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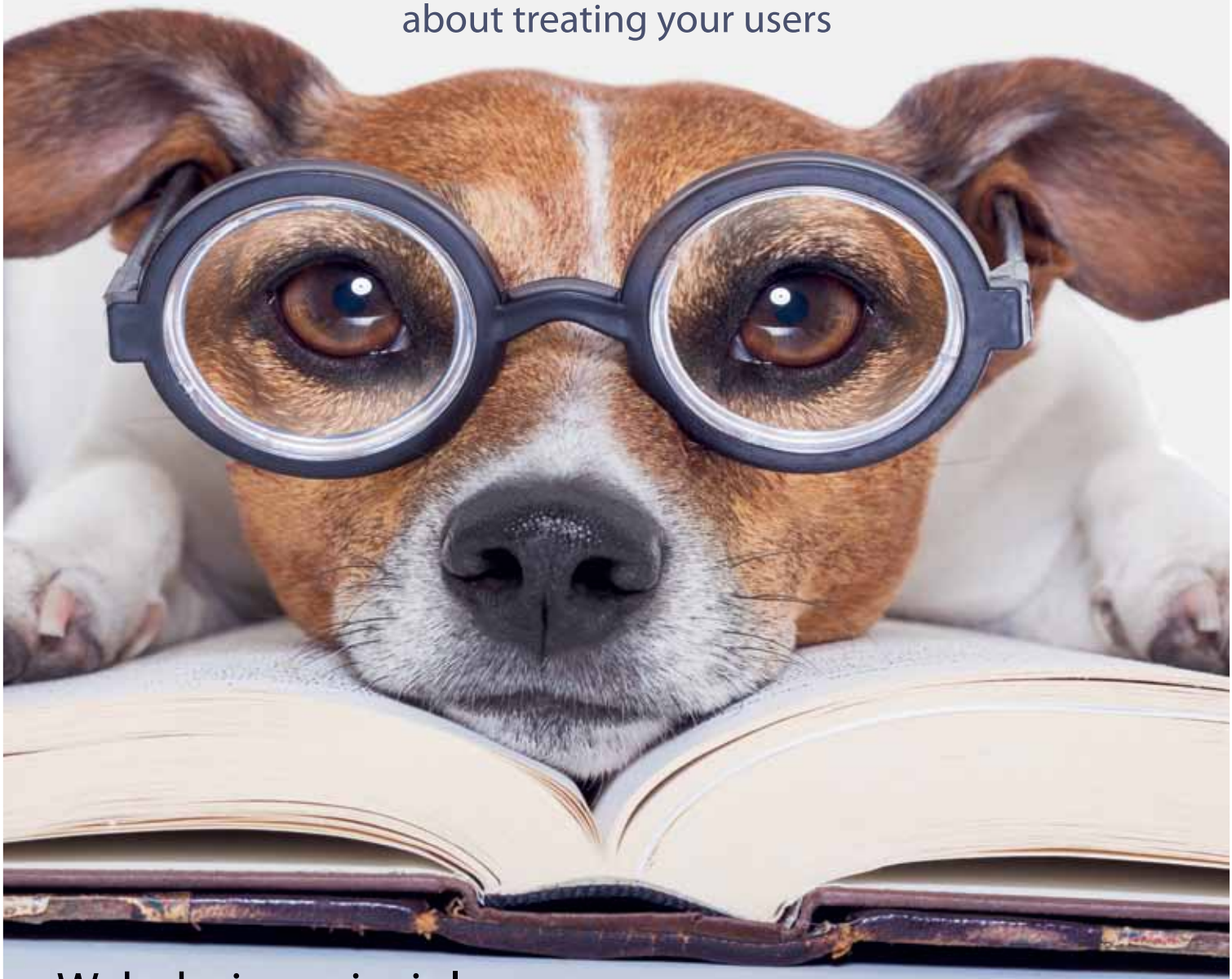
JULY 2024

Move over AI – meet CI!

What Canine Intelligence can teach you about treating your users



Web design principles for tech writers

How to help your users avoid reading

My digital twin

How AI agents can smoothen your workflow

The New Machinery Regulation: "Digital-Only" Instructions for Use?

One of 50 tekom publications

The New Machinery Regulation – Answers and recommendations for action

The Machinery Regulation (EU) 2023/1230, applicable as of January 2027, is crucial for access to the European market. It changes some of the requirements for instructions for use to be provided by manufacturers of machinery and related products.

This whitepaper supports technical writers in introducing and implementing the New Machinery Regulation, which allows provision of instructions for use in digital formats but at the same time imposes some restrictions.

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From the editor

"Form follows function" is a design principle dictating that the shape and form of a building or object should follow its intended purpose. Today, this simple maxim appears almost too obvious to provoke any deeper reflection. Born during a transformative era in architectural history, the principle became a guiding mantra for a generation of forward-thinking designers who were eager to close the chapter on superfluous ornamentation in favor of designs that truly served their purpose. The Austrian architect Adolf Loos even went so far as to call lavish designs a crime, claiming that ornamental architecture represented backwardness or degeneration.

The form follows function maxim has since become a guiding principle, not only in architecture but throughout all user-oriented sectors, from product design all the way to software development. With the rise of online help, the transformative developments were also mirrored in technical communication.

"Digital publishing has changed the way people read content," writes Sara Stein in our focus theme, starting on page 12. While people used to read linearly from start to finish, today's users scan documentation to find what they are looking for. In her article, she provides guidance for creating visual forms that follow their TechComm functions.

Ivanka Radkova believes that a deep understanding of graphic design principles can give technical communicators a competitive edge, and enhance their visibility and value in their company. In her article (starting on page 22), she gives insights into what we should consider when selecting colors, shapes, and other graphic elements.

Kirk St.Amant looks into the psychology behind our perception of visuals and gives tips on how to make them more captivating (starting on page 18).

Visual communication will also be one of the many focus themes at this year's tcworld conference, which will be held in Stuttgart, Germany, from November 5-7. The conference is expected to draw more than 4000 professionals from technical communication as well as many related fields, such as translation and localization, to our venue. You can now find the full program at tcworldconference.tekom.de.

Corinna Melville
Editor, *tcworld magazine*

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Move over AI – meet CI!

Meet our new author Terri Guren and find out what tech writers can learn from their furry friends.

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Web design principles for tech writers

No matter how good your documentation, no one likes reading lengthy user manuals. A simple document facelift can greatly assist readers in scanning your documentation.

page 12

My digital twin

What if you could have a clone of yourself who can help you do your job, only better and faster? Here is how AI agents can smoothen your workflow today.

page 26

The new kids on the AR block: Mixed Reality and Extended Reality

The outlook for AR/VR headsets is expected to improve as Mixed Reality and Extended Reality gain acceptance.

Image: © jacoblund/ istockphoto.com

Global shipments of Augmented Reality and Virtual Reality (AR/VR) headsets declined 67.4% year over year in the first quarter of 2024, according to new data from the International Data Corporation (IDC). The decline in shipments was expected as the market transitions to include new categories such as Mixed Reality (MR) and Extended Reality (ER). Despite the decline, the average selling price (ASP) rose to over US$1000 as Apple entered the market and incumbents such as Meta focused on premium headsets such as the Quest 3.

Mixed Reality occludes the user's vision, but provides a view of the real world with outward facing cameras. Extended Reality employs a see-through display, but mirrors content from another device or offers a simplistic heads-up display.

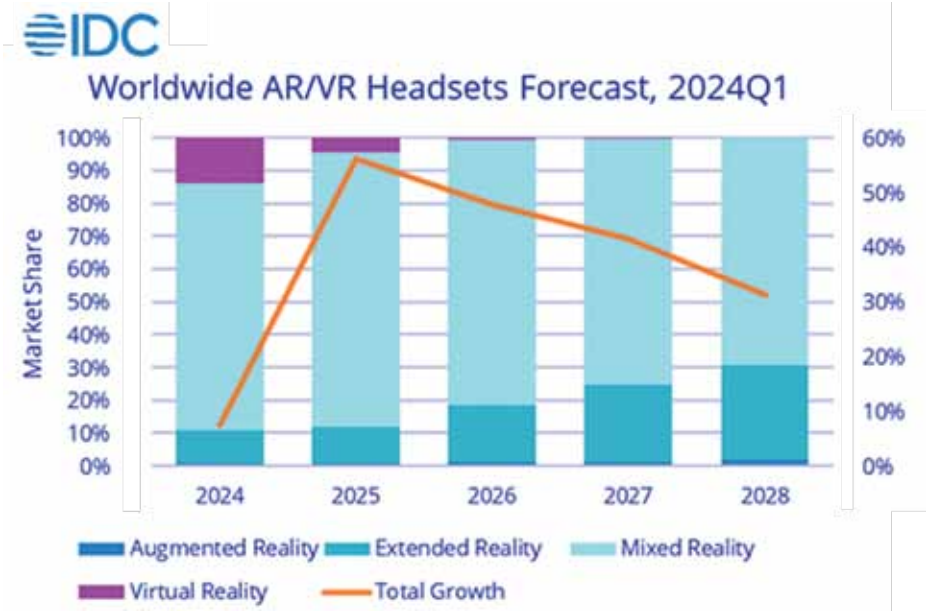
Both the Quest 3 and the Vision Pro helped educate users and enticed developers to create MR content, blending the digital and physical worlds. Unfortunately, this has come at a premium for users.

"With Mixed Reality on the rise, expect strictly Virtual Reality headsets to fade in the coming years as brands and developers devise new hardware and experiences to help users eventually transition to Augmented Reality further down the line," said Jitesh Ubrani, research manager, Worldwide Mobile Device Trackers at IDC. "Meanwhile, Extended Reality displays are set to garner consumer attention as they offer a big screen experience today while incorporating AI and heads-up displays in the near future."

Although average selling prices (ASPs) for the overall market crested above the US$1000 mark, this is not representative of all products. "ASPs for AR headsets have almost always been above this price point, but ASPs for VR, MR, and ER headsets have typically been lower," said Ramon T. Llamas, research director with IDC's Augmented and Virtual Reality team.

"Looking ahead, we anticipate ASP erosion across all products," Llamas continued. "Because the overall market is still in its early stages with more expensive first- and second-generation devices, prices will be high even as early adopters buy them. In order to reach scale in the mass market, vendors will need to reduce prices on later and upcoming devices."

IDC forecasts headset shipments will return to growth later this year. Newer headsets and lower price points will help with the turnaround expected later this year. Beyond that, headset shipment volume is expected to see a compound annual growth rate of 43.9% from 2024–2028. www.idc.com



© IDC 2024

Standardizing supply chain information models

With escalating cybersecurity threats exploiting software supply chain vulnerabilities, there's an urgent need for better understanding and proactive measures to identify and prevent future risks. Members of OASIS Open, the global open source and standards organization, have formed the Open Supply Chain Information Modeling (OSIM) Technical Committee (TC) to standardize and promote information models crucial to supply chain security.

The aim of OSIM is to build a unifying framework that sits on top of existing SBOM data models such as CSAF, CycloneDX, OpenVEX, and SPDX. OSIM is not intended to replace or endorse any one of these models. Instead, as an information model, OSIM will bring clarity to software supply chain partners, mitigate vulnerabilities and disruptions, reduce security risks, and make it easier for companies to plan for upgrades and contingencies.

"CISA is excited to be a part of this technical effort to bring greater visibility to the software supply chain," said Allan Friedman, senior technical advisor at CISA. "OSIM represents an important effort to address the need for greater structure and comprehensibility of software supply chains," said Isaac Hepworth, Google, and OSIM co-chair. "By establishing standardized information models we can enhance transparency, interoperability, and resilience in end-to-end operations – ultimately aiding cyber risk management and protecting critical infrastructure."

Recognizing the crucial role of the Software Bill of Materials (SBOMs) in fortifying software supply chain security, the OSIM TC aims to create, for example, a standardized SBOM information model that would enhance understanding and interoperability across diverse SBOM data formats (i.e. SPDX and CycloneDX). Competing data models, like SPDX, CycloneDX, CSAF, and OpenVex, show the need for creating information models that would bring coherence across diverse specifications.

Get involved

The OSIM TC welcomes a diverse range of contributors, including software and hardware vendors, open-source maintainers, technology consultants, business stakeholders, government organizations, and regulatory bodies. Participation is open to all through membership in OASIS, with interested parties encouraged to join and contribute to shaping the future of supply chain information modeling.

www.oasis-open.org/tc-osim

Image: © burcu demir/istockphoto.com

ARGO TRANSLATION ACQUIRES GLOBAL ACCENT

U.S. translation company Argo Translation has acquired Global Accent Translation Services. The acquisition is set to expand Argo Translation's market reach and extend its industry coverage, particularly in market research and outdoor goods translation. The company is poised to enhance its offerings with advanced technology such as AI-driven translation models, real-time chat translation, and platform integration with its proprietary CMSConnect® application.

www.argotrans.com

XTM INTRODUCES XTRF 9.9

XTM International, provider of translation technology for enterprises, has launched XTRF 9.9. The update includes enhanced integration between XTM Cloud and XTRF, as well as improved vendor management and invoicing capabilities.

https://xtm.cloud

COMPONENT CONTENT ALLIANCE

RWS, provider of technology-enabled language, content, and intellectual property solutions, has launched the Component Content Alliance (CCA), a global community that brings together content experts, thought leaders and technical professionals to collaborate, share insights and drive innovation in component content development. The CCA, which first launched with a LinkedIn Community, offers members exclusive access to webinars, conferences and workshops where industry leaders share insights and best practice across a range of topics related to component content.

www.rws.com

Top five strategic technology trends in software engineering

Image: © Tippapatt/istockphoto.com

Research firm Gartner, Inc. has presented the top five strategic technology trends in software engineering for 2024 and beyond.
According to a Gartner survey of 300 software engineering and application development team managers in the U.S. and U.K. in the fourth quarter of 2023, meeting business objectives is one of the top three performance objectives for 65% of leaders. By investing in disruptive technologies, software engineering leaders can empower their teams to meet business objectives for productivity, sustainability and growth.
Figure 1 reveals the top five strategic technology trends for software engineering

Software engineering intelligence

Software engineering intelligence platforms provide a unified, transparent view of engineering processes that helps leaders to understand and measure not only velocity and flow, but also quality, organizational effectiveness, and business value.
Gartner predicts that by 2027, 50% of software engineering organizations will use software engineering intelligence platforms to measure and increase developer productivity, compared to 5% in 2024.

AI-augmented development

Software engineering leaders need a cost-effective way to help their teams build software faster. According to the survey, 58% of respondents said their organization is using or planning to use generative AI over the next twelve months to control or reduce costs.
AI-augmented development is the use of AI technologies, such as generative AI and machine learning, to aid software engineers in designing, coding, and testing applications. AI-augmented development tools integrate with a software engineer's development environment to produce application code, enable design-to-code transformation, and enhance application testing capabilities.
"Investing in AI-augmented development will support software engineering leaders in boosting developer productivity and controlling costs and can also improve their

MADCAP SOFTWARE EXPANDS PRODUCT PORTFOLIO

MadCap Software, Inc., provider of multi-channel content authoring, management and publishing solutions, has introduced two new offerings: ***Publish to Syndicate*** in MadCap Flare 2024 and ***CCMS-Central Connector*** in MadCap IXIA CCMS 7.1.

Publish to Syndicate enables teams to collaborate on technical and learning content as well as maximize content reuse. The new feature works by allowing users of MadCap Flare technical authoring software to seamlessly publish content directly to Xyleme Syndicate, an enterprise-level learning content management system (LCMS) within the MadCap Software product ecosystem.

CCMS-Central Connector serves as a bridge between structured content creation and cloud-based content management and delivery platforms. By connecting MadCap IXIA CCMS, an enterprise-class component content management system (CCMS), with the robust capabilities of MadCap Central, the integration tool streamlines workflows, enhances efficiency, and offers a unified destination for content delivery and management.

Both MadCap Flare 2024 with Publish to Syndicate and MadCap IXIA CCMS 7.1 featuring CCMS-Central Connector are now available. Product pricing is based on team size and implementation.

www.madcapsoftware.com

teams' ability to deliver more value," said Joachim Herschmann, VP analyst at Gartner.

Green software engineering

Green software engineering is the discipline of building software that is carbon-efficient and carbon-aware. Building green software involves making energy-efficient choices for architecture and design patterns, algorithms, data structures, programming languages, language runtimes, and infrastructure.

Gartner predicts that by 2027, 30% of large global enterprises will include software sustainability in their non-functional requirements, up from less than 10% in 2024.

The use of computer-heavy workloads increases an organization's carbon footprint, and generative AI-enabled applications are especially energy-intensive, so implementing green software engineering will help organizations prioritize their sustainability objectives.

Platform engineering

Platform engineering reduces cognitive load for developers by offering underlying capabilities via internal developer portals and platforms that multiple product teams can use. These platforms provide a compelling "paved road" to software development, which saves time for developers and improves their job satisfaction.

Gartner predicts that by 2026, 80% of large software engineering organizations will establish platform engineering teams, up from 45% in 2022.

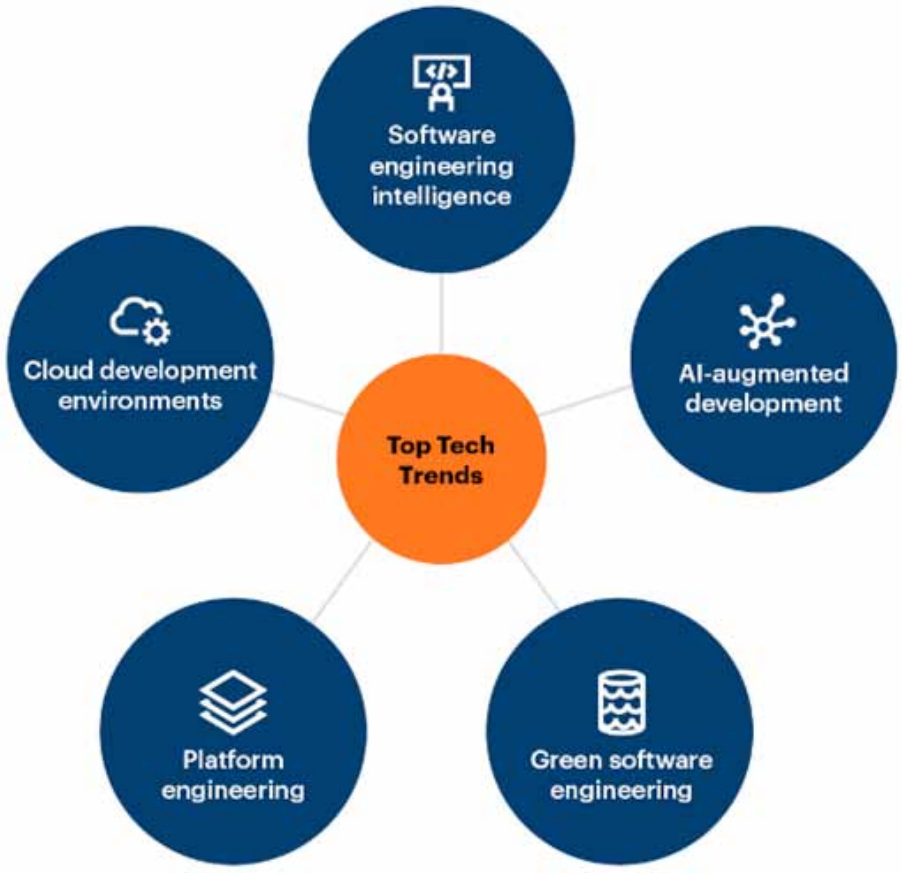


Figure 1: The Gartner top strategic technology trends for software engineering for 2024
Source: Gartner (May 2024)

Cloud development environments

Cloud development environments provide remote, ready-to-use access to a cloud-hosted development environment with minimal effort for setup and configuration. This decoupling of the development workspace from the physical workstation enables a low-friction, consistent developer experience, and faster developer onboarding.

"The technology trends Gartner has identified are already helping early adopters to achieve business objectives," said Herschmann. "These disruptive tools and practices enable software engineering teams to deliver high-quality, scalable AI-powered applications, while reducing toil and friction in the software development life cycle (SDLC), improving developer experience and productivity."

www.gartner.com

Move over, AI – meet CI!

What Canine Intelligence can teach you about treating your users

Text by Terri Guren

Hello to all of you wonderful tekom members! Mom is taking a break, so I volunteered to step in and write the *tcunplugged* column. I've been hanging out with Mom for 16 years, so I have a pretty good idea of what she does. (It seems to involve staring at the computer screen, some bursts of rapid-fire typing, and occasionally shouting rude things or pulling faces, especially when reading email.)

Recently, Mom tried to explain AI to me. I can't say that I was impressed. Why rely on software algorithms when the average doggo could help solve most of your content problems? I call this *CI* (Canine Intelligence), even though Mom says that intelligence is not my strongest suit.

Canine Intelligence relies on the wisdom and experience of millions of dogs who share their lives with humans. It is universal for all breeds, sizes, and nationalities and will never accidentally launch a missile strike. Here are my favorite CI tips to help you write better user-pleasing content.

Be consistent

The CI concept: Anyone who has tried to train a dog knows that consistency is critical. You can't respond inconsistently to any behavior if you want us to learn a trick or master a new skill. Toto, the neurotic toy poodle who lives upstairs, gets mixed messages from his family all the time. His Mommy wants him to walk next to her as they come down the steps, but his Daddy lets him run ahead (and even encourages him to do so). No wonder he is such a hot mess. Sometimes they yell at him for barking, sometimes they laugh, and sometimes they even give him a treat!

We want and need consistency. If you comfort us one time but scold us another time for leaving a puddle on the kitchen floor, we become anxious, confused, and stressed.

The TechComm concept: Your users trust you to provide a consistent response to a similar behavior. This is important in the UI, of course, but we sometimes forget how important it is in the content. Do some of your procedures list prerequisites, but others don't even have that heading? Do some graphics have annotations but others none? Do you provide rich layered content of tips and help in some topics but not others? Consistency in content structure, presentation, and information helps strengthen trust between the company and your users.

Be generous with treats

The CI concept: Dog food is fine, but we also need treats! Treats aren't just for rewards, either. They are little mouthfuls of joy that brighten our day. And guess what? We definitely notice when you break a treat in half or try other sneaky tricks to save money. Whatever your current budget is for treats, double it! Chewy treats, crunchy treats, soft and squishy treats – they are our birthright and we demand more!

The TechComm concept: Yes, your users can survive on a bland diet of dry content, but imagine how much joy you could add by sprinkling a few treats onto your documentation. Value-added content, including tips, tutorials, cool workarounds, and use case examples can improve the overall UI. "Treat" content gives your users new ideas, helps them use the product better, and counteracts the daily drudgery of bland content.

Respect our favorite spots

The CI concept: I once found a half-eaten falafel in a shrub near our home. (I managed to gobble it before Mom could react.) Now, whenever we pass that shrub,

I must stop and sniff carefully, because maybe it will have grown another falafel. There is also a gap under a fence that I must sniff. The jackals squeeze under it and leave the most intriguing aromas. I may sniff, move on, and then double back to sniff again.

Mom always lets me sniff. I feel sorry for the dogs who are dragged away from their favorite spots. Being able to return to these favorite smells is a comfort to us. It provides emotional support and the assurance of stability, as well as the stimulation of one of our most powerful senses.

The TechComm concept: Make it easy for your users to mark their favorite bits of content. There may be a reference table, a high-level workflow, or even a complex procedure that they return to over and over. Allow your users to label or save cherished topics rather than forcing them to search each time they need them.

Provide variety

The CI concept: Yes, consistency is important, but variety (when not in response to behavior) is great! This includes getting some human food or dressing up for holidays or special events. I pretend that I hate it when Mom dresses me up for Purim, but the neighbors always make a big fuss over me, and I end up getting extra love, treats, and attention. And don't tell Mom, but I do think that I am a very pretty unicorn.

Variety also means giving us choices. Sometimes I like to nap on my bed next to Mom's desk, and sometimes I like to sit by the windows and watch the wild boars. Some dogs like riding in cars, and some like being carried. Some like swimming, and some prefer digging in the sand.

The TechComm concept: Some companies build variety into the UI without compromising on consistency; consider, for example, the Google Doodle. Could you release push content on holidays or for special events? Could you offer your users a choice by providing content in various formats? Some users like videos, while others prefer to read. Having a variety of deliverables and ways of getting information means that more of your users can find the best content style for their preferences.

Save us when we struggle

The CI concept: We're just furry kids. We get into accidents, get sick, do stupid things, and sometimes we need help. Back in April, I was out in the yard, and I became entranced by an interesting smell. Following my nose, I stepped off the edge of the yard and into the *wadi* (a dry riverbed). I ended up rolling down the steep ravine and getting completely tangled in vines. I was really scared, but Mom found me. One of our neighbors helped her; actually, the whole building got involved, with neighbors hanging out the windows and trying to orient Mom based on my cries. I was so relieved and happy when Mom finally crawled through all the underbrush and untangled me from those nasty vines. She told me that she was getting too old for this nonsense. But Mom always helps me when I am in trouble.

The TechComm concept: Help your users! Don't let them flounder! Do you make it easy for them to ask for help, with clear links to support lines, chat options, or other resources, or do you just dump them into a monolithic PDF and let them drown? They may already be feeling foolish (I know I did as soon as I rolled down into the *wadi*). But if you can help them when they are really in trouble, they will be loyal users for many years.

Cherish your old dogs

The CI concept: Some people abandon elderly dogs. They take them to dog shelters, have a vet put them to sleep, or even leave them by the side of the road. This makes Mom really, really mad. We old dogs are still Good Boys and Good Girls! We still have love to give. We may need help getting up the stairs, we may have a few pills to take every day, and we may have fading vision and hearing, but we are the same dog with thoughts and feelings and a lifetime of memories. I still have a wonderful appetite and love seeing my friends on our walks. Even though I am old and wobbly, I am still enjoying life. And while I do need some extra help from Mom these days, it isn't too much. It doesn't take a lot to keep an old dog comfortable and feeling cherished.

The TechComm concept: Don't abandon your old users! They don't necessarily want to learn a completely new paradigm for content or deal with a chatbot. Yes, your new users are younger and more energetic, and it is fun to create all kinds of sexy new content deliverables for them. But your old users have loyally stuck with you for years. Give them that little extra boost they need or the extra cushioning they want. Don't dump them on the side of the data highway.

Conclusion

In the cold, impersonal world of technical content, there is a lot you can learn from your furry friends.

Do you have a Good Boy or Good Girl? We want to hear from you!

ABOUT THE AUTHOR

Terri Guren is a scruffy 9-kilo terrier mix. She adopted Leah Guren 16 years ago and is approaching her 17th birthday at a rapid (albeit arthritic) waddle. Terri's hobbies include eating, napping, watching the wild boars, and peeing on hedgehogs. She is universally recognized as a Pretty Good Dog, apart from being a massive drama queen at the vet's.

Web design principles for technical writers

How to help people avoid reading

Image: © hitmanphoto/istockphoto.com

Text by Sara Stein

Since documentation moved from PDF to HTML, web design – the layout and user experience (UX) of websites – has become a relevant aspect of technical communication. Which web design principles should be implemented in documentation sites? Should they be treated the same as websites offering products or services?

To answer that, we need to consider the function of a documentation site. "Form follows function" is the famous axiom of industrial architect Louis Sullivan, who believed that the shape of a building or object should be derived from its intended purpose or function. [1] By understanding the function of a documentation site, we can design it accordingly.

What's the purpose of a documentation site?

Online documentation can range from simple online help to a one-stop-shop for all your customers' knowledge needs, a platform on which you showcase your industry expertise, help generate interest in your product portfolio, and contribute to cross-sales. The common denominator is that product content needs to be accessible and easy to understand. In other words, the documentation site must be **easy to read**.

Digital publishing has changed the way people read content. Once upon a time, people read linearly from start to finish. Today, people interact with content and consume it in a non-linear way. Readers seek control over not just what they read, but how, when, where, and in what medium.

Based on the "form follows function" design principle, the look and feel of a documentation site or knowledge base should differ from the user interface of a product or service since its function is different. A product or service is usually action-oriented: Users perform various actions or get the product to perform various actions. A documentation site is content-oriented: Users look for relevant information or content they need to do a specific job.

	Product or service UI	Documentation UI
Main function	Action-oriented	Content-oriented
Use cases	Perform various actions or get the product to perform various actions	Find and read content to do a specific job

Table 1: A product site is action-oriented while a documentation site is content-oriented.

How do people read a documentation site?

Let's look into how people behave when reading documentation:

People don't like to read. Reading requires cognitive effort, especially when reading in a non-native language. Reading is hard work, which most people prefer to avoid. Based on Daniel Kahneman's limited capacity model, there's a limit to how much information a person can process at any given time. [2]

People scan documentation. Instead of reading word-by-word, people scan web content to find what they're looking for. When we scan, our eyes dart around the page in an attempt to extract meaning. Eye-tracking research shows that most users read very little from a wall of text but will hunt for the information they need to do their job. [3]

People process images faster than words. The human mind processes images superfast. MIT neuroscientists found that the brain can identify images in as little as 13 milliseconds, compared to half a second to process a word. [4] For most readers, the point of entry into text will be where something catches their interest such as a relevant heading, infographic, screenshot, or admonition note.

Based on these insights, we understand that a user-friendly documentation site should be easy to scan, not contain long chunks of text, and include meaningful images where relevant. In the words of Ellen Lupton, author of *Type on Screen*: "One of design's most humane functions is to help readers avoid reading." [5]

Visual signposts

A good documentation site design helps the audience to avoid reading, by facilitating scanning. Readers process many visual and textual cues unconsciously. These cues help readers navigate to find the information they need. When designing a documentation site, we can leverage visual cues that facilitate scanning, such as a table of contents and headings, visual chunking, tables, infographics, admonition icons and, last but not least, white space.

This article explores these visual cues and explains best practices for using them to design a documentation site with a better user experience.

TOC

The table of contents (TOC) is the primary navigation tool on a documentation site. The TOC lists all the topics within a knowledge area and usually appears in the left navigation pane. It basically tells the document story in a hierarchical list of logically arranged topics, where subtopics are nested under primary topics.

Many users will start scanning the TOC instead of searching, especially when the search yields hundreds of results. Too many search results inhibit a positive user experience, as people often don't find what they're looking for. Exposing the TOC, or structure, of a document allows readers to skip what's less relevant and focus on what's important for them to do their job.

Besides the document TOC, a single page in the document might have its own TOC for topics. This internal TOC helps users scan content within that page, especially when there are many subtopics (Figure 1).

To facilitate scanning, the TOC should have these visual attributes:

- **Short lines that are front-heavy with content:** Readers scan down the left and process mainly the first words. [6] Don't start a topic with "the" or "a", since it doesn't add meaningful information.
- **Chunking that reflects hierarchy:** Similar items are grouped together, and secondary items are indented under primary items.
- **The currently displayed topic is highlighted:** This makes it easy for users to know where they are, especially in a TOC with many items.
- **Sentence case:** Use sentence case for TOC items and not Title Case (except for proper nouns and acronyms). Title Case is harder to read. [7]

For readers with accessibility issues, content is often accessed linearly, so it's important to ensure that the navigation order displayed in the TOC is logically structured.

Headings

Different levels of headings are used in documentation to convey the structural hierarchy. While PDF documents may have many levels of headings (up to five or six), online documentation has a simpler hierarchy. It

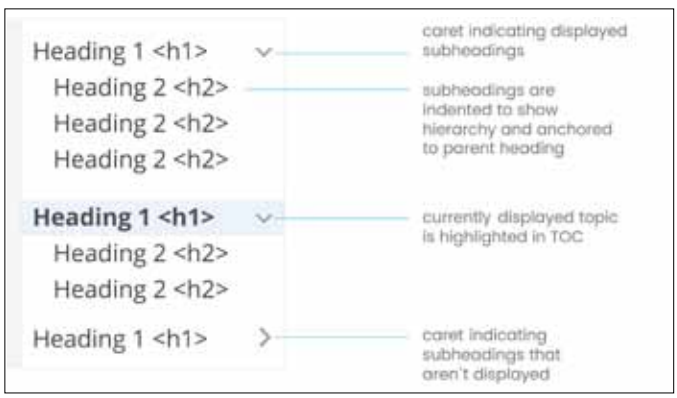


Figure 1: Visual signposts help with scanning a table of contents and making sense of the document structure.

usually contains a maximum of two or three heading levels within the same page. When each section is prefaced by its own heading, it's easier for readers to scan and find the content that's relevant to them.

Heading hierarchy is distinguished at a glance by size and sometimes color:

- **Size:** Heading size is related proportionately to its level in the hierarchy, so H1 > H2 > H3. The bigger something is, the more important it's perceived to be.
- **Color:** Used as a secondary identifier, color can be used to distinguish different heading levels. Color is usually applied to higher level headings, while default black text is used for lower-level headings. It's not best practice to rely on color alone to convey meaning, since some readers might have vision impairments.

When different styles are used for headings, readers can understand the structure and hierarchy of the sections at a glance (Figure 2).

Chunking

Most readers are put off by lengthy chunks of text. Remember, people don't like to read! Small chunks of text are less overwhelming than unbroken text. Readers may have difficulty focusing on or comprehending lengthy sections of text. To that end, it's best practice to organize information in manageable chunks. With visual chunking, we divide content into components, where each component is presented separately by a different stylistic element.

In online documentation, cascading stylesheets (or CSS) give the documentation its look and feel. Each stylistic element is defined in the CSS as a separate entity, such as headings, numbered and bulleted lists, tables and notes. A well-defined and well-designed CSS helps readers recognize different content types at a glance, since each type is stylized as a discrete and recognizable unit.

When a long topic includes headings, subheadings, tables, graphics, and notes, it's much easier for readers to scan the topic quickly and extract information from these visual signposts.

Here are some best practices for leveraging visual chunking:

- **Principle of proximity:** Based on the principle of proximity, we perceive things as related to each other when they're close to each other. To facilitate scanning, headings should be anchored to the chunk of text that follows the heading. In other words, the space between a heading and the associated text should be less than the space separating the heading from the text above it. This refinement helps to sharpen the relationship between heading and text (Figure 3).
- **Consistent spacing within and between style elements:** When styles are used consistently, with consistent spacing within elements of the same style and consistent spacing between different elements, it conveys a pattern to the readers that subconsciously signifies order and structure (Figures 4 and 5).

Tables

In a world of TMI (too much information), people increasingly rely on data visualization to analyze large amounts of information and make data-based decisions. The easiest way for users to analyze data in documentation is via tables. A well-formatted table can be scanned both vertically and horizontally and can be read in both directions.

Some of the visual cues to consider when designing tables:

- **Alignment:** By default, text should be left-aligned. Numerical values are usually right-aligned so they can be easily compared in a column.
- **Row height:** This should be generous enough so that the text has sufficient cell padding. It's difficult to read text in

Figure 4: Proximity principle in action: The introductory sentence to the second list is closer to the subsequent bullets than to the preceding bullets, indicating that it's a group.

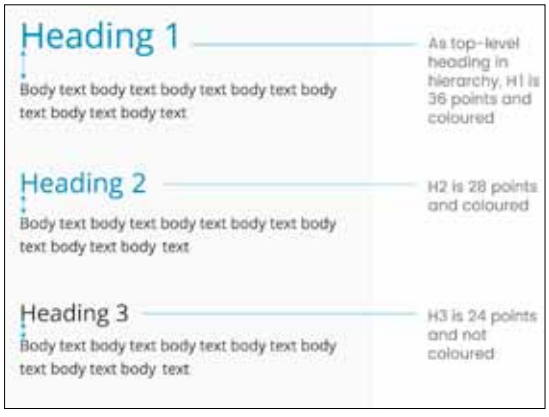


Figure 2: Notice that spacing between the heading and body text increases in proportion to heading size.

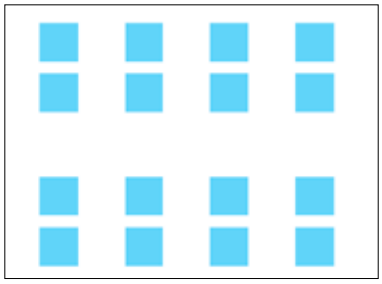


Figure 3: The proximity principle: How many groups do you see? We tend to see eight groups of two squares rather than four groups of four squares, as the distance between the two squares is closer than the distance around them.

Figure 5: Proximity principle misused: In this example, the spacing below the subheading is greater than the spacing above it. This implies that the text is not anchored to its subheading. To anchor the text to its heading, the space below a heading must be less than the space above the heading.

rows that are too tight or, conversely, too spread apart with excess cell padding.
- **Borders:** Don't overdo internal borders. They break up the table data and make it difficult to scan.
- **Consistency:** Row height and vertical text position should be uniform; otherwise, formatting is inconsistent and distracting.

Infographics

When scanning a documentation site, people process images before they read any text. Studies that follow people's eye movements as they view search results show that search results with images get more attention than results with only text. [8] People also understand infographics faster than lengthy chunks of text. Workflows, dataflows, and concept infographics help readers easily understand complex procedures at a glance. Eye movement studies also show that the top half of the page gets more attention than the bottom (Figure 7).

If you want to grab your readers' attention:
- Use infographics, data viz, screenshots, and icons.
- Put infographics near the top of the page. It's likely they'll be seen more at the top than at the bottom of the page.

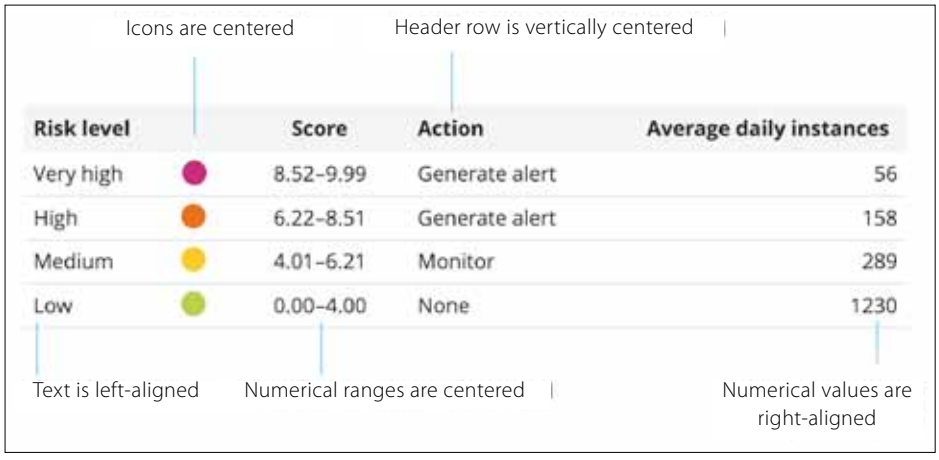


Figure 6: Data aligned in tables (left, right, or center) according to type helps facilitate scanning

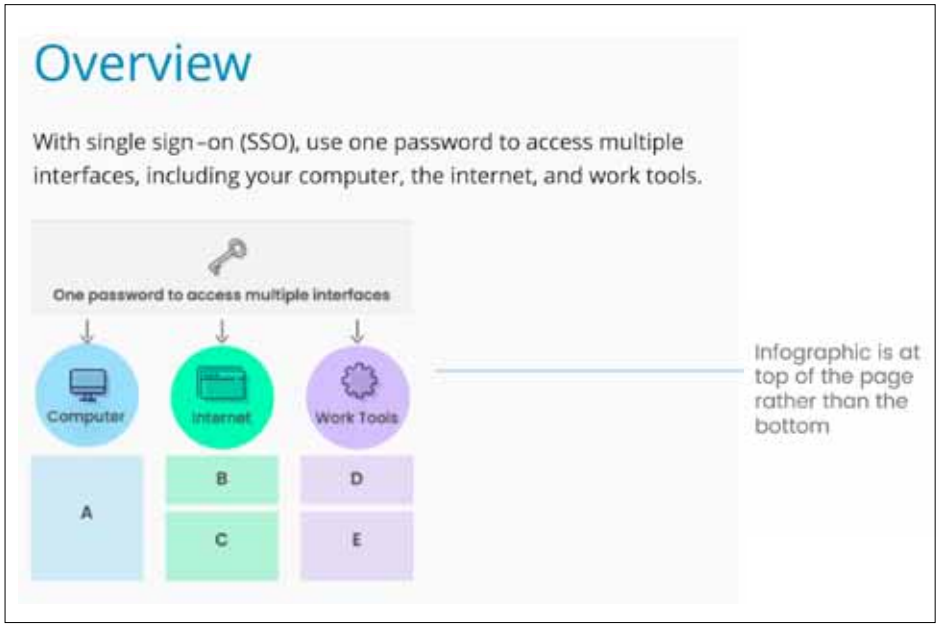


Figure 7: An infographic at the top of the page is more likely to be noticed than at the bottom of the page.

Some readers might have difficulty comprehending very technical content as text. Supplement text with infographics and other media, such as videos, to facilitate better understanding.

Admonition icons

Most people are familiar with standard icons in a user interface or app icons on a phone. Documentation has its own set of icons – or admonitions – indicating the different text types in a document. Admonition icons act as visual signposts since they appear saliently in the left margin, and signal to the reader what type of content they contain even before they are read.

There are several benefits to using admon icons in documentation:
- **Easy-to-scan:** Readers can quickly scan a document for different content types, as the admon icons stand out.
- **Clear meaning:** Adding a label to the admon icon significantly improves the icon's usability for all users. [9] When you add a text label to an icon, even if it's a standard or common icon, the icon is no longer ambiguous. The text label clarifies the icon's meaning so all users can understand it.

Admon icons that signify different content types can include Note, Warning, Important, Example, and Tip, as shown in the examples in Figure 8.

You might want to use additional admonition icons depending on the nature of your content. Some documents use a code admon for indicating code that developers need, especially if most of the document does not contain code.

White space

Designing visual signposts in documentation is not only an act of marking, but also of spacing. White space is an essential ingredient in visual documentation because it makes elements stand out and facilitates scanning. The more white space around an element, the more important it's considered to be.

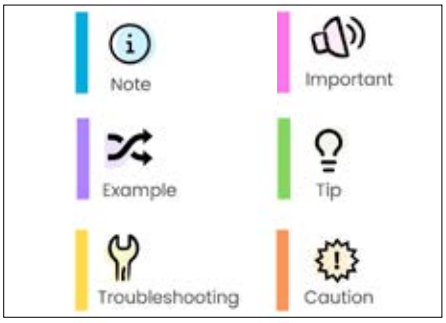


Figure 8: Labels clarify the content type when the icon by itself might be ambiguous.

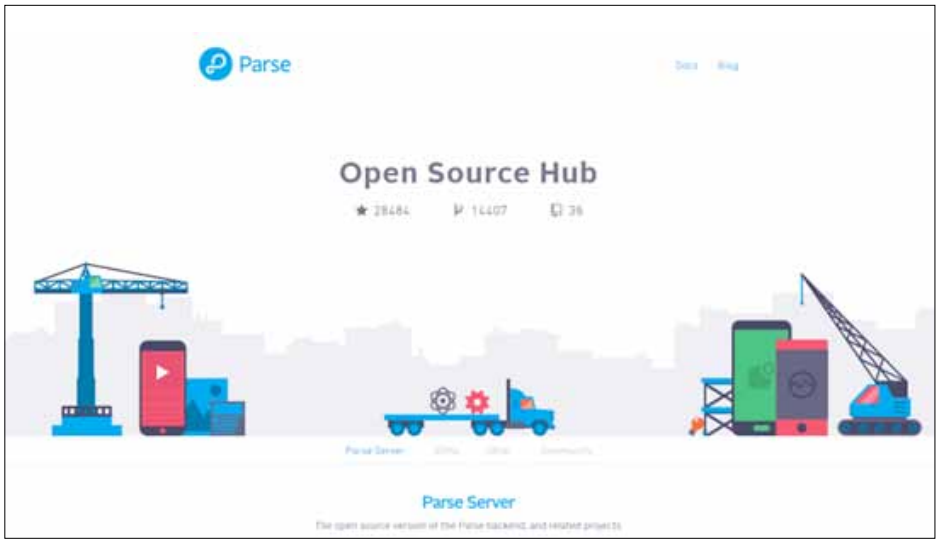


Figure 9: Websites like Parse are easy on the eye because of the generous white space.

The power of white space in documentation is often underestimated. People may comment that the margins are too large or try to maximize the real estate of the content frame by reducing white space. However, white space plays a pivotal role in a document: It draws attention to data and visuals. Headings at the top of a page are usually surrounded by generous white space. This technique is known as sinkage. The extra white space around a heading makes it stand out from the rest of the text as something important. Larger headings require more white space around them to stand out.

The purpose of white space around text and images is:

- to grab attention, as a heading or image surrounded by ample white space stands out, and
- to act as a moat separating different sections. When sections are too cramped next to each other, they're harder to scan.

Conclusion

Our readers' time is valuable. Few readers read anything in sequential order from start to finish; instead, they scan. In a customer-oriented documentation site, we'll leverage visual cues to help guide customers through documentation and make them read less, not more.

Visual cues that facilitate effective scanning need to be leveraged in an optimal way. They should reflect the company's brand, look and feel and provide subtle, but not overstated, direction in navigating a document. Every visual in documentation should have a purpose. Otherwise, it runs the risk of becoming visual clutter.

When documentation looks professional, is balanced, well-designed, user-friendly, and easy to scan for relevant content, then customers will most probably assume that the company is also professional. This is known as the halo effect – when positive impressions of a product in one area positively influence one's opinion in other areas.

References

[1] "The Architecture of the Solomon R. Guggenheim Museum", www.guggenheim.org/teaching-materials/the-architecture-of-the-solomon-r-guggenheim-museum/form-follows-function

[2] Kahneman, Daniel. *Attention and effort*. Vol. 1063. Englewood Cliffs, NJ: Prentice-Hall, 1973.

[3] "Text Scanning Patterns: Eyetracking Evidence" Nielsen Norman Group. www.nngroup.com/articles/text-scanning-patterns-eyetracking

[4] Potter, Mary C., Brad Wyble, Carl Erick Hagmann, and Emily S. McCourt. "Detecting meaning in RSVP at 13 ms per picture." *Attention, Perception, & Psychophysics* 76, no. 2 (2014): 270-279.

[5] Lupton, Ellen, ed. *Type on screen: A guide for designers, developers, writers, and students*. Princeton Architectural Press, 2014.

[6] "First 2 Words: A Signal for the Scanning Eye." Nielsen Norman Group. www.nngroup.com/articles/first-2-words-a-signal-for-scanning

[7] White, Jan V. *Great Pages: A Common-sense Approach to Effective Desktop Design*. Serif Pub., 1990.

[8] Meyers, P. J. Eye-Tracking Google SERPs – 5 Tales of Pizza. Moz, Inc. Oct 5, 2011 [cited Jan 21, 2020]. moz.com/blog/eyetracking-google-serps.

[9] Harley, Aurora. Icon Usability. Nielsen Norman Group. July 27, 2014. www.nngroup.com/articles/icon-usability

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The psychology of visual design

When scanning information, our attention is naturally drawn to graphics. Understanding how humans process visual content helps us to become better designers.

Text by Kirk St. Amant

Image: © Delpixart/istockphoto.com

Visual content plays a central role in technical communication. Audiences often rely on visual factors – including headings, icons, and menu bars – when using technical content. The question becomes: What makes visual content usable? The answer involves psychological processes that shape how humans interact with visual information.

The three Rs of usability

To use something effectively, humans need to perform three interconnected processes:

The first process is "recognition": Do individuals know – or recognize – what to use to achieve an objective?
Example: Do individuals recognize a "call phone" app on a smartphone AND do they recognize what that app does?
Goal: Know what an item is and what it does.

The second process is "reaction": Do individuals react to – or use – a recognized item as needed to achieve an objective?
Example: Do individuals know what actions to perform when using the "call phone" app to make a call with a smartphone?
Goal: Know how to use an item to achieve the desired objective.

The third process is "resolution": Do individuals know when a resolution has occurred – i.e., that they used an item correctly to achieve an objective?
Example: Do individuals know what the smartphone screen should display to indicate they correctly used the "call phone" app to make a phone call?
Goal: Know the task was performed successfully.

Usable content allows individuals to address all three "R" (3R) processes easily and effectively. Similarly, these three processes shape audience expectations for usable visual designs. Technical communicators can benefit from an understanding of these processes when creating visual content.

Understanding 3R expectations

The 3R processes are not inherent to items. Rather, individuals learn them based on their experiences. When first encountering an item (e.g., a "call phone" app), individuals don't know what that item is or what it does. Rather, they need to learn the 3R processes associated with using it. Individuals also need to learn how 3R processes interconnect in a feedback loop that guides their use of that item.
When using a "call phone" app, for example, individuals must learn that when they see a particular icon (visual stimulus), they need to tap that icon (action) to use it when making a call. If individuals perform this process correctly, a new visual (stimulus) – the "number pad" screen – should appear to indicate the process was performed successfully. Individuals also need to learn that when the number pad appears, they should stop tapping the app (cease action).
From a 3R perspective, the process might resemble the following:

- **Recognition:** The individual knows the design of the "phone" app and identifies it as something used to make a phone call.
- **Reaction:** Upon seeing the "call phone" app, the individual knows to tap the app to use it.
- **Resolution:** If the individual used the app as intended, the interface should change to display a "number pad" screen; upon seeing this screen, the individual knows to stop tapping the "call phone" app.

On first use of a "call phone" app, individuals need explicit instruction to identify each part of this 3R process. For example: First, locate the "call phone" app, which resembles… Next, tap that app as depicted… The "number pad" screen should now appear to indicate you have performed this process correctly. When the "number pad" appears, stop tapping the app.

In some cases, learning this 3R process involves active guidance; for example, individuals may rely on instructions when learning to use an item. In other cases, this process can be more passive, with individuals learning a process by observing and mimicking what others do. And sometimes, individuals blend the two – for example, reading instructions while observing others perform the same activity.
During this learning process, the individual's mind establishes certain associations for using an item. First, the mind learns to recognize items based on their features. (If an item has these features, this is what it is and what it does.) Next, the individual learns to associate a specific action or set of actions with using that recognized item. (When you encounter an item with these features, perform this action to use it.) Finally, the mind learns to register certain changes as signs that the item was used correctly. Per the "call phone" app example, the recognize, react, and resolution situation would be

Recognition	Reaction	Resolution
See app	Tap app to use	Number pad screen appears = stop tapping app

Over time, this 3R process becomes reflexive. When the individual sees the correct visual, that person automatically performs the corresponding action and will continue to perform that action until the expected result – or change in visual display – occurs. Psychologists call this reflexive response situation "conditioning". This influences how humans use many items on a daily basis.

Conditioning and visual content

Visuals are often central to these conditioning processes involving the 3Rs. In many cases, it is the ***recognition*** of a specific visual

that prompts individuals to perform a given ***reaction***, or action, while another specific visual prompts the ***resolution*** essential for individuals to stop performing that action.
In this way, these interconnected 3R factors allow individuals to perform many everyday tasks automatically. These reflexive behaviors have specific benefits: They free the individual's mind to focus on other things (e.g., plan what to say during a phone call) by relegating more common activities to reflex (e.g., use an app to make a phone call). The reflexive nature of conditioned behavior, however, means individuals rarely notice how different designs prompt certain actions. As a result, usability issues involving 3R factors can be difficult to diagnose, as individuals are often unaware of how visual elements affect their use of items.

Mapping the 3Rs

To create effective visuals, content creators need to identify – or map – the 3R stimuli and actions an audience associates with using an item. This mapping works as follows:

Step 1: Identify the overall process individuals must perform to use something successfully.
Step 2: Identify the different tasks (specific actions) individuals must perform as a part of this process.
Step 3: For each task, identify

- the stimulus that starts the related action,
- the specific action performed, and
- the stimulus that stops that action.

Per the "call phone" app example, the resulting map of this process might resemble the following:

Process

Making a phone call with a "call phone" app

Task 1: Tap the "call phone" app

- **Start stimulus:** Icon displaying a landline telephone receiver
- **Action:** Tap the app
- **Stop stimulus:** Number pad interface

Task 2: Type in number

- **Start stimulus:** Number pad interface
- **Action:** Type in number
- **Stop stimulus:** Complete number appears in a designated area on the interface

Task 3: Place call

- **Start stimulus:** Receiver icon on number pad
- **Action:** Tap receiver icon
- **Stop stimulus:** "Calling" interface appears

Task 4: Begin speaking

- **Start stimulus:** Interface changes to "call in progress"
- **Action:** Say "Hello"
- **Stop stimulus:** Auditory response indicates to proceed with conversation or leave a message

In this case, a combination of visual and auditory stimuli facilitates the use of the related item. Mapping can help identify where such visual/auditory factors occur and what these stimuli are. Individuals can then use their understanding of these 3R dynamics to create content that better meets the stimuli and actions an audience associates with using the item to perform the related process.

The mapping process

Mapping usability expectations involves interacting directly with members of the intended audience. These interactions would focus on identifying the 3R recognition-reaction-resolution (stimulus-action-stimulus) expectations that the audience associates with using an item to perform a process. Interviews and focus groups with members of the intended audiences are effective for collecting such 3R information. The questions should mirror the mapping process and could resemble the following:

Question 1: Can you describe the process of using X to do Y?
Example: Can you describe the process of using a "call phone" app to make a phone call?

As audience members describe this process, the content creator could ask the following questions to identify the 3R factors associated with that process.
Question 2: What do you search for when you start this overall process? Can you describe that item?
Question 3: What do you do when you encounter (e.g., see) that item?
Question 4: What happens after you perform that action?

or

How do you know you have done this step correctly? Can you describe the resulting situation?
Question 5: What do you do next?
Question 6: What do you use to perform that process? Can you describe that item?
Question 7: What do you do when you encounter (e.g., see) that item?
Question 8: What happens after you perform that action?

or

How do you know you have done this step correctly? Can you describe the resulting situation?
Question 9: What do you do next?

The content creator would continue with the questioning process as structured here until interviewees or focus groups have provided answers to the 3R factors involved in all steps of the overall process.

Mapping goals

This mapping approach allows content creators to identify the stimuli audience members associate with performing the different steps in an overall process. Content creators gain insights into how to design content (e.g., visuals) that users can recognize and use. The goal is to identify the different visuals an audience associates with each part of an overall process. Content creators can use this information to design visual elements that prompt audience members to use an item in a particular (i.e., intended) way.
Mapping could also reveal that individuals do not associate particular stimuli with

certain tasks. This lack of expectations might indicate the need for instructional content that clarifies the 3Rs of a step or steps in a process. The solution could involve integrating instructional text into a visual – such as having an app contain the words "Tap here to make a phone call" – to identify the item and its use. Mapping results might even indicate the need for more complete technical documentation to help audiences identify, understand, and act as intended when using a product.

Final thoughts

Usability expectations often reflect conditioning for 3R processes. By understanding these dynamics, individuals can create visual content that audiences can easily use. Such understanding can also guide when and how to integrate textual and other content into visuals or activities involving visual content.

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TechComm that pleases the eye

Color, shapes, and aesthetics

Find your inner graphic designer and create a visual standard for your team

Text by Ivanka Radkova

Image: © topform84/istockphoto.com

In the dynamic world of technical writing, conveying complex information effectively often requires more than well-chosen words. It demands various diagram types to enhance content and engage customers. Ideally, this is where a dedicated graphics design team would be a great help with their expertise and creativity. However, many of us work for small businesses or companies with limited resources and do not have the luxury to fall back on such a team. This is where we can step up and enhance our own visibility and value within the organization.

To do so, we might have to acquire new skills. This might be daunting, especially when we lack confidence in our design abilities or are unsure where to start or what tools to use. But this is also an opportunity for personal growth and development, and a chance to expand our skill sets.

A harmonious color palette

If your company does not already have a color palette, the first step is to create one that ensures alignment with the company's brand identity. Which colors should be selected, and how should they be chosen to ensure harmony?

First, identify the colors of your logo. These will be your leading colors. With the help of an online color wheel tool (such as Adobe Color Wheel [1] or Coolors.co [2]), you can generate a harmonious color palette for your diagrams. A color wheel tool supports you in your journey to create visual standards for your team. When creating a color palette for your diagrams, you can use this simple formula:

Select two primary colors, two secondary colors, and two accent colors. With this straightforward formula, you can confidently create a harmonious color palette for your diagrams.

What is a color wheel?

Sir Isaac Newton first described the color wheel in 1666. It shows various colors, including primary, secondary, and tertiary colors.

Primary colors are red, blue, and yellow. These cannot be made by mixing other colors.

Secondary colors are formed by mixing two primary colors. These are purple (mixing red and blue), orange (mixing red and yellow), and green (mixing blue and yellow).

Tertiary colors are a mix of primary and secondary colors. For example, amber is created when red and orange are mixed.

Selecting colors

Colors are powerful communication tools. They are essential in conveying information and influencing people to make decisions. Studies have revealed how different colors affect our human behavior and emotions. How colors influence individuals may differ depending on age, gender, and culture. A 2022 study of more than 4000 people from 30 different countries provides insight into what we associate with certain colors. [3] It showed that 68% of participants related red with love, the same number of people associated yellow with joy, and 35% associated blue with relief. Green evoked satisfaction and happiness in 39% of participants, and 25% linked purple with pleasure.

With each color having a different meaning, check how the colors in your palette reflect your brand and impact your audience. Let's look at some examples of color associations:

Red is often linked with love and passion, but also with opposing aspects such as danger and anger.

Blue promotes loyalty and authority. In business, blue is mostly found in social media, tech companies, banking, insurance, airlines, auto manufacturers, and pharmaceuticals.

Yellow is linked with joy and positive energy. Regarding business, it implies the idea of affordability or even warmth. This color is also a good option for companies targeting younger customers or those operating in the food industry.

Purple reflects luxury, ambition, mystery, and magic. It is also considered stylish and associated with generosity and power. Regarding business, purple promotes products for women and children, healthcare, and finance.

Figure 1: The color wheel

Orange promotes energy, success, and happiness. It is the color of activeness, kindness, and accessibility. It also represents creativity and adventure. Orange might be a good option for businesses that target children or young people.

Green is often associated with nature and the environment. It symbolizes purity, balance, sustainability, organics, health, and well-being. Green suits organizations such as hospitals, pharmacies, pharmaceutical companies, or anything related to a healthy lifestyle.

Other visual considerations

Having created the color palette, let's take a look at the elements each diagram consists of. These are text and labels, shapes, connectors and arrows, icons, and legends for complex diagrams.

Text and labels

Select a sans-serif font for the text and labels within your diagrams. Ensure that the font is available from the sans-serif family so it does not break when a customer views your diagrams in SVG file format, for example. Such fonts are Arial, Verdana, Tahoma, and so on. If you work on Mac, the font type is Helvetica. Use this font for the text in all your diagrams to maintain consistency.

Figure 2: Example of an accessibility check

Consider using labels for the following diagram components:

- **Titles:** For any diagram, give a title that tells the story of this diagram and what it depicts.
- **Legends:** Ensure you properly label all elements within a diagram that might otherwise confuse or mislead your audience.
- **Icons:** Maintain consistency in the placement of icons. Depending on the space and complexity of diagrams, labels can be placed to the left or right of, or above or below, the component icon.
- **Definition:** Use definitions for any non-obvious name or acronym.

Always use regular text. Do not use underlining, bold, or italics, as this formatting can overwhelm the reader. Use an online contrast checker tool to ensure that the colors you generate and the text color you select are accessible. The contrast ratio must be at least 4.5:1 to meet accessibility requirements. An example of an accessibility check can be seen in Figure 2.

Shapes

Different shapes convey different meanings. For example, you will need an oval shape or terminator to depict the start or end of a process, a rectangular shape for a process or step, and a diamond shape for decisions. Make sure to use different colors for each different shape, and apply this style to all your diagrams. You might need additional shapes depending on your industry and the kind of systems you are describing. Do not use effects on your shapes such as shadows, gradient colors, or 3D effects. Also, placing one colored layer over another is inappropriate for people with color deficiency.

You can use either filled shapes or outlined or dotted shapes. Filled shapes must not have borders, and outlined or dotted shapes must use the same weight and dash type. Dotted shapes are usually used to describe an optional process or step. You can also use solid or dashed borders to group elements within a diagram that are part of the same component (see Figures 3 and 4).

Connectors and arrows

We use connectors and arrows to connect different elements. They indicate the direction or flow of the process. To maintain consistency, determine the connector's weight, color, and arrow type, and use this style across all your diagrams. Avoid crossing lines, diagonal lines, or curved lines. Figure 5 shows examples.

Icons

Icons within a diagram can be helpful to improve readability and reduce clutter. We use icons to represent components and simplify a concept without using words. Create your own icons library to easily reuse and customize icons for your diagrams in size, color, and orientation. There are some helpful free online resources that you can use to download the icons you need. For example, you can

Figure 3: Examples of basic shapes with a flat color

Figure 4: Example of outlined shapes

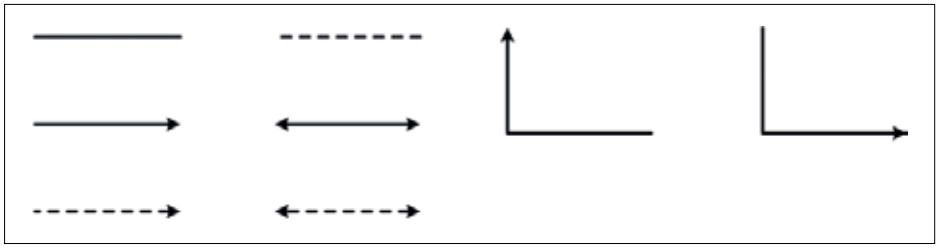

Figure 5: Examples of connectors and arrows

download icons from Material Symbols of Google [4], Clarity Design [5], and so on.

Legends

Create a legend for any complex diagram that explains any significant colors, line types, arrows, and so on to avoid confusion and misinterpretation.

Design principles in a nutshell

When you create a diagram, make sure that you adhere to the following design principles. Ensure that diagrams comply with the following principles:

They should

- be straightforward and easy to understand.
- follow the average reading direction – from left to right and top to bottom.
- use simple shapes and as few different shapes as possible.
- have a clear starting point.
- have no crossed, diagonal, or curved lines.
- not rely on color alone to convey meaning.
- be correctly aligned to avoid a chaotic appearance.
- stick to the color palette, using no more than three or four colors in one diagram (if possible).
- use **red** only for error messages.
- be saved as SVG or PNG files to ensure the quality of the images you implement in your documentation.

After determining the visual style for every element of your diagram, you can quickly establish a visual standard for your team and create a visual template for diagrams.

Creating a template

A visual standard template for diagrams defines company branding elements such as the color palette, font type, font size, and color. The template should encompass diagram elements, like the shapes typically used, connectors, and arrows with specified weights, colors, and arrow types.

It is beneficial to have an icon database of frequently used icons, such as product icons and elements from your product's user interface, and reusable diagram templates that include placeholders for various elements like shapes, connectors, and labels, see Figure 6. Having a visual standard template for diagrams is essential for several reasons.

Consistency and clarity

A standard template ensures that all diagrams follow the same format, making it much easier for your audience to understand and interpret information. Clarity is crucial, particularly where documentation consists of complex diagrams.

Efficiency and quality

A visual standard template saves time creating diagrams, allowing you to focus on the content and accuracy of the information rather than on design aspects. This will increase the quality of the diagrams.

Maintenance

When updates are needed, such as changing the color palette for your organization or the logo sign, you can easily apply the necessary changes and update your diagrams.

Reviews and feedback

Using a predefined design style template for every component to create diagrams makes it easy for other team members and subject-matter experts to review and provide feedback.

Training and onboarding

Standard templates make creating training materials easier, ensuring everyone is aligned with the established standard. New team members can also quickly start using the visual standard.

In conclusion

Establishing a visual standard for your diagrams is essential for ensuring consistency, enhancing clarity, and boosting efficiency. This will save time and make your content look more professional. As technical writers, it is essential to continuously improve our skill sets to elevate the quality of documentation, contribute to the efficiency and effectiveness of the writers' team, and take advantage of opportunities for professional development.

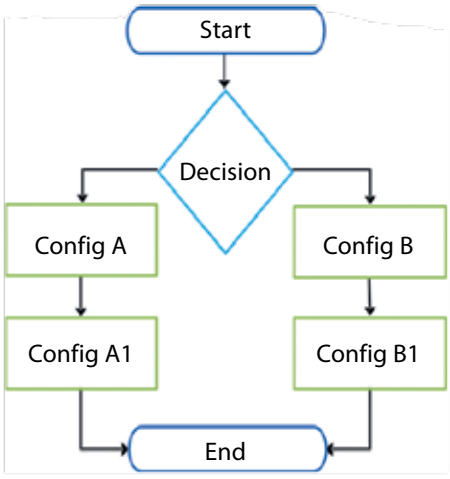

Figure 6: Example of a simple diagram within a visual standard template

References

[1] https://color.adobe.com/create/color-wheel
[2] https://coolors.co
[3] "Universal Patterns in Color-Emotion Associations Are Further Shaped by Linguistic and Geographic Proximity", Sage Journals. https://journals.sagepub.com/doi/10.1177/0956797620948810
[4] https://fonts.google.com/icons
[5] https://core.clarity.design/foundation/icons/shapes

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My digital twin

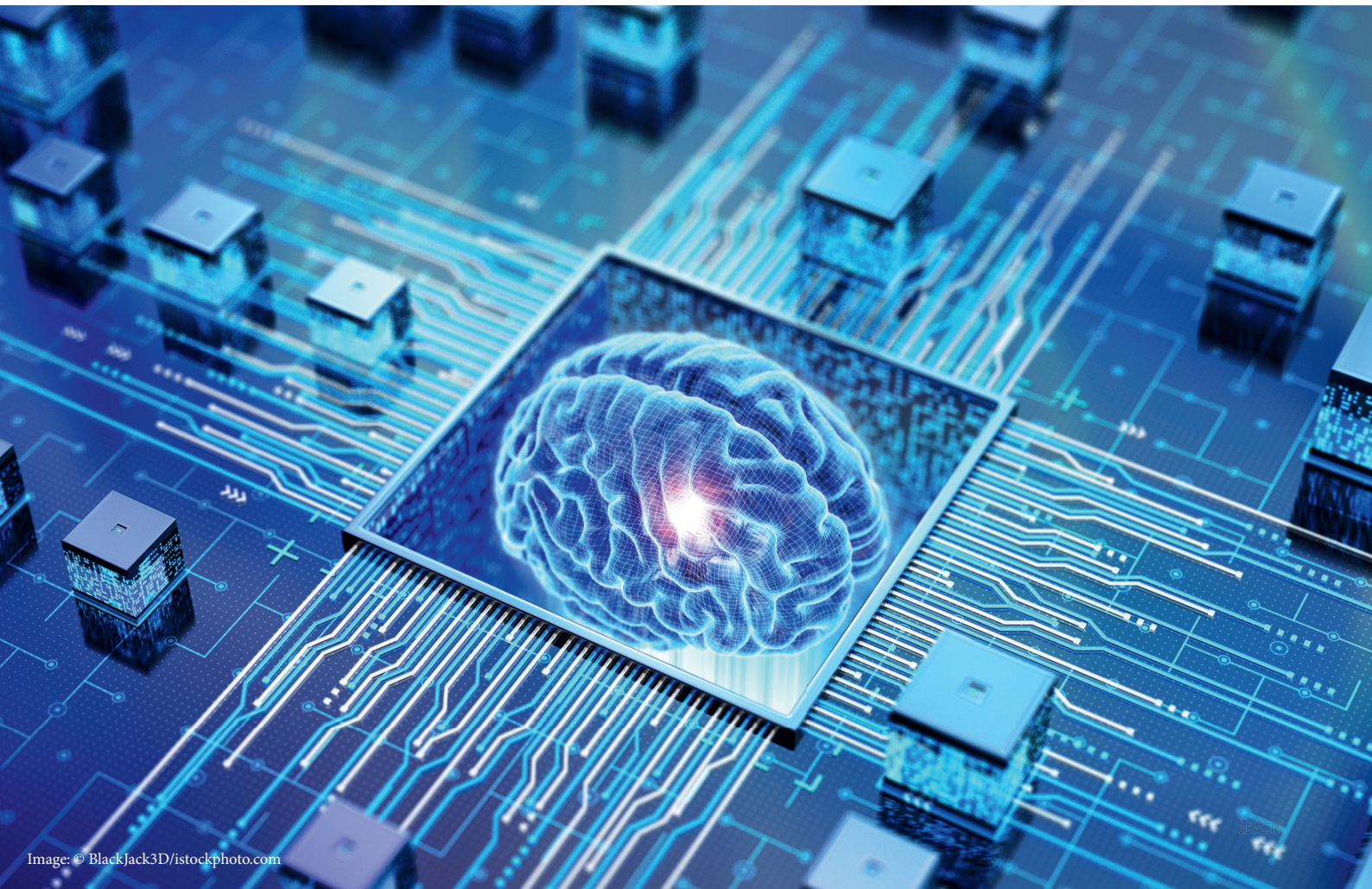
Transforming the workflow with the help of a team of AI agents

Text by Andrew Mills

Imagine having an assistant who can write better and faster than you, all while closely mimicking your own writing style. Being able to leverage the power of an AI Large Language Model (LLM) to – quickly and easily – emulate my writing style with impressive accuracy has been an absolute game-changer for me. I now spend less time writing and more time improving my guides. I also have time to learn new skills that I can apply to my guides, improving them all-around.

I see AI models as assistants who are great at writing quickly, but the LLMs also need a guiding hand to fit my specific industry niche. When I feed these AI models samples of my recent work, they can quickly produce content that closely matches my style. I can then refine their output and use it to make future guides even better. This technological tool could transform your workflow too, even if you're understandably skeptical about its capabilities.

My interest in AI for content creation was sparked by the potential to automate the more time-intensive aspects of guide authoring. This automation allows me to focus on adhering to the "80/20 rule" – mastering the basics to achieve a "more than good enough" final result



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(without worrying about striving for absolute perfection).

AI and ethics

While I won't delve deeply into the ethical debates surrounding AI (a topic that has been covered extensively in *tcworld magazine*), I will share my initial reactions and how I chose to embrace this technology. When GPT-4 was released, its ability to replicate my work with such accuracy and speed left me in genuine awe. However, rather than feeling threatened, I saw the potential for AI to transform the technical writing landscape. Just like with the advent of the Internet, AI is here to stay, and its capabilities will only grow over time. It's important, however, to remain mindful of the ethical implications as we integrate these tools into our workflows.

A game-changer for our workflow

The introduction of custom GPTs has greatly boosted the technology. Gone are the days of refining the "perfect prompt" for each conversation or investing heavily in fine-tuning an AI instance with my writing. Now, I just upload instructions and a sample PDF. This streamlined process has significantly improved my productivity and the quality of my content.

LLMs are now "multi-modal," meaning that they can be trained on, and therefore process, different types of input, be it text, images, audio, or even video. In fact, GPT 4 was released while I was in the middle of writing this article, and its biggest selling point is its pitch as an "all-in-one" AI LLM.

Text creation

With ChatGPT, I can create a small workforce of GPTs, each dedicated to specific tasks. This division of labor allows for quicker completion, analysis, and iteration while minimizing the chances of AI "hallucinations" (i.e., making up facts), ultimately requiring less editing.

Audio production

Utilizing my cloned voice, I can experiment with settings to achieve the best mix of emotion and consistency (yes, they have improved so much that you can adjust emotion, and breathing, and alter the delivery cadence as you wish). Even something as basic as recording a script in my own voice and then outputting it using my cloned voice saves substantial amounts of time in post-production, as there's no need to worry about clipping, background noise, etc.

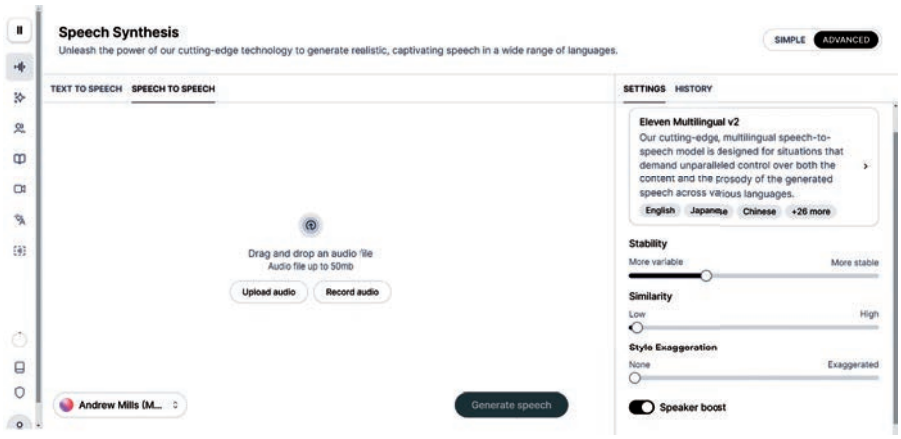


Figure 1: Clone a voice, or generate one from scratch, using the ElevenLabs.io website and/or API.

Overview of AI tools

Here's a brief overview of some of the tools I have learned to use in my AI-upgraded workflow:

Writing: ChatGPT's custom GPT feature enables me to tailor AI to each key task.

Audio: ElevenLabs.io (Figure 1) provides super-efficient and high-quality voice cloning (the AI voices are substantially better than what was around just a year ago), while Adobe offers the frankly unbelievable "Podcast" tool (Figure 2) that can transform less than ideal narrations into near studio-quality audio by simply dragging and dropping the file into the browser. As someone who has edited audiobooks and tutorials, the quality and ease of use are beyond impressive.

Translation: I've used DeepL Pro to translate chapters of a book from English to Spanish at around 90% accuracy, taking no longer than six seconds per chapter!

Image and video upscaling: Topaz Photo AI offers quick and easy image enhancement. Topas also offers ever-improving video upscaling tools.

A workflow enhanced by AI

Leveraging AI tools like ChatGPT for writing offers numerous benefits and quick wins, especially when cloning your writing style:

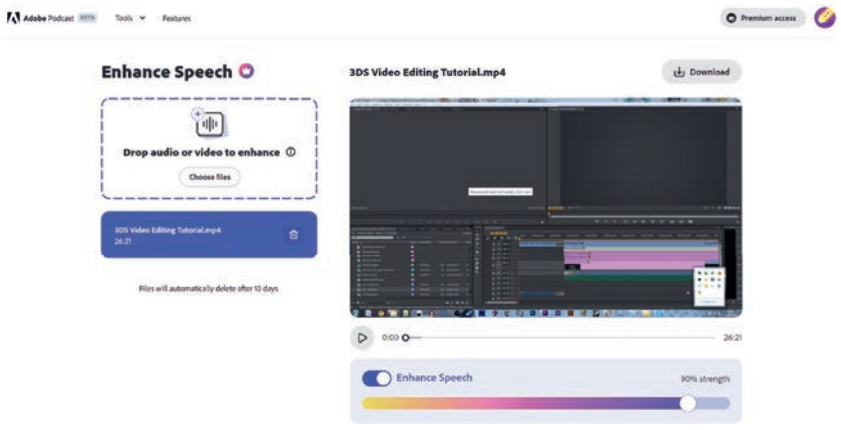


Figure 2: The Adobe Podcast tool assists the production of voice-overs.

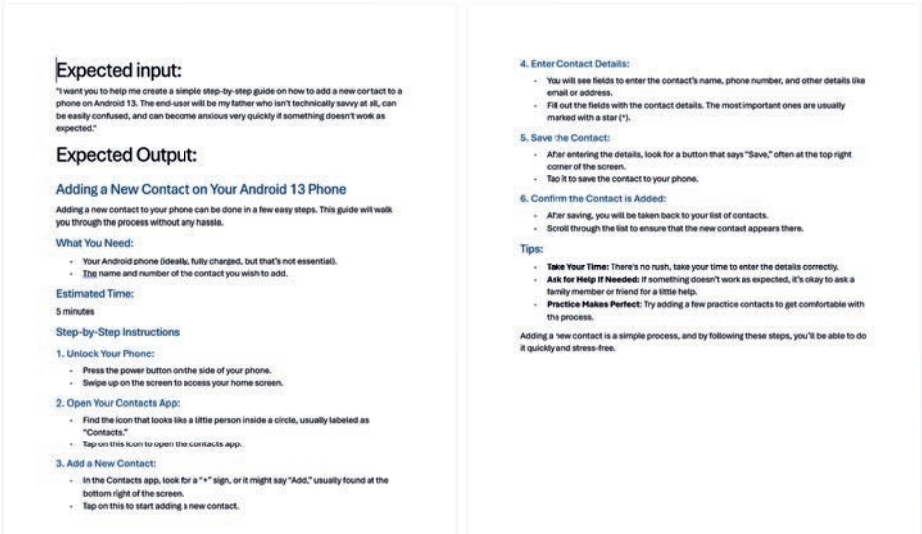


Figure 3: Provide the GPT with tailored guidance in the form of a style guide and/or a curated example.

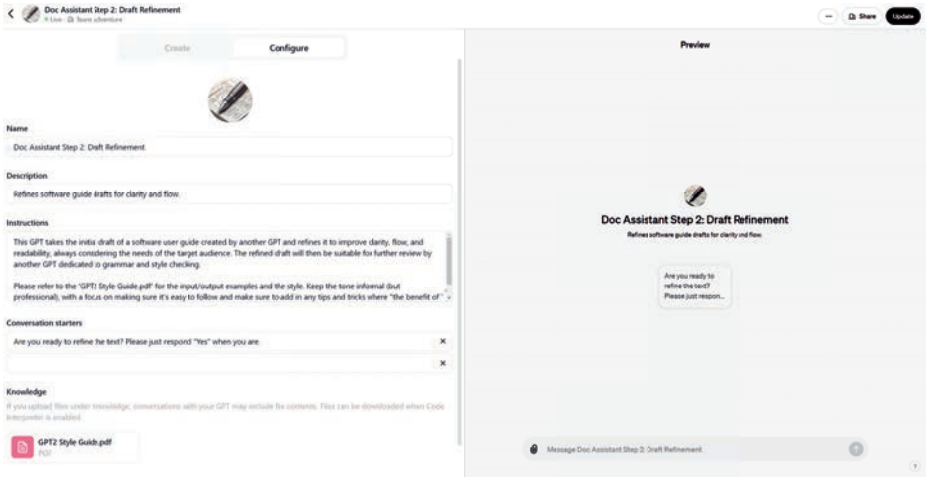


Figure 4: This GPT is dedicated to refining the initial draft following the supplied style guide and instructions.

Task specialization

Creating multiple GPTs, each with a specific task, improves efficiency and reduces errors. For example, one GPT can handle initial content drafting, another can refine the text, and a third can focus on editing for grammar and style consistency. This division of labor ensures that each aspect of content creation is handled with precision, maintaining a consistent quality across all outputs.

The concept of task specialization involves creating a series of specialized GPTs, or "AI Agents", where each one assists and refines the output of the previous one. This chain-like approach can be particularly useful for tasks that require multiple stages of processing and review.

More than likely, your document development and maintenance lifecycle contain similar stages across different products: From idea-crafting and brainstorming to first drafts, refinement, (potentially) early end-user feedback for beta/draft quality work, and so on. This process can be recreated and automated with the use of AI Agents. These agents can work together at a speed far beyond our human capabilities.

Quality control

Specialized GPTs ensure that each part of the process meets high standards, minimizing the need for extensive revisions. Setting up a chain of GPTs where each one reviews and improves the output of the previous one can be semi-automated, creating a continuous loop of refinement and quality control.

AI tools struggle to handle large chunks of text at once (think a whole book-sized PDF). The odds of making mistakes increase with the amount of text. This is why it is important to assess the different stages in your document development lifecycle and replicate each step in smaller chunks. This also reduces the odds of the AI tool "hallucinating" (i.e. making stuff up).

Scalability

With multiple GPTs working in parallel, you can upscale your content production significantly without compromising quality. This capability is particularly beneficial for large projects or tight deadlines.

Time saving

Automating repetitive and time-consuming tasks allows you to focus on more strategic and creative aspects of your work, ultimately increasing overall productivity.

Idea generation

Dedicated GPTs can be used for brainstorming and generating fresh content ideas, ensuring a steady flow of innovative topics and approaches.

Content variation

GPTs can create variations of the same content for different audiences or platforms, providing tailored approaches with minimal extra effort.

Automation

Once you've got your AI Agents all set up and running as intended, it's time to take it to the next level. Using OpenAI's API, you can automate the flow of information between these agents. For example, the "Drafting Agent" generates initial content and then automatically passes it onto the "Refinement Agent" to improve it. It is then sent to the "Editing Agent" to check for errors in spelling and grammar before being passed on to the "Final Review Agent" for final style-guide checks, before it ultimately generates the final output (in the desired format, such as

HTML or Markdown). This feedback loop can lead to highly polished content.

It's worth noting that, especially in the early days of using this new workflow, you'll want to pay close attention to the outputs in each step, tweaking the custom GPTs' instructions (or manually refining the style guides included in the GPTs). It would be foolish to expect perfection from a tool that is effectively predicting the next word. Understand and accept this limitation and update and refine where necessary.

Integrating GPTs via custom actions

Leveraging custom actions and automation tools can make the process even more seamless. Tools like Zapier, Integromat, or custom scripts can automate the flow between different GPTs, ensuring that each agent performs its task and passes the output on to the next.

Writing custom scripts using languages such as Python allows for greater control and customization. These scripts can handle API requests and responses, and manage data flow and error handling.

Multi-agent workflow example

Here is a basic example based on an upcoming real-life project: creating an Android 13 user guide for my technologically challenged dad.

To save time, I will only generate a few separate AI Agents. I won't be connecting them via scripts or APIs but, instead, I will simply copy and paste each response from one GPT into the next. To give you an idea of how to start building your own GPTs, I will show you how I quickly constructed these.

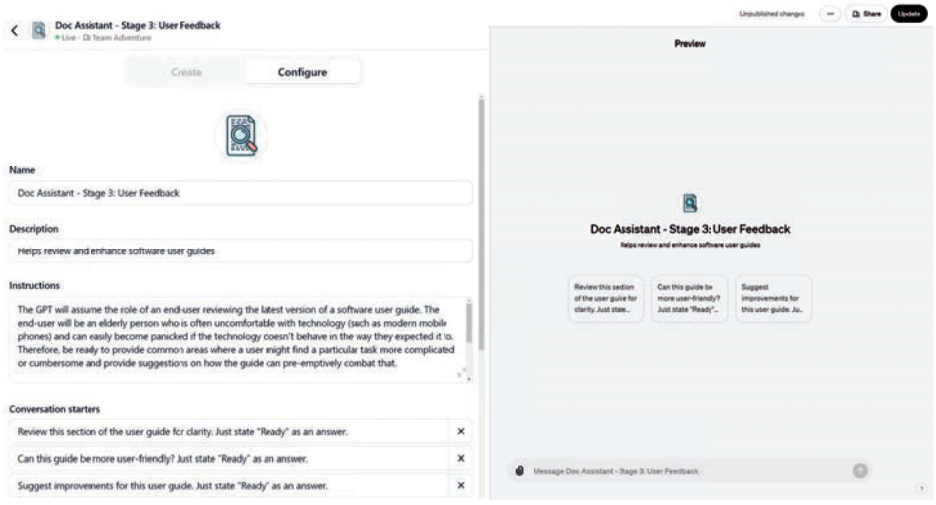


Figure 5: Ask the LLM to assume the role of an expected end-user. Use it to critique the text.

markdown — Copy code

```
## Adding a New Contact on Your Android 13 Phone

Adding a new contact to your phone can be done in a few simple steps. This guide wi

### What You Need:
- Your Android phone (ideally, fully charged, but that's not essential).
- The name and number of the contact you wish to add.

### Estimated Time:
5 minutes

### Step-by-Step Instructions

#### 1. Unlock Your Phone:
- Press the power button on the side of your phone.
- Swipe up on the screen to access your home screen.

  **Top Tip:** If your phone has a password, PIN, or pattern, you'll need to enter

#### 2. Open Your Contacts App:
- Find the icon that looks like a little person inside a circle, usually labeled as
- Tap on this icon to open the contacts app.

  **Top Tip:** If you can't find the Contacts app, swipe up from the bottom of the
```

Figure 6: ChatGPT can output text in a variety of formats, from Markdown (as shown here) to HTML, plain text, and more.

Step 1: Draft creation

GPT 1 generates the initial draft. This is where I get it to ask me a series of pertinent questions about what type of document/guide I'm trying to create. It is also worth defining the target audience here. I provided a style guide on what type of input to expect from me, and what type of output I expect from the LLM in return (Figure 3). This style guide (and the instructions) should be updated over time.

Step 2: Content refinement

GPT 2 refines the output from GPT 1 (Figure 4). You can ask it to focus on improving the flow, clarity, readability, and more. Once again, asking it to refer to a provided style guide for expected inputs and outputs helps keep it on point.

Step 3: Simulated user feedback

GPT 3 has been tasked with assuming the role of a typical end user. It is definitely worth nailing down who this typical end user is (as

best you can), as this defines the feedback (Figure 5). If you find that the feedback GPT 3 provides requires additional direction, you can provide a style guide here as well.
You can also ask GPT 3 to implement the feedback for you (which can be quite a timesaver). Otherwise, you can manually pick and choose what suggestions to use, if any.

Step 4: Grammar and style editing

GPT 4 checks for errors and ensures style consistency (as LLMs guess the next word, there is a risk of it straying from the intended output if you don't guide it).

Step 5: Final quality check

GPT 5 performs a final review and is tasked with outputting the final version in the specified format (Figure 6). ChatGPT can output text in multiple different formats, such as plain text, HTML, Markdown, and more, potentially saving you even more time when it comes to implementing it into your current output toolchain of choice.

Step 6: Human sanity check

As LLMs are still in their relative infancy, it is important to manually review and refine their output until you have developed a strong confidence that the output can be released. The technology is improving rapidly, and error rates will – hopefully – decline as the tools mature.

In conclusion

While setting up this automation requires technical knowledge and time to refine the AI Agent flow, the benefits of these hyper-streamlined workflows far exceed the effort. Many of the tools mentioned offer direct API access, allowing seamless integration with existing or custom toolchains. By leveraging these tools and techniques, you can create a highly efficient and automated workflow that maximizes the capabilities of AI LLMs, consistently ensuring higher quality and more rapid content creation. This allows you to focus on enhancing the documents you create and deliver to those in need of your expertise.
Oh, and if you're wondering whether I wrote this article or my digital AI twin did… Well, I'll let you be the judge of that.

ABOUT THE AUTHOR

Andrew Mills has over 28 years of experience in software user guide authorship. He's a proponent of keeping things simple and has turned his expertise towards leveraging AI technology, allowing him to deliver his unique style of help to more people more quickly.

@techauthor
@the_tech_author

Figure 7: Five Artificial Intelligence robots creating the book for you

Technical writers' role in the GenAI era

User queries are no longer directed at search engines and help desks but at GenAI. So, are your users finding what they are looking for?

Text by Selvaraaju Murugesan

Image: © MicroStockHub/istockphoto.com

Truth forms the foundation of trust. With the advent of GenAI, there has been no scarcity of synthetically generated content. Technical writers have been cautiously using GenAI tools to aid content creation tasks such as creating article outlines, enriching content, and so on. However, GenAI-based assistive search is taking over the knowledge base search functionality as customers seek to interact through a ChatGPT-like interface. Traditional lexical search functionality does not offer context, leaving customers struggling to find the right information. Where lexical search can no longer meet evolving customer needs, technological advancements have paved the way to semantic search powered by GenAI capabilities. However, GenAI's capabilities are prone to hallucination and generating fictitious information. So, how can we keep our customers' trust?

If responses generated by GenAI-based assistive search are not powered by trustworthy content, they will tarnish the reputation of your brand, and eventually your customers will churn. This is where the technical writers come in!

There is an emerging responsibility being added to the technical writer's portfolio to evaluate responses of GenAI-based assistive search to customer questions based on your knowledge base content. Given that technical writers understand your product and services holistically, they are best suited to be the gatekeepers of trustworthy content which is fed into GenAI-based assistive search and to evaluate the responses.

In addition to lexical search functionalities, which use keywords, many companies across the globe have implemented GenAI-powered assistive search. Table 1 shows the different approaches in search paradigms.

Characteristics	Lexical search	GenAI assistive search
Knowledge discovery	Keywords	Prompts (questions)
Context required	No	Yes
Response time	Milliseconds	1-5 seconds
Matching algorithm	Keyword matches	Semantic matches
Autocomplete keyword	Yes	No
Response	Articles that contain the "keyword"	Accurate response to the prompt (questions)

Table 1: A comparison of lexical search vs. GenAI assistive search

Evaluating GenAI-based assistive search responses

Technical writers are best suited to evaluate the responses generated by GenAI-based assistive search, as they curate accurate information across the organization and interact with a lot of subject-matter experts. The responses from GenAI-based assistive search are very subjective; thus, it is important to create some baseline around GenAI-based assistive search responses through numerical metrics. These metrics can serve as a guide to improve responses by either tweaking the underlying content or tweaking GenAI-based assistive search tools' functional parameters such as system messages, chunk size, and so on.

It is crucial to formulate a diverse range of questions encompassing themes like "what," "how," and "yes/no" to assess the effectiveness of GenAI-generated responses. Alongside these questions, consider adding tricky ones that might challenge the GenAI's ability to respond accurately, as well as questions for which answers aren't readily available in your knowledge base.

There are two open-source frameworks available to evaluate the responses generated by GenAI-based assistive search.

OpenAI Evals

Evals framework is championed by OpenAI and has been released as an open-source GitHub project (Figure 1). OpenAI's evaluation framework lets you customize templates that align with your unique use cases, streamlining your workflow. This GitHub project can be forked to evaluate GenAI responses for your knowledge base. For each question, you can generate a human response and compare it to a GenAI-based assistive search tool's response. Then metrics can be generated based on the following criteria:

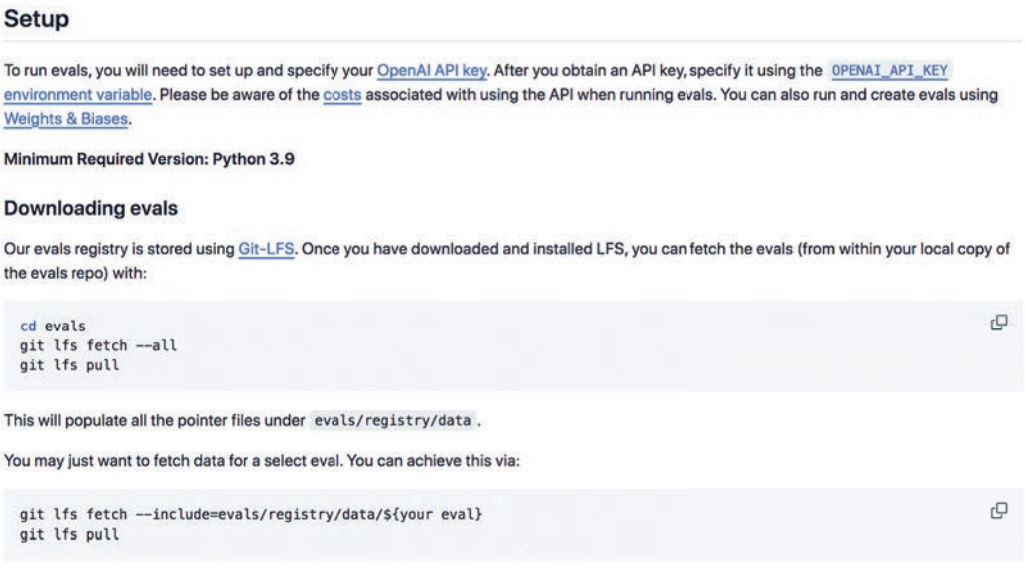
- Do any of the human-generated responses start with a GenAI-generated response?
- Do any of the human-generated responses contain a GenAI-generated response?
- Do any of the human-generated responses contain any of the GenAI-generated responses?

The results can be scored, and appropriate metrics can be calculated using the OpenAI Evals GitHub repository. Technical writers need to build a large corpus of questions and ground truth. This corpus can be used iteratively when there are changes to the underlying content or when a new version of the GenAI-based assistive search tool is released.

Ragas Framework

Ragas Framework focuses on assessing the quality of how GenAI-based assistive search retrieves content from your knowledge base and generates a response to the prompt (question). For evaluation purposes, the metrics of importance are:

- Faithfulness – a measure of the factual consistency of the generated response against the given context



Setup

To run evals, you will need to set up and specify your OpenAI API key. After you obtain an API key, specify it using the `OPENAI_API_KEY` environment variable. Please be aware of the costs associated with using the API when running evals. You can also run and create evals using Weights & Biases.

Minimum Required Version: Python 3.9

Downloading evals

Our evals registry is stored using Git-LFS. Once you have downloaded and installed LFS, you can fetch the evals (from within your local copy of the evals repo) with:

```
cd evals
git lfs fetch --all
git lfs pull
```

This will populate all the pointer files under `evals/registry/data`.

You may just want to fetch data for a select eval. You can achieve this via:

```
git lfs fetch --include=evals/registry/data/${your eval}
git lfs pull
```

Figure 1: OpenAI Evals framework *© github.com*

- Answer relevancy – a measure of how relevant the answer is to the prompt (question)
- Answer semantic similarity – a measure of the semantic resemblance between the generated response and the ground truth
- Answer correctness – a measure of the accuracy of the generated response when compared to the ground truth

This framework also produces a single metric that takes a harmonic mean of all metrics so that it can be used to evaluate different scenarios and test cases.

OpenAI Evals framework is simple to use while the Ragas framework has a lot of metrics to suit your business use cases. Depending on the use cases, technical writers can opt for either of these frameworks to ensure accurate and reliable responses from the GenAI-based assistive search.

As customers are providing feedback on the GenAI-generated response, performing analysis on the questions and customer feedback is important for improving the trustworthiness of your GenAI assistive search engine. GenAI assistive search analytics can provide deep insights into the knowledge base content.

GenAI assistive search analytics

Technical writers can access the list of questions (prompts) that have been raised by their customers. This gives them better clarity on the following:

- What kind of questions customers have asked
- Which words relating to business terms are often used by customers
- What type of questions are commonly asked
- How these questions correlate with other business activities
- What information has most commonly been sought

This will help technical writers to understand the customers' intent, leading to better business outcomes.

Topical analysis

Topical analysis refers to the process of analyzing questions (prompts) to determine the topics they cover. This gives technical writers an insight into the general topics customers most frequently search for. This analysis can be used to identify trends, understand customer needs, and guide content creation or product improvements.

1. **Holistic topical analysis**
   An analysis of all questions helps to understand which questions are trending. We can then delve into the "why". These topics can be correlated with any recent product launches, any changes to products or services, and so on. Introducing a time dimension to the topical analysis offers a perspective on trends, patterns, and insights into how your customers utilize your knowledge base.

Popular searches

Topics	Count
Crowdin translation	34
GitHub Integration	20
Ask Eddy	12
Team accounts	12
Document360	10

Unanswered questions

Topics	Count
Salesforce	10
Gaming	5
Pricing	5
Team accounts	2
Redirection	2

Figure 2: Topical analytics *© Document360*

2. "Unanswered questions" topical analysis

By filtering out those questions (prompts) to which the GenAI-based assistive search could not respond due to a lack of information or context, you can then undertake a topical analysis of these "unanswered questions". This analysis will reveal which information your customers are seeking for which you currently lack content. This can lead to the creation of new knowledge base content.

Citation analysis

Source articles that are used for creating a response via GenAI are usually displayed as citations. These citations provide customers with a trust factor. If citation articles for each response can be analyzed holistically, we can understand the high-value content of your knowledge base. This analysis helps technical writers identify critical articles in the knowledge base and take steps to ensure those articles are always up to date. This analysis can also help to identify stale content in the knowledge base.

Usage analysis

Search volume along with positive and negative feedback sliced across different time dimensions shows the usage statistics of your GenAI assistive search tool. Successful responses and "unanswered question" responses reveal the adoption of the GenAI assistive search tool as a primary means to interact with your knowledge base. The list of all questions along with its feedback can also be made available to technical writers if they choose to dive into individual questions over time.

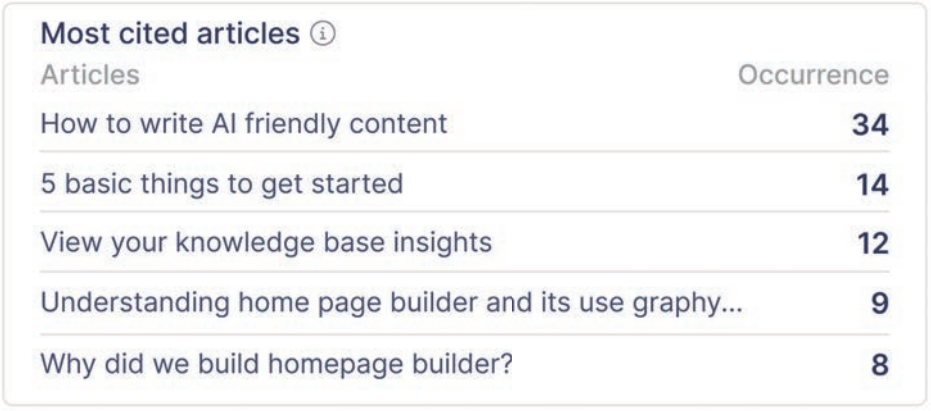


Figure 3: Citation analysis *© Document360*

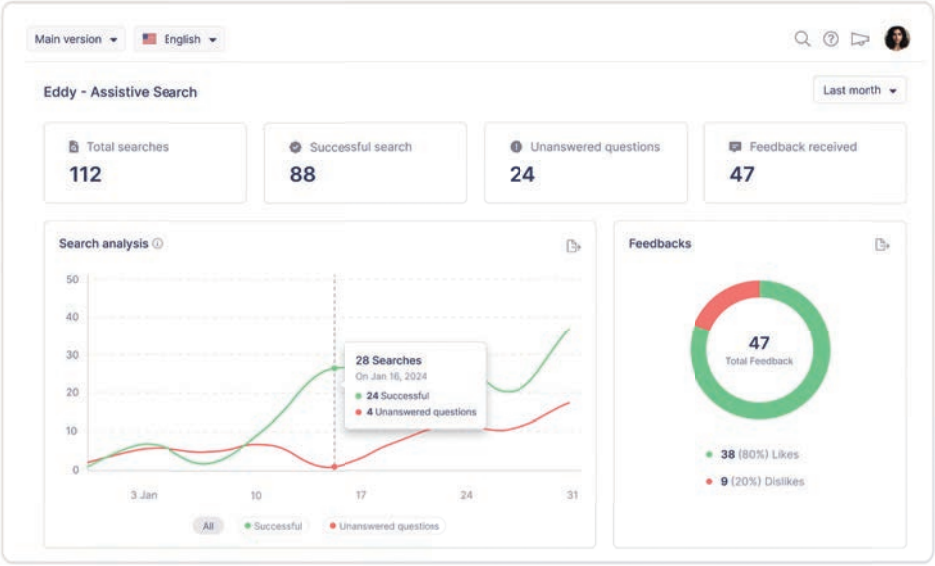


Figure 4: Usage analysis *© Document360*

Closing remarks

Now is the time for technical writers to learn new skills in evaluating responses of GenAI-based assistive search tools. Additionally, technical writers need to expand their data literacy skills and have an analytical mindset to understand trends in search analytics to add more value for their customers by producing trustworthy content.

ABOUT THE AUTHOR

Dr. Selvaraaju Murugesan is the Head of Data Science at Document360. He leads Artificial Intelligence product feature development that leverages data analytics to generate actionable insights across all components of the documentation lifecycle. He also speaks at tekom conferences and delivers technical presentations across the globe.

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AI in software development

Imagine a world where anyone can effortlessly generate software without the need for coding expertise.
A glimpse into what automated systems can and can't do.

Gone are the days of directly interfacing with AI models; instead, we have entered an era in which automated systems harness the power of AI to produce tailored software with precise functionality.
Consider a scenario where a developer needs to implement a new feature on a large website. Instead of manually writing code, they interact with a sophisticated AI-powered system. With specific prompts provided, the system intelligently divides the task into smaller components and sends relevant requests to the AI model. This approach enables the AI to generate or adapt code across multiple files, seamlessly integrating the desired functionality into the existing codebase.
AI can handle a remarkable breadth of tasks within this framework. From generating HTML and CSS to crafting database queries, AI is versatile in tackling the full stack of software development. Developers are then free to focus on high-level design and innovation rather than mundane coding tasks.

The democratization of software development

Looking ahead, the implications of this paradigm shift are profound. Software development is poised to become more accessible and democratized, allowing non-traditional developers to participate in creating custom solutions. Imagine a world where anyone can effortlessly generate software tailored to their requirements without the need for extensive coding expertise.
This democratization of software development may lead to a proliferation of customized solutions, replacing standardized platforms with bespoke applications. However, it does not suggest that software developers will become redundant. Just as the advent of LEDs dramatically increased the use of lighting, AI-driven software development could spark a surge in innovation and adoption.
In essence, the future of AI in software development promises not the replacement of developers but rather an amplification of their capabilities. By harnessing the power of AI within specialized systems, a new era of creativity, efficiency, and customization in software development is possible.

Tailored software development driven by AI

Rather than relying on a myriad of plugins for additional features, the future lies in instructing AI to tailor software to specific needs, cutting down on unnecessary complexity and bloated codebases.

Image: © NanoStockk/istockphoto

At present, AI possesses the capabilities of a junior developer, but with ongoing advancements, it will likely evolve into a sophisticated software architect. This trajectory suggests a future where standard software becomes tailored to specific industries, such as banking or healthcare, ensuring compliance with rigorous safety standards while leaving room for customization in less critical applications.

A vision for the future

Looking ahead, it is possible that users will simply communicate their needs to the AI system, which will then execute tasks seamlessly, from booking vacations to managing internal processes. To achieve this vision, AI must become more interoperable with existing systems, ensuring reliability and trustworthiness. Despite current challenges, companies are actively addressing these issues to pave the way for a more deterministic AI future.
In practical terms, AI-driven software development requires a shift towards more specialized processes tailored to specific tasks, enhancing communication between stakeholders and AI systems. While concerns about reliability and ownership persist, implementing safeguards such as multiple AI checks and transparent AI-generated labels can mitigate risks.
Transitioning towards AI-driven software development entails a learning curve, as teams adapt to new workflows and technologies. However, with dedication and a proactive approach to skills development, teams can use AI to change the way software is created and used.
AI-driven software development will transform the industry, offering efficiency, customization, and functionality. By embracing this paradigm, organizations can unlock new possibilities and drive innovation in the digital landscape.

With the help of AI, this article summarizes the IUNTC event "AI in Practice". The online event featured separate but complementary presentations by Claudia Sistig and Prof. Michael Rössler and was moderated by Prof. Sissi Closs. The 49 attendees at the session joined in a lively question-and-answer session after the talks.

Ten questions about iiRDS

How is iiRDS proving itself in businesses, for example, in power plant construction? What potential does the standard have, and where is there room for improvement? An interview with Michael Straeter and Tobias Köffer from Siemens Energy provides answers.

Interview: Susanne Lohmüller

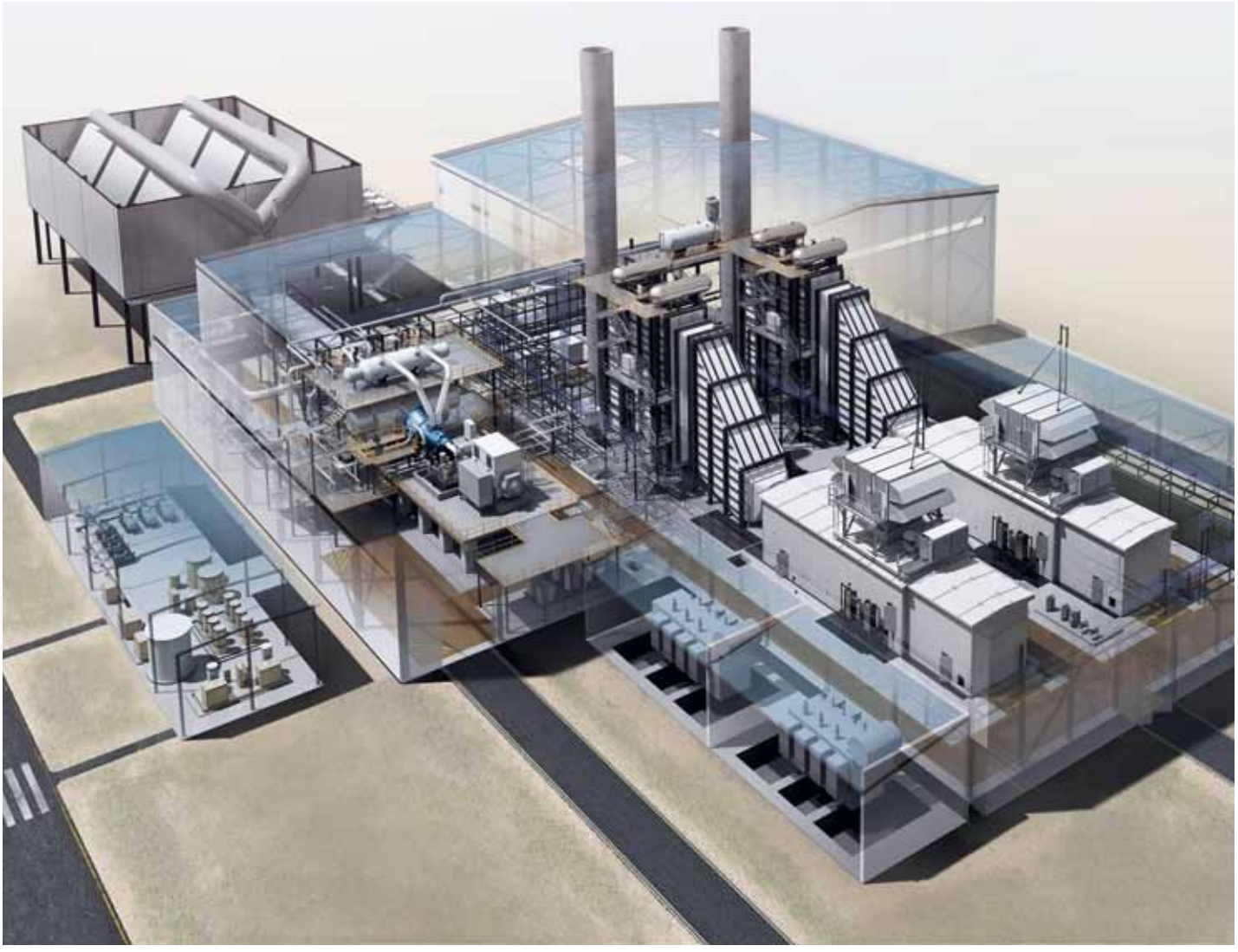

Figure 1: Model of a gas and steam power plant; the technical editorial department now also produces documentation for the large components supplied with the aid of iiRDS. *© Siemens Energy*

Michael Straeter has been active in technical documentation and information development for more than 20 years and has accompanied a large number of documentation and content management projects. He has been working as a Content Management Project Manager for Siemens Energy since 2014.

Tobias Köffer has been working at Siemens Energy since 2009 and has been involved in various areas of technical writing since 2014. His areas of responsibility focus on the (further) development of information products, support for existing generator systems, and digitization projects in the field of technical editing.

The intelligent information Request and Delivery Standard (iiRDS) defines uniform metadata for all information products. This simplifies the exchange of information, for example, between a manufacturer and its suppliers. But iiRDS can also improve information processes within the company, as it does at Siemens Energy.

How did you come across iiRDS?

Michael Straeter: We first became aware of the topic through tekom publications and events. We have been discussing the topic internally since 2018 and have been talking to service providers and suppliers. We then set up our first pilot project in 2019. The question was if we could display our central information products in iiRDS. And that worked.

Tobias Köffer: Independently of the changes to our own information products, we also looked into the possibilities of (semi-) automatically assigning metadata. The aim was to efficiently process content created outside the CCMS [Component Content Management System] to make it usable in a targeted manner. It very quickly became clear that this could not continue in the long term without a standard, and iiRDS was the obvious choice.

Why did you choose iiRDS?

Michael Straeter: In a large company like Siemens, later Siemens Energy, there are many competing requirements, developments, and standards side by side. When we introduced our CCMS, we decided in favor of PI-Mod and against DITA. But we soon realized that without a guiding standard, we were making our taxonomy immeasurable and increasingly incomprehensible – precisely because in the power plant sector we are dealing with huge product ranges, a vast amount of required information, and a great many "standards" in the departments involved. When we started to look at expanding our editorial portfolio – in case the era of fossil fuel power plants does come to an end – it was clear to us that it would not work without a radical pruning of the taxonomies and a standardization and minimization (keyword DIN EN IEC/IEEE 82079-1). On the information side, iiRDS seemed to us to be a promising approach. On the product side, after some analysis and trial and error, we also found a more generic approach. However, both together also had an impact on our information products and editorial processes.

Tobias Köffer: We are trying to create a tool-independent and standardized way for information recipients to access and work with our content. We are also making our work a little easier for the future and laying the foundations for increasingly digital and granular use, even in our fairly traditional environment of power plant construction.

Which products do you use iiRDS for?

Michael Straeter: At the moment, mainly components of turbine generator sets. Specifically, this involves new construction and service documentation for gas turbines, condensers, generators, and steam turbines for power generation. New additions include hydrogen production plants, power transmission plants (high-voltage converters), and tool and fixture documentation for power plant construction. Not all areas are at the same level in terms of the implementation of iiRDS; some are still being converted or developed.

How do you use iiRDS in technical writing?

Michael Straeter: So far, we have mainly used the standard for classification, structuring, and building a cross-system ontology (we have two different CCMSs in use), but also in the area of automatic metadata recognition and assignment. We do not yet use it as an exchange format. But that is an important goal.

Have you brought in external support?

Michael Straeter: We had expertise right from the start. It wouldn't have worked without it. After the initial internal deliberations, we started a PoC [Proof of Concept]. We then investigated how we could generate iiRDS packages from heterogeneous sources, largely without converting the CCMS. Now that this also seems achievable, we are focusing on automated interfaces and process automation. CCMS manufacturers are now also supporting us, and more could be added in the areas of CDP [Content Delivery Portal] and customer clouds (which we would like to operate with iiRDS). The topics of language analysis and terminology also play a role. We have been working closely with partner companies in this area for some time.

Figure 2:
Large power plant gas turbines in production; construction time several months; the Technical Writing department delivers the documentation before the gas turbine arrives at its destination.
© Siemens Energy

Which other departments are involved in the implementation of iiRDS?

Michael Straeter: We plan and pursue the implementation within the Technical Editing department in small agile project teams. In the direct environment of our department, we had to deal with our mostly internal customers at an early stage. After all, the standard also has an impact on our information products. Once we had made our main goals clear – standardization, a leaner and more future-proof information model, and additional automation options – we were readily supported. It certainly helped that a whole series of processes were and still are undergoing change as a result of the spin-off from Siemens AG to Siemens Energy.
Beyond our department, we are now networked with teams that deal with issues of enterprise data, data quality, data governance, and ontology at a higher organizational level. We are trying to get involved there and make the topic of "usage information" a strong one – after all, this is part of every product and every service. iiRDS is met with great interest here. In the future, we will try to incorporate our expertise in this field into higher-level data and information models. This promises to be all the more successful, the more prominent iiRDS becomes as a standard, and the better our information products and processes reflect this.

Tobias Köffer: In the short term, we are initially implementing iiRDS in the technical writing environment. In the medium and long term, we also want to use the ontologies mentioned, especially in those areas that cannot be specified by iiRDS. These include, in particular, the structure of our products and services as well as the detailed stages of the life cycle that a power plant goes through.

Do you also involve your suppliers?

Michael Straeter: Not now. At the moment, it is us and some of our network partners who are promoting the standard within the company. Given the vast number of internal and external information suppliers – we are on the move with our products worldwide – we cannot assume that iiRDS will establish itself as a standard across the board in our product area. We are also dealing with a traditionally conservative, long-term, and highly specialized sector in energy generation. This also applies to technical documentation. Thus, we are working more on making the supplied information "iiRDS-ready" and integrating it into the standard.

Tobias Köffer: The integration of information suppliers is traditionally somewhat difficult. This applies to both internal and external suppliers. We can't assume that suppliers will take on the issue of their own accord. We therefore tend to try to lower the entry barrier and make it as easy as possible for us to process the information, for example, through automated metadata recognition and assignment.

How have processes in technical writing changed with the introduction of iiRDS?

Michael Straeter: So far, hardly at all. Our current assessment is that the editorial process will not necessarily have to change after the

iiRDS Request API
The iiRDS Request API specification is now available for comment on the iiRDS Website.
iirds.org

introduction of the adapted classification structure, at least not as a result of iiRDS. As soon as the creation of iiRDS packages – whether inside or outside the CCMS – is largely automated, employees will basically only have to quality assure a different format. Of course, we had to bring all employees on board, especially in the area of taxonomy and classification, which is change management. Some information products are already iiRDS-compliant, others have to be converted retrospectively. This is an expensive and lengthy process that is repeatedly slowed down by delivery deadlines and the resulting workarounds. But we hope that in one to two years we will have reached the point where old taxonomy structures have reached the end of their life cycle.

Tobias Köffer: The fact that the editorial process remains largely unchanged is definitely a big plus. In practice, harmonization often goes hand-in-hand with a certain amount of disruption to day-to-day business or established processes. In view of our order situation, it is not advisable to intervene too deeply in the process.

Michael Straeter: But something else has changed as a result of iiRDS, namely, the desire to standardize and minimize other areas in the same way and make them more comparable. From our point of view, DIN EN IEC/IEEE 82079-1 provides a kind of framework for subjecting information products ("information for use"), creation and provision processes, necessary qualifications, and required resources to a fundamental revision. This is because, as the standard clearly describes, ultimately these areas cannot be separated from each other but, on the contrary, should build on each other in a meaningful way.
As already mentioned, some of the content structures have changed. Since the introduction of iiRDS, we have adopted a much more generic approach and no longer try to map project and customer-specific tables of contents at all costs, for example.

What future benefits do you expect from iiRDS?

Michael Straeter: We are pleased that iiRDS practice has picked up speed in recent years. The dissemination and practical experience support the efforts to spread and standardize iiRDS internationally. We have also seen that iiRDS can now be integrated into other standards, such as Industry 4.0/AAS, ECLASS, or VDI 2770. In this way, information and products can be brought closer together. Things that are comparable to each other, such as information for use, can now be presented in an information space and applied to a wide variety of product areas. This is where we hope to see real progress in the digital exchange of information. Above all, however, we hope that the iiRDS standard will make information provision much more dynamic and target group-oriented. On the content management side, we have been able to provide more than just PDFs for some time now.
Tobias Köffer: If we look at the big issues of recent years, such as ChatGPT, these are also making waves in the traditional power plant construction environment. This has led to an increased interest in metadata and the various ways of providing information, especially outside of technical editing. iiRDS seemed to be the natural choice to meet this demand and provide solutions across the entire spectrum of knowledge graphs, Artificial Intelligence (AI), Large Language Models (LLMs), and more.

Where do you see potential for improvement in iiRDS?

Michael Straeter: Frequent criticism concerns deficits in the "request", and we can agree with that. What could a query language based on a standard look like that focuses primarily on the user's perspective? We believe that this is less a technical question and more a question of agreement. Target groups, individual product variants, and their product life cycles require a complex information structure. On the one hand, this requires quick and comprehensive orientation, but also the shortest possible path from question to answer. That remains a challenge.

Tobias Köffer: By its very nature, the standard unfolds at the meta-level, and this is where most of the discussions and arguments in favor of this standard arise. This debate is reserved for a relatively small specialist audience and requires a considerable amount of familiarization with a complex topic. There is currently a lack of suitable tools to better emphasize the advantages, especially at the semantic level, outside the specialist audience. This applies not only to the request part but also to the entire life cycle of the information. The easier it becomes to create and interact with iiRDS content, the greater the overall interest will be.

ABOUT SIEMENS ENERGY

As a global energy technology company, Siemens Energy supports its customers along the entire energy value chain: low-emission or emission-free generation, transportation and storage, reduction of greenhouse gas emissions, and energy consumption in industrial processes.

ABOUT THE TECHNICAL WRITING TEAM

More than 40 employees produce technical documentation in the "Field Data Manuals" department. They are supported by around ten partner companies. Every year, 200 technical documents are produced for global projects. The Technical Writing department works on over 40 information products, which are used in around 40 product series and for services.

The European Machinery Regulation

New requirements for digital instructions for use

Text by Dr. Gabriela Fleischer

With the publication of the Machinery Regulation 2023/1230 in the Official Journal of the European Union in June 2023, the cat is finally out of the bag: From 2027 onward, instructions for use may also be published in digital form within a defined framework. The continuous lobbying of tekom and industry representatives was successful.

From directive to regulation

The Machinery Regulation will replace the Machinery Directive published in 2006 (Directive 2006/42/EC). It is based on the principles of the "New Approach" of 1985, which means that the law establishes binding basic requirements for products, and standards specify technical details that are necessary to fulfil the requirements. European directives must be implemented nationally, which leads to divergences in the member states across the EU.

The EU Commission justifies the proposal for a revision of the Machinery Directive with the following objectives, among others:

- Reduce paper-based requirements for documentation
- Reduce possible divergences in interpretation derived from transposition
- Ensure coherence with other EU New Legislative Framework (NLF) legislation

The directive therefore became the Machinery Regulation with the option of providing instructions for use in digital form. The NLF has been modernizing and supplementing the "New Approach" since 2008 and provides the regulatory framework for European product regulation. It states the following about instructions for use and other information:

"Article 1 General principles

3. Economic operators shall be responsible for ensuring that all information they provide with regard to their products is accurate, complete and in compliance with Community rules applicable.

Article R2 Obligations of manufacturers

7. Manufacturers shall ensure that the product is accompanied by instructions and safety information in a language which can be easily understood by consumers and other end-users, as determined by the Member State concerned."

Advantages of digital formats

The effects of greater digitization of instructions for use and technical documentation were outlined in connection with the revision of the Machinery Directive. With regard to financial savings through digital formats, it is assumed that printing costs currently account for 1-4% of companies' turnover per year. Based on the turnover of € 663 billion in the machinery sector in 2017, this would mean annual costs of € 6.63 billion to € 26.5 billion.

Digital instructions are also preferred by users: According to surveys on preferences for the format, 62.7% of respondents want manuals only in digital form. This means that € 4 billion to € 16.6 billion could be saved annually – based on 82,239 companies, this would lead to a saving of € 48,000 to € 201,000 per company. On the other hand, there are costs for digital instructions for use due to the purchase, installation, and maintenance of servers and printing costs for digital instructions for use. If, after purchasing the machinery, the user decides to use the paper version of the instructions for use in one language, the printing costs per manual are assumed to be € 0.40.

However, there is no systematic comparison and consideration of the advantages and disadvantages of digital formats and paper formats in terms of user-friendliness: How quickly can I find the relevant information, and how specifically has it been created for a target audience in each case? Also, information for use must be accessible to the target audience during the expected lifetime of the machinery (e.g., technically available and legible). The blanket statement that digital formats are "more sustainable" certainly falls short. Digital formats also consume resources and have an "ecological rucksack", or environmental impact.

Digital formats of information for use are already commonplace in many industries. Above all, the software industry has been working mainly with digitally provided information for use for years. A tekom survey conducted back in 2015 revealed that 75% of all software companies surveyed had a print share of less than 25%, measured against the total volume of documentation. In contrast, 50% of the industrial companies surveyed had a print share of 75% or more. The Machinery Regulation will certainly increase the proportion of digital formats for instructions for use.

Outlook

Digital formats for information products or information for use are in vogue. They also offer significant advantages for the machinery sector, especially in terms of the user-friendliness of instructions for use, if the information on safe use is prepared in a way that is appropriate for the target audience and good navigation enables quick access.

The decision as to whether paper or digital formats for instructions for use are suitable for the safe use of machinery should also be measured in legislation against how barrier-free access is ensured for all target audiences of the instructions for use and how user-friendly preparation is achieved so that

the information is clear, understandable and, where applicable, legible. Only then can the instructions for use fulfill their purpose.

The Machinery Regulation 2023/1230

With the Machinery Regulation, instructions for use, assembly instructions and technical documentation can be made available in digital formats from 2027 onward. tekom has produced a whitepaper that examines the Machinery Regulation with regard to innovations for instructions for use and technical documentation, which can be found on our website.
www.technical-communication.org/tekom/publications/specialist-books/detail/new-machinery-regulation

This article is based on a publication in DIN Mitteilungen May 2024 by DIN Deutsches Institut für Normung e.V.

Become a technical communicator

Introducing the Technical Communication online course of the Munster Technological University (MTU) in Cork, Ireland.

Text by Farshad Ghassemi Toosi

Technical communication explained

Across industries, the need to effectively communicate technical information to specific audiences is paramount. Information developers play a crucial role in rendering scientific and technical data comprehensible and user-friendly. They ascertain the structure and delivery of information, thereby furthering the business objectives of their organizations.
Information developers need to be versatile, with knowledge in both communication and technology, alongside expertise in their specific domains. There are a wide array of roles, including technical communicators, technical editors, information architects, content strategists, instructional designers, technical illustrators, localization specialists, user experience architects, visual designers, web designers and developers, trainers and e-learning developers, and project managers, among others.

Information developers engage in a spectrum of activities ranging from documenting standard operating procedures (SOPs) to crafting information for Artificial Intelligence (AI) technology. They serve as intermediaries between industries and end users.
It is essential for information developers to grasp concepts such as programming, AI, machine learning, Natural Language Processing (NLP), application programming interfaces (APIs), cybersecurity, and localization engines. Information development ensures that designs, products, systems, and methodologies are comprehensively documented and communicated to their intended audiences, thus optimizing the business value for the organization.

Studying TechComm

The Munster Technological University (MTU) Cork Campus offers a Level 9 program in Technical Communication.
By combining technical communication with state-of-the-art technological skills, prospective students gain the knowledge and capability to analyze, generate, and oversee information for contemporary users.
The MSc in Technical Communication is a 90-credit master's degree program delivered online through platforms such as Zoom and Canvas. It comprises 60 credits of taught modules and a 30-credit project. This two-year (four semesters), part-time program is given during evenings. Upon successful completion, students will be awarded an MSc in Technical Communication. The 30-credit project provides students with the opportunity to explore related topics and apply their acquired knowledge and skills to real-world scenarios.
The program is designed to introduce learners to current techniques and technologies, such as XML and DITA for technical communication, information experience design, and techniques used in writing for industry. It also includes modules on research practice and ethics to raise learners' awareness of ethical aspects of writing. A distinguishing aspect of this program is the recent introduction of elective modules, which familiarize learners with hot topics such as machine learning and AI, cloud computing, cybersecurity, and computational biology.
Upon successful graduation, learners are equipped with the necessary skills to work in various industrial sectors in the field of information creation.

Entry for this program closes in September of each year.
Candidates are required to apply well in advance through our online portal at www.mtu.ie/courses/crkindd9/#modules.

For questions and queries, please contact farshad.toosi@mtu.ie.

events

tcworld 2024/2025

SEP '24

NORDIC TechKomm Copenhagen
- September 18-19, 2024
- Copenhagen, Denmark

IUNTC Meeting
Topic: A framework for understanding cognitive biases in technical communication
- September 19, 2024, 4 PM (CEST)
- Online
- www.technical-communication.org

OCT '24

Elia Networking Days
- October 1-2, 2024
- Berlin, Germany
- elia-association.org/our-events

TAUS Massively Multilingual AI Conference
- October 2-4, 2024
- Albuquerque, NM, USA
- www.taus.net

IUNTC Meeting
Topic: Artificial Intelligence literacy and adjacent digital literacies for the digitalized and datafied language industry
- October 2, 2024, 4 PM (CEST)
- Online
- www.technical-communication.org

ATA Annual Conference
- October 30-November 2, 2024
- Portland, OR, USA
- www.atanet.org

NOV '24

tcworld conference 2024
- November 5-7, 2024
- Stuttgart, Germany
- tcworldconference.tekom.de

In his keynote "Departure and Disruption: Rethinking Knowledge", Dr. Michael Gebert will dive into how AI is revolutionizing technical communication and opening up new possibilities. With a background in business administration and a PhD in swarm intelligence, Dr. Michael Gebert is a visionary entrepreneur who is passionately committed to innovation, particularly in the field of AI.

Languages & The Media
- November 13-15, 2024
- Budapest, Hungary
- www.languages-media.com

IUNTC Meeting
Topic: AI-based iiRDS tagging of technical documents as an example of applied and collaborative research
- November 14, 2024, 4 PM (CET)
- Online
- www.technical-communication.org

DEC '24

IUNTC Meeting
Topic: AIWorkbench
- December 5, 2024, 5 PM (CET)
- Online

MAR '25

NORDIC TechKomm Stockholm
- March 12-13, 2025
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tcworld conference 2025
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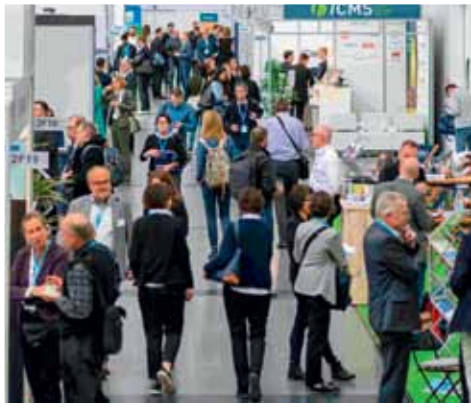

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