

magazine for international information management

tcworld

OCTOBER 2020

Is your technical writing team fit for the future?

Creating content for emerging technologies



Revenue growth division

division

division

Conversation design

Key principles behind good chatbots

Continuous localization 2.0

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imprint

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Cover image

© Serbey Nivens/istockphoto.com

tcworld magazine is published every quarter (4 issues per year).

Subscription price of a single issue:
 8,00 Euro + VAT
 + shipping & handling.

Yearly subscription: 32,00 Euro
 + VAT + shipping & handling.

The minimum subscription period is one calendar year. This will automatically be renewed for a successive period of one calendar year, unless written notice to cancel the subscription is given to the publisher at least six weeks before the end of the calendar year. An annual subscription to *tcworld magazine* is included in the membership fee of members of *tekom Deutschland* and *tekom Europe* (except Austrian members). Printed in Germany

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Are we better prepared for the new normal?

As the viral threat has captivated the world and kept a tight grip on it, a new – more permanent – reality is starting to emerge from the fog of the unforeseen. While many businesses in sectors such as retail, tourism, hospitality, and transport, to name just a few, have taken a hit that for many will be too drastic to overcome, workers from other sectors – many employing white-collar professionals, managers, and other specialists – have adjusted their workspaces and are keeping the business afloat. Research has shown that around 30 percent of people in developed countries have the capacity to work from home. Usually, these are people that used to work in offices and do most of their tasks on a computer. Despite the drastic impact that the coronavirus pandemic has had on many members of our community, we are lucky enough to find ourselves among these 30 more fortunate percent of the working

population, who can keep doing what they have been doing in an adjusted workspace or from home. A recent survey among *tekom* members found that 87 percent of people working in technical communication already have a lot of experience dealing with software and technology or online events. This indicates that the conversion to digital is considerably easier for technical communicators than for other industry sectors. More than half of survey respondents (62 percent) use virtual communication (e.g. web meetings, professional networks) on a daily basis, and another third at least once a week.

In fact, our community members appear to be quite flexible in adjusting to the situation: 72 percent say that, depending on the topic, they are happy to hold discussions either online or in person; only 20 percent prefer face-to-face contact.

The same applies to online events, with 72 percent stating that they believe online events to be just as good as on-site offerings, while only 17 percent oppose them. Eleven percent even found online events to be the better option. We were particularly pleased to learn that almost three quarters of respondents believe the virtual *tcworld* conference is a good alternative considering the current situation.

This year's *tcworld* conference – a purely digital event – won't fail to deliver that unmistakable *tekom* feeling with a large variety of presentations, a virtual exhibition, and plenty of opportunities to network and socialize. You can learn more about the event on page 44.

We look forward to seeing you at this special event!

Corinna Melville

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JENNI CHRISTENSEN
Training and Technical Documentation Manager,
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Is your technical writing team fit for the future?

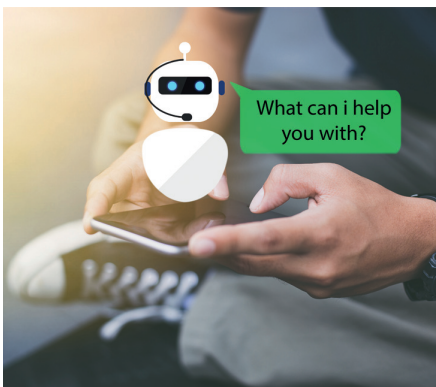
Emerging technologies don't require lengthy, carefully drafted manuals. They challenge your team to show a clear vision, strong commitment, and new skills – and to think innovatively.

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Conversation design: Key principles behind good chatbots

Designing conversational dialogues for chatbots is as challenging as it is rewarding. A new style of communication is required to keep users engaged.

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Continuous localization 2.0

More content types, more languages, more frequent updates: How to navigate your continuous localization journey

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Introducing the Future of Connectedness framework

Today, connectivity is more important than ever before. COVID-19 has shone a light on the capabilities that connectedness provides. It is a key enabler for business continuity and resiliency, allows for scalable access anytime anywhere, provides real-time insights, and creates pervasive digital experiences. International Data Corporation (IDC) reports that connectivity is now recognized by CEOs as one of the top three strategic elements in their digital transformation strategy. As organizations and consumers seek secure, real-time

personalized insight wherever they might live, work, and play, borderless connectivity becomes a fundamental strategic imperative for any digital transformation.

IDC gathered a group of its leading telecommunications, networking, and services analysts across the globe to define what the future of connectedness looks like, defining it as the timely movement of data across people, things, applications, and processes to create seamless digital experiences. There are several elements to consider

when thinking about connectivity and what role it plays in the future enterprise. IDC has created the *Future of Connectedness Continuum* framework that is comprised of three separate but interdependent layers that must interact seamlessly and continuously. These include:

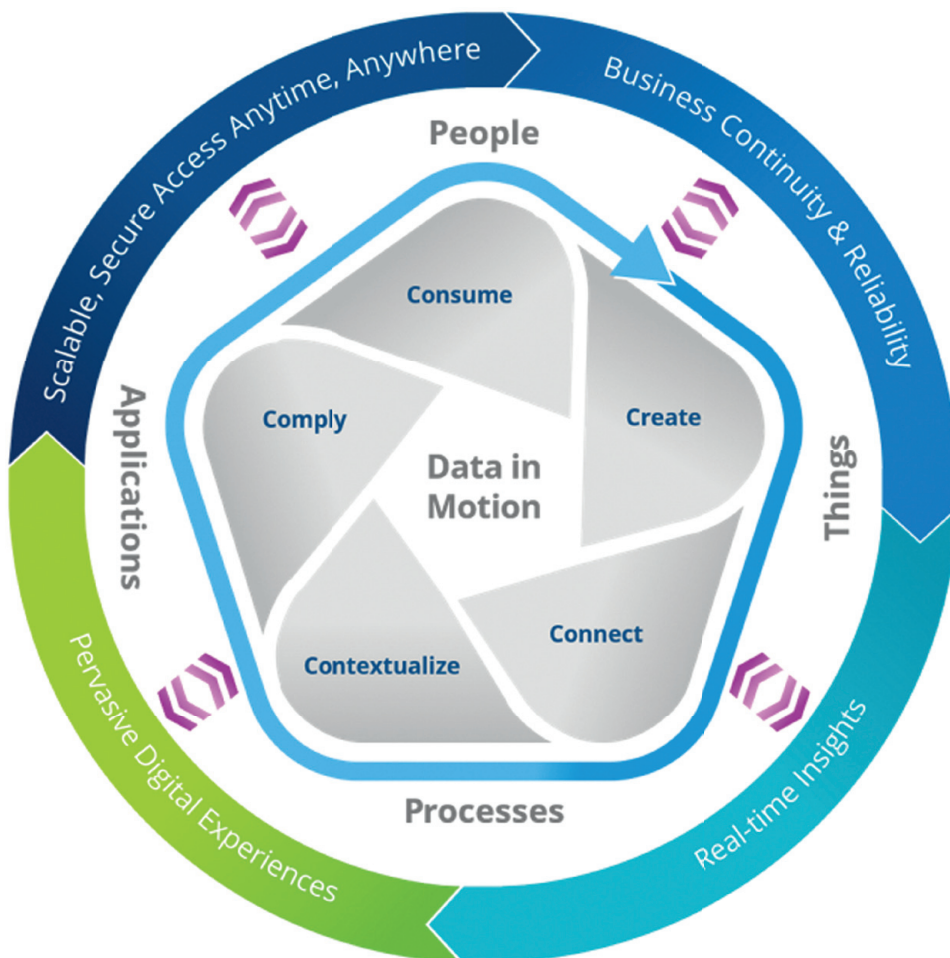
- **The Cycle of Data** – these are the actions taken when data is in motion but requires agile, autonomous, pervasive, secure, and resilient connectivity
- **Data Consumers** – these are the consumers of the data in motion
- **Connectivity-Driven Outcomes** – these are the outcomes achieved when data is moved seamlessly and provide value to organizations and individuals alike.

The Future of Connectedness means that organizations need to look to connectivity as a strategic element to maintaining, sustaining, and growing business operations. It will require additional investment, more strategic planning, and greater oversight. With this in hand, organizations will develop seamless engagement models to interact with their employees, customers, partners, and others in their specific ecosystem – and connectedness will be the underpinning of it all.

“Connectivity is the common denominator in how we interact with the world around us today. As digital interactions increase, it becomes clear that connectivity is not yet seamless, nor pervasive,” said Carrie MacGillivray, group vice president and general manager, Worldwide Telecom, Mobility and IoT research. “The evolution of access technologies is going to accelerate the digital connection and in turn, unveil the Future of Connectedness – between people, things, processes, and applications. These connections are the sinews of how we live, work and play.”

Find out more here:

<https://bit.ly/3hR1b0s>
www.idc.com



Source: www.idc.com

Internet of Things still two to five years away from transformational impact

The Gartner, Inc. 2020 Hype Cycle for Supply Chain Strategy shows that the Internet of Things (IoT) has reached the bottom of what the research firm has labeled the “Trough of Disillusionment”. The market will begin to climb out of this trough, as the technology advances and practitioners succeed in defining the best opportunities for the unique measurement and tracking capabilities of the IoT. The Trough of Disillusionment highlights technologies and markets where interest has waned as experiments and implementations fail to deliver (see Figure 1).

“IoT is in the trough because we see that many companies are implementing the technology, but they struggle to define the best opportunities for using its measurement and tracking capabilities,” said Mike Burkett, vice president and distinguished analyst with the *Gartner Supply Chain Practice*. “We see further potential to grow its use over the next several years. Gartner estimates that installed IoT endpoints for manufacturing and natural resources industries are forecast to grow to 1.9 billion units in 2028. That is five times up from 331.5 million units in 2018.”

According to *Gartner’s 2019 Digital Business Impact on the Supply Chain Survey*, 59 percent of respondents

had partially or fully deployed IoT across the entire organization. Another 22 percent were piloting and 15 percent had not invested yet, but planned to do so in the next two years.

“We have categorized IoT as a transformational technology because it has the potential to impact many areas of the supply chain in a broad and profound way,” Mr. Burkett said. “While the most obvious use cases are in manufacturing, IoT can also help improve customer service because it enables leaders to better understand customer needs. More mature organizations will also be able to create information-based products such as providing visibility and analytics for better asset usage.”

For supply chain leaders looking to implement or expand IoT capabilities, it’s important to work with subject matter experts to identify supply chain processes that can benefit from IoT. “In some cases, processes will have to be redesigned to accommodate IoT capabilities. If the subject matter expert is an external provider, supply chain leaders should always check how they might use – and possibly monetize – captured data,” Mr. Burkett concluded.

www.gartner.com

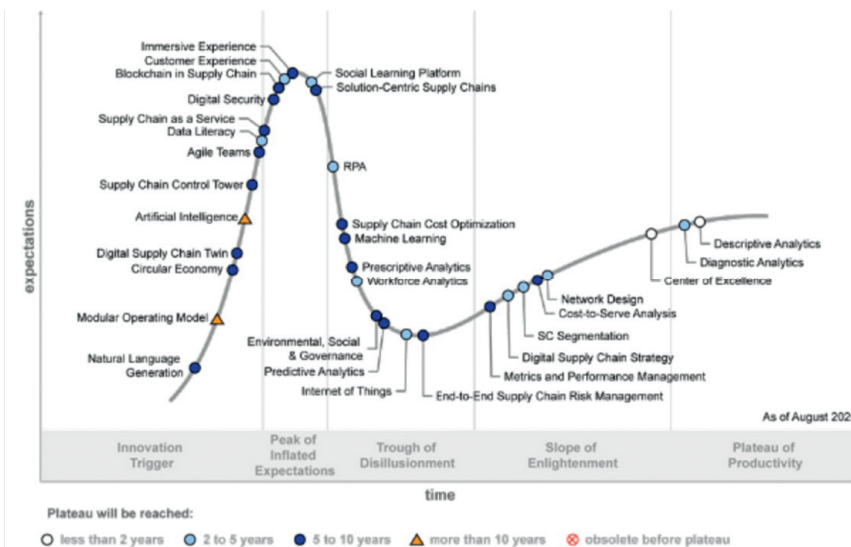


Figure 1: Hype Cycle for Supply Chain Strategy, 2020

Source: Gartner

THE MEDICAL INTERPRETER ONLINE

Cross-Cultural Communications (CCC) has launched the Medical Interpreter Online on its Blue Horizon online training platform. It offers an interactive, skills-based introduction to medical interpreting and meets the training requirement for the two U.S. national certification programs for medical interpreters: the Certification Commission for Healthcare Interpreters (CCHI) and the National Board of Certification for Medical Interpreters (NBCMI).

www.interpretertraining-online.com

VENGA SPONSORS WOMEN IN LOCALIZATION

Translation and localization provider Venga Global has announced its sponsorship of Women in Localization (W.L.), a professional organization for women in the localization industry. W.L.’s sponsors support the organization’s core mission to promote professional development, mentoring, networking and career advancement.

<https://womeninlocalization.com>

INTERNATIONAL SALARY REPORT FOR THE LANGUAGE SECTOR

Adaptive Globalization has released the first comprehensive salary report for the language service provider sector. The report details benchmark competitive salaries for an array of positions as a guide for employers seeking to attract and retain talent in the coming year. Moreover, it provides summaries of key roles in the industry, their progression paths, and their salary ranges across 18 locations globally.

www.adaptiveglobalization.com

LIONBRIDGE FOR RELATIVITY INTEGRATION

Translation and localization provider Lionbridge has released Lionbridge for Relativity®, a plugin solution available in the Relativity App Hub that enables accurate, efficient translation for law firms, corporate legal departments and e-discovery service providers around the globe through Relativity’s platform. The release is part of a Lionbridge rebrand of its legal translation services, previously known as Geotext, to Lionbridge Legal.

www.lionbridge.com

Empowered customers have turned the tables on consumer-facing businesses

Consumers will dictate how B2C firms sell to them, forcing companies to continually adapt and keep up with changing customer expectations and buying behaviors.

According to research and advisory firm Forrester, consumers no longer need to trade off price, convenience, and emotional experience when making buying decisions. They expect new products, services, and delivery models to cater to all attributes at once – forcing firms to enter their most frenzied phase of innovation. As a result, the future of B2C buying is not a shift from traditional to digital or an abandonment of self-service in favor of delivery; it is all of the above.

As consumers demand better experiences of every kind, Forrester's new research explores four trends that will define how B2C firms evolve to meet consumer demands over the next decade:

1. Marketplaces will lose market share to brands

While companies like Amazon have gained tremendous influence in the past ten years, brands will be the real winners in the next decade. Brands like Nike that have pulled their products from marketplaces already understand they must be in control of their own products to build experiences that create loyal customers. In 2019, 50 percent of U.S. adults were indifferent to online marketplaces. However this dropped to 44 percent in 2020, most likely due to lockdowns preventing in-store shopping.

2. Experience, not marketing, will drive demand

The traditional buyer journey must be reinvented. Today's buyer wants to buy or test products be-

fore fully committing, emphasizing the use, ask, and engagement pieces of the buying model. Spotify is an example of a brand using innovative pricing and distribution that enables access instead of ownership.

3. Values, specifically privacy, will influence purchase decisions

While climate change and racial and gender equality are top-of-mind, privacy is the most important to consumers when buying. In fact, the most popular corporate value among U.S. and Canadian online adults is a commitment to information confidentiality and data privacy. Firms that don't make privacy, security, and data ethics a core tenet of their corporate social responsibility efforts will face the ire of consumers and regulators.

4. Traditional business models will become extinct

Startups and nimble tech companies are forcing even the most established consumer-facing business to rethink their strategies. To survive, companies will need to evolve through alternative revenue streams, expanded partnerships and new channels.

"Companies will need to discard orthodoxies around pricing, distribution, promotions and products," said Forrester VP and Principal Analyst Sucharita Kodali. "Companies that survive by 2030 will have new products and solutions that constantly adjust to fickle and changing consumers. These transitions are painful because firms have a lot invested in their current go-to-market approaches. If the pandemic taught us anything, it's that sometimes even large capital expenses carefully invested in over the years need to be re-evaluated."



Image: © new look casting/istockphoto.com

go.forrester.com

European Parliament chooses multilingual AI speech solution

Intelligent language and content company SDL has announced that a consortium, formed by Cedat85, SDL and Bertin IT, has been ranked first out of three finalists to provide real-time, AI-powered transcription and translation services for the European Parliament plenary sessions.

The solution can automatically transcribe and translate parliamentary multilingual debates

in real time and learn from corrections and user feedback, improving its quality over time.

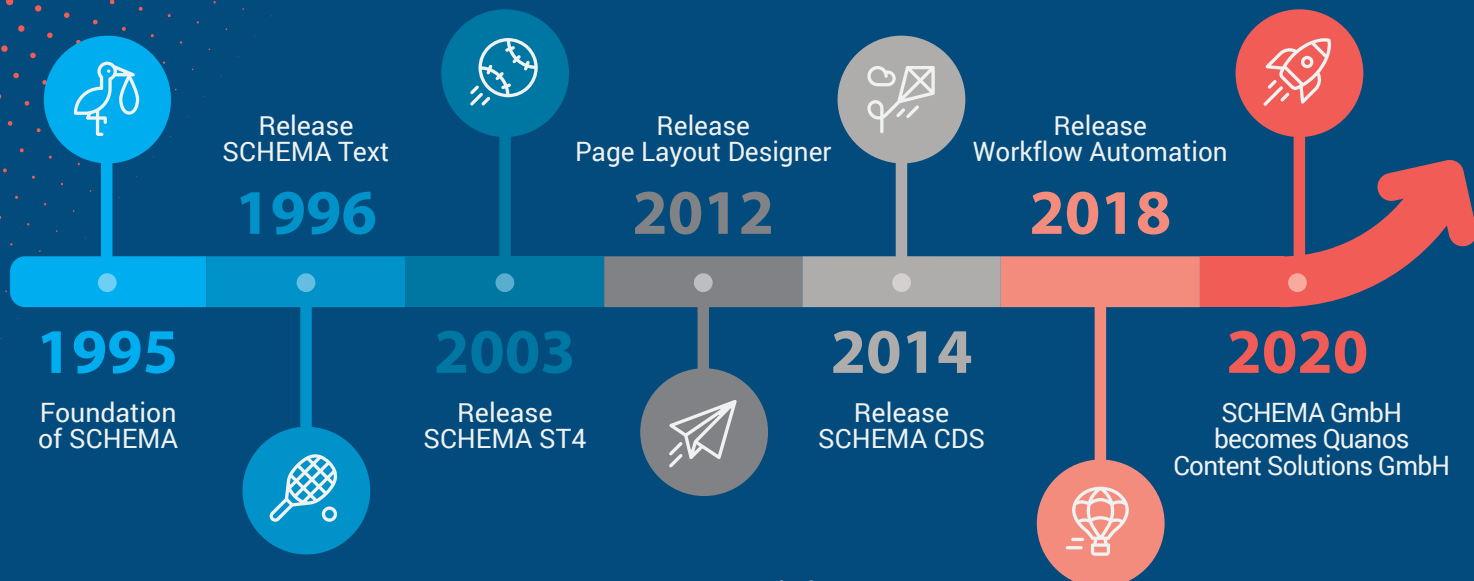
The idea is to help members of the European Parliament access debates on screen, including hard-of-hearing people who currently have no direct access to the debates. The ultimate goal is to provide an automatic transcription and translation service for parliamentary debates covering all 24 official languages used by the institution.

The selection process, which lasted almost a year, was open to all international suppliers and measured the quality of the proposed IT solution, technical support, quality of project management, quality of live demonstrations, and cost. The top three consortiums were each awarded a one year contract.

www.sdl.com

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Zoom-proofing your presentations

Tips for surviving our new present-from-home reality

Text by Leah Guren

So, how is your pandemic going? If you are like many of us, you may be familiar with these phenomena:

- You haven't worn real trousers since early March, but you have an impressive collection of masks.
- When you eventually need to wear proper trousers again, you discover that they are uncomfortably tight!
- You have met your colleagues' pets as they Zoom-bomb your meetings.
- You get excited about taking out the garbage.
- You forgot which side of the car the gas tank is on, and you may have had to remove a bird's nest from your windshield.

While it is easy to joke about being stuck at home, this pandemic is taking its toll on us

economically, physically, and emotionally. You may feel tired, distracted, anxious, and have a shorter attention span. Some of us have lost family members, friends, or colleagues to COVID-19. And many of us are seriously worried about surviving financially.

Sadly, we don't know when this will end. It may be mid-2021 before a vaccine becomes available. And, even if life starts to get back to normal, there are some aspects that may never revert to the way they were before February 2020. For example, many companies have discovered that letting their staff work from home is good for both their budget and employee productivity. Conferences may choose to maintain a virtual presence, even if they resume face-to-face events, thus removing the barrier of travel expenses for many attendees. Universities may also

keep classes online to make education affordable and accessible to more students.

Thus, we need to adapt to the current situation and assume that it is here for the long haul.

The show must go on!

Despite the pandemic, the show must go on, and that includes presentations.

Whether you are standing in front of a live audience at a conference or sitting in front of your computer in your home office, there are some basic principles of good presentations that remain constant. I have spent many decades teaching people to create more focused, goal-oriented presentations that speak to the needs of the audience. You still need to narrow down your ideas, create a compelling "hook", and connect your ideas for the audience.

However, presenting virtually creates new challenges. I have been teaching online for many years, but my "virtual" skills have been seriously tested over the past six months!

Here are a few tips that I can share with you.

1. Pacers beware!

If you have attended any of my live conference sessions, you know that I like to move around the room. I can't tolerate being tethered to a fixed microphone or stuck behind a podium. I love to keep moving, interact with different parts of the audience, and add life and energy to my presentations through large gestures. This has been my authentic style for years, and it feels stilted and unnatural for me to sit still. In fact, during some of my online lectures in which I don't use a webcam, I can fool my smartwatch into thinking that I "walked" several kilometers, simply because I continue to move and gesture so much, even while seated.



Image: © Aleksandr Davydov/123rf.com

The problem is that movement works against you when using a webcam. Instead of adding energy to the presentation, it can be distracting. Connectivity problems lead to video lag or even freezing. Movements can look jerky and awkward.

The solution: Rehearse to limit motion. Record yourself and watch. Try again. Watch again. Learn exactly how much movement creates a sense of life and energy without becoming distracting.

2. Where did they go?

Interacting with the audience is a big part of a successful presentation. When I speak to a live audience, I can see their faces, read their expressions, and monitor their body language.

In some of my online courses where we have a limit on the number of students, lectures look like Zoom meetings, where all participants can be seen. But in the virtual world of webinars where there may be hundreds of attendees, speakers cannot see their audience. We have no idea if they are engaged, interested, suspicious, or amused. It is extremely unnerving to present into the void! We have to find different ways of generating engagement and monitoring attention.

The solution: Use built-in features of different webinar platforms. You can create surveys, ask questions (to be answered via chat), or have participants use hands-up responses. Make sure to build questions and interactions into the presentation frequently. Remember, most people are experiencing difficulty concentrating, so online sessions are doubly challenging! Rather than talking for 45 minutes and then asking for questions, build interaction stations into your presentation every 5–7 minutes.

3. Are you looking at me?

In live presentations during which I am standing in front of an audience, I can make direct eye contact with people. But one of the biggest problems of online presentations is that we tend to look at our screen (the center of our slide area), rather than into our webcam. This can create the impression that we are not looking at the audience.

Worse, if someone in a small Zoom meeting asks a question and you look at their thumbnail video rather than into the webcam when you answer them, it appears almost anti-social.

The solution: Ideally, position your webcam so that it is as close as possible to the center of your screen. If that is not possible, learn to always talk to the webcam instead of looking at the screen. This takes a little practice, but the result is worth

the effort. For smaller Zoom meetings, position the participant thumbnails on the top of the screen, rather than on the side, so that if you look at them, you are already looking in the direction of the webcam.

4. Sit up and take notice.

When you stand in front of a live audience, you don't have to worry about whether they can see you. But many people have their webcams set at an odd angle, causing them to be cropped or off-center.

The solution: Arrange your chair and webcam so that you are centered in the video frame, ideally showing chest and head. If you are too far from your webcam, people won't be able to see your expressions. They won't feel the connection between the video thumbnail and what you are saying. During a presentation, you can see your own thumbnail and make corrections as necessary, but it is always better to test in advance by recording yourself and watching the video playback.

5. Skip the greenscreen.

When we speak at a conference, we have no control over the backdrop. The conference venue takes care of that. But when we present from our home office, we need to be aware of what appears behind us. While many people use virtual backgrounds, there are technical problems that can make them appear amateurish and distracting. For example, unless you have chosen your shirt carefully, you may have bits of it "disappear" into the virtual background. Moving into and out of the greenscreen area creates strange pixelation that is distracting. Connectivity problems make the video even worse if there is a virtual background.

The solution: Tidy up your real background! If you have a home office, make sure the area in the background looks like an office. A clean wall, a bookcase, or a few plants can be nice. Don't be afraid of color and detail in the background. My bookcase has lots of colors and visual details, but creates a nice background for my sessions.

6. We can't hear you!

Audio is always important. If the audience struggles to hear the speaker, they lose interest very quickly. No one wants to strain to hear or understand. With virtual presentations, audio quality is even more important.

The solution: Test your microphone. If the built-in microphone on your webcam is not strong enough, use a headset and position the micro-

phone to provide the best audio without any static or feedback. Test your audio whenever you have to use a different web conferencing platform. And speaking of audio, try to minimize background noise, including barking dogs, loud children, phones, etc. While we can control some things (such as muting your cellphone or disconnecting a landline), you have to adapt to some noise. For example, I have no control over the jackals who roam the wadi (dry ravine) next to my home. When they start serenading us at night, all I can do is close all the windows and hope that my microphone does not pick up the howls.

7. Don't panic!

Things are going to go wrong. There will be technical problems (at your end, at the web conferencing hosting site, or at the attendees' end). There is no way to avoid it. Despite your best efforts, your cat or dog may find its way into your office mid-presentation and want to join in. Trust me, everyone understands!

The solution: Relax and stay calm. We are all learning to cope in these difficult times, and perfection is an unattainable goal. I've seen tense meetings greatly improved when a plump cat walks in front of the webcam. Prepare, rehearse, and do your best to minimize problems in advance. But when glitches occur, stay calm. Your audience will appreciate your response more than they will be bothered by the distractions.

Do you have a tip to share? Let me know!

ABOUT THE AUTHOR

Leah Guren

is the owner/operator of Cow TC. She has been active in the field of technical communication since 1980 as a writer, manager, Help author, and usability consultant. She now devotes her time to consulting and teaching courses and seminars in technical communication, primarily in Israel and Europe.



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Building a framework to future-proof your technical writing team



A man with a beard, wearing a brown sweater and a VR headset, is seated at a wooden desk in a modern office. He is looking towards the right, away from the camera. In front of him is a silver laptop. To his left, there is a glass of water. The background features a white brick wall and a large window with a view of an outdoor area with plants and a building structure. The overall lighting is bright and natural.

Technical writing teams are faced with new challenges when creating content for emerging technologies. New skills, thought leadership, and tools and resources are required. Innovation, commitment, and a clear vision at all levels are key to future-proofing your team.

Text by Toni Byrd-Ressaire

As we approach 2021, I'm looking forward to thoughtful articles predicting breakout trends and market opportunities for emerging technologies. I fully expect to see AI, ML, AR, VR, IoT, IIoT, and a few other acronyms displayed across my virtual reading devices, predicting the future of technology with varying degrees of success.

Despite the hype, it's fair to say we're not all walking around wearing HUDs and few products have yet achieved the ubiquity of the Apple iPhone. Yet, there's no denying the mass adoption of smart home speakers, voice and chatbots for enterprise, and other IoT devices in our homes, cars, and businesses.

The future is clearly here, and from a technical communication perspective, this point is key – the way people interact with content has changed and continues to evolve. For technical writers, it's not about AR and bots, or some futuristic technology we have not yet imagined. It's about information and how we develop audience-focused content, regardless of the medium.

The purpose of this article is not to predict emerging technologies, but rather to lay out a framework that we are using at Technically Write IT (TWi) to upskill technical writing teams and develop a culture of innovation. This article presents lessons learned (and those we're still learning) as we adopt and adapt to emerging technologies, focused on the evolving content requirements of users and the industries we serve.

“Content is King” but the processes aren’t

In 1996, Bill Gates wrote in his essay *Content is King*: “...the definition of ‘content’ becomes very wide.” [1] Gates was referring to the transition from print to Internet content, even including code as content. The statement has also proven true regarding technical content, and the PC and modem Gates referenced as mediums have expanded to include more digital devices. The value of content is undisputed, but our processes for developing technical content are changing.

Today, users have access to multiple devices and often synchronize digital information across devices. Users less frequently require long-form, linear content, instead expecting information at their fingertips, contextual to the device they’re using, and profiled. User profiles allow information consumption to be more personalized based on preferences, location, and behavioral characteristics. Advances in voice interfaces have also changed the way users interact with content. The definition of content has certainly become very wide. These expectations demand an evolution of technical writing processes and represent a significant leap in how content is designed. Traditional content models do not account for highly contextual, multi-dimensional information development and delivery. Furthermore, technical writers are increasingly required to understand rapidly developing new technologies in order to produce content for an ever-changing landscape of devices, formats, and consumption patterns. Content is still king, but technical writing processes must adapt.

Innovate strategically

In 2017, when research firm Gartner was making grand predictions about AI adoption [2], and Forrester explained how businesses would

delegate customer service to AI-powered chatbots [3], TWi started exploring the impact such changes might have on a technical writing services company. In 2017, the reality was that most companies in serviced verticals still required traditional content, but TWi wanted to be prepared. One of the groups that recognized the need for new content models in response to the Industry 4.0 [4] movement was the Information 4.0 Consortium, a European-based non-profit that developed content requirements for what it termed an Information 4.0 era. TWi began researching and experimenting with the concepts put forth by the Information 4.0 Consortium, iIRDS Consortium content delivery standards [5], and looking at tool interoperability, a challenge with current authoring and delivery processes that only becomes more complex with emerging technologies that often do not account for content inclusion.

With no external funding or client demands for “futuristic” content, TWi initially decided on an internal approach that focused on research, exploration, and experimentation. The leadership “funded” internal teams with time.

Preparing technical writing teams for the content challenges of emerging technologies requires new skills, thought leadership, and a significant financial investment in tools and team resources that may not offer an immediate return on investment. It requires a culture of innovation at all levels of the company.

Establish a framework to support innovation

The leadership at TWi recognized the value of a structured approach that would encourage innovation while noting the boundaries of limited resources and creating alignment with the company’s strategy and objectives.

The company adopted a framework to facilitate exploration, experimentation, and development of content strategies for emerging technologies. The framework included alignment around the vision, an inclusive approach that encouraged everyone to get involved, and some structure around how to carry out

activities. Figure 1 shows our Innovation Framework.

Communication, collaboration, and effective processes to manage change and innovation are important elements of the framework. Most importantly, future-proofing a technical writing team requires a clear vision.

Focus teams around a vision

If you don’t know what the problem is, how can you solve it? A lack of vision and a clear problem statement present one of the greatest risks for any new project. A well-defined strategy with clear objectives will ensure that all activities are aligned with the company vision. It will help keep your team focused on the end goal and ensure that everyone is on the same page.

Without a clear vision, teams will tend to focus on the question “What are we going to do?” The real question should be “Why are we doing this?” Strategic goals may be very high-level. But specific objectives define how the company will reach those higher-level goals, and these objectives



Figure 1: Innovation Framework



Idea validation

- ? **Problem statement**
what problem are we trying to solve
- ? **Purpose statement**
why are we trying to solve this
- ? **Research**
what do we need to learn/know
- ? **Proposed solutions**
what solutions can we explore
- ? **Proposed project**
what can we do to test or validate the proposed solution
- ? **Project plan**
what resources do we need to complete this project
- ? **Validate**
will anyone adopt/buy this solution
- ? **Lessons learned**
how can we incorporate lessons into our content strategy

Figure 2: Idea validation

must be research-based and identify pain points in the market.

In that sense, the vision requires consideration of both company needs and industry needs. The company needs will tend to be centered around financial goals: either extending financial boundaries or taking corrective actions to achieve resilience. For example, the company may want to expand services to leverage a more sustainable position.

But industry needs should be a key driver in the “how” and “why” and should inform objectives. What can we do as a company to resolve our clients’ (and potential clients’) issues? Answering those questions clearly will illuminate the “how” and “why”, which should then drive all activities within the company, including those of technical writing teams. A technical writing team must look beyond individual projects and understand the “why” behind a larger vision, which will drive the “how” of innovation.

Let’s look at a practical example of how idea generation and validation may work. A company has set strategic goals to achieve ten percent growth over five years. One key objective may be to develop services to help achieve growth. The technical writing team knows that clients use their services because they have large amounts of legacy content to manage. After conducting client surveys and analyzing data from previous client requests,

the technical writing team understands that a high percentage of clients report they have content silos with legacy content that is not machine-readable. To manage the content requires many resources to perform manual, repetitive processes.

There are several opportunities for content innovation in the previous example. The technical writing team may develop more efficient processes, or explore automation or Artificial Intelligence applications to manage content. Those are ideas, but the “why” is clear: Solving any one of those problems has a positive impact on the client and places the company in a better position to offer a new service and meet strategic goals. For a more detailed explanation of idea validation, take a look at Figure 2. The company vision does not outline the innovative process or the specific innovation goal, but the vision clearly defines the strategic outcome. It’s important to note that specific outcomes may not be clear initially. While that may sound intrepid to some, there must be enough space to permit free thinking, research, and changes in direction to occur as findings dictate dead ends or new areas of exploration. Outcomes may not be clear until the research phase is complete.

It’s up to the leadership and strategists to set a clear vision for the company and communicate this vision to all members of the team. Innovative technical writing teams can be successful with the “how” and “what” once they understand the “why”.

Adopt an inclusive approach

Moving from a traditional service-based company to a focus on information models that fit the new landscape of emerging technology demands a mind shift and complete transformation of internal processes. Future-proofing a technical writing team involves change management.

Change management has become a frightening term in companies seeking to transform and is often approached with a top-down implementation. A more effective approach, and the one TWI adopted, is inclusive. To transform from within requires every member of the team to become committed to innovation. It requires communication, trust, and a good measure of excitement.

Communicate clearly

Communication must start with the leadership team. As stated previously, the company vision must be communicated clearly. Transparent conversations about goals, objectives, and expectations should happen regularly. Communication should go both ways. Leadership and technical writing teams should have ample opportunity to ask questions and question everything. The goal of open communication is to align the thinking of every team member to allow the sharing of ideas, and to coordinate all activities toward the common goal.

Trust your team

Transformation and innovation also require that the leadership places a great deal of trust in writing teams. Sometimes ideas reach dead ends. Recognizing that not all ideas may lead to a return is the approach TWI takes toward innovation. All ideas are good – but not all ideas can be aligned with the company strategy, not all ideas are feasible, and not all ideas will result in a desired outcome. But unless we take a close look at those ideas, evaluate them, and even test them, we will never know if those ideas are relevant. TWI takes the approach that ideas are worth considering. Some ideas will lead to a dead end. Others may take the company in a new direction. Some ideas may be nuggets of gold. Following ideas through at least an initial research phase (if only an initial evaluation), and possibly through a project and testing phase, requires trust. Trust is established through open communication, and risk is minimized when structures are in place to guide teams and align ideas and activities with the company vision.

Nurture passion

It's important to address the element of excitement. Ideas and innovation are born from passion. Without passionate people, innovation won't happen. Early on, TWi recognized that providing internal time to work on interesting and exciting projects would nurture passion.

Use structure to guide teams

A clear structure supports team members through the innovation journey. While innovation requires freedom to generate and explore ideas, experiment with tools and processes, and even face dead ends, structure will guide innovative teams toward a common goal and make the most effective use of resources.

In this section, I provide some examples of structures TWi put in place to permit innovative thinking.

Training

To take a deep dive into emerging technologies, even from the perspective of content, requires some level of training and upskilling team members. Depending on the skills of your team, a rigorous training program may be required initially. You may bring in a consultant, as TWi did, to train teams to adapt content practices to emerging tech. An initial, intensive training may focus on high-level concepts that immerse the team in new ways of looking at information and the technologies impacting it. Conferences focused on emerging tech provide an effective way to immerse a team in a subject.

Continuous training can be provided as needs arise and new technologies emerge. For example, if your team has identified a need to develop content for Augmented Reality (AR) experiences, provide access to courses online or offline, and buy an AR headset for the team to play with.

Teams

Internal teams form the backbone of innovation activities at TWi. A team-based structure permits a small group to focus on an area of knowledge, research, or projects. Team formation may be based on expertise or areas of interest.

Focus teams, as the name implies, focus on innovation in a specific topic. Teams may explore innovations in information design, project management, visual graphics, and others. For example,

a visual graphics team may research the requirements for 3D CAD drawings used in an Augmented Reality experience.

Milestones

Innovation tends to happen in the context of smaller activities, starts and stops, but there should be some overarching milestones.

Initial milestones should be high-level. There's a careful balance to consider. Milestones that are too specific can stifle innovation. If they're too broad, you end up with chaos and may never reach a goal.

Projects and activities

Innovative activities can range from research to experimenting with tools or even coming up with a more innovative process. Activities may be organized into projects with phases, project plans, and shorter-term milestones. Specific teams can work on projects related to their area of focus, or project teams can be multi-disciplinary.

Balance growth and sustainability

There is an element of managing innovation that seeks a balance between growth and sustainability. It's not a simple thing to manage growth and the resources required while maintaining profitability.

Innovative teams need time, and that's time not spent on client work. They may need software licenses that are not used in daily client work and may only need them for brief periods of time to experiment. If you're looking at emerging technologies, they may need some hardware for testing. Companies need to achieve net gross and profit margins while scaling up as growth occurs. Innovation leadership means making sure all resources are available, but also balancing those resources with existing client needs.

In summary

To future-proof your technical writing team, provide specific training around emerging technologies, establish a supportive culture of innovation, and create a structure for innovative thinking and activities that maintains a balance between growth and sustainability. Create a communication plan based on trust that ensures everyone is moving in the same direction.

Finally, ensure that all team members clearly understand the company vision and are moving toward a common goal. Provide just enough oversight to maintain all innovative activities within the confines of that goal, while making space for new ideas and the resources to research, test, validate, and develop those ideas. This approach will build resilience into the entire company and future-proof your tech writing team.

Resources

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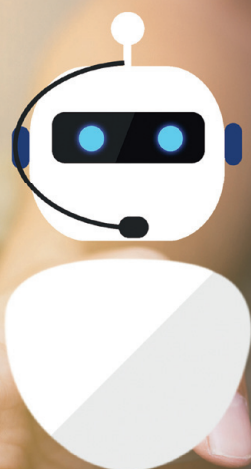
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Conversation design: Key principles behind good chatbots

Chatbots have become a common part of customer assistance. Designing conversational dialogues for chatbots is as challenging as it is rewarding, and technical communicators might just have the skills and experience required.

Text by Marianne Macgregor

Image: © B4LLS/istockphoto.com



What can i help
you with?

The speed of digital transformation and the demand for chatbots have increased greatly due to the COVID-19 pandemic and social distancing regulations, which have resulted in a growing demand for conversation designers.

This demand allows technical communicators the opportunity to move into the area of conversation design. We already have many of the skills that conversation designers require, but conversation design is not only about designing content in a conversational style. This type of human-machine interaction requires research, planning, prototyping, and testing in addition to writing the actual conversational dialogue. Understanding how a chatbot platform works and how this platform handles dialogue is also a requirement.

Good conversation designers have skills and knowledge in technology, basic psychology, and conversational writing. Many of the big players in the chatbot and digital assistant market provide design guidelines online, but so much information is available that it is easy to become overwhelmed and not know where to start. In this article, I want to introduce you to this new opportunity by providing some principles of conversation design that result in good chatbots (see Figure 1).

Laying the groundwork

Your team should include at least a chatbot owner, a developer, and a conversation designer. Together you create the project foundation.

Strategy: From business case to use case

By validating your business strategy at the start, you ensure that a chatbot is necessary and will bring value to users and your business.

- **Business case**

The first step is to make sure you have a solid business case. User research is key to your business case and you can perform a simple online survey or meet directly with potential users. You can ask users about their work tasks and how they perform them, as well as about the main challenges they face.

- **Return on investment**

Chatbots should make things easier and faster for users and bring added value to your company, for example, by reducing support costs. By analyzing the research

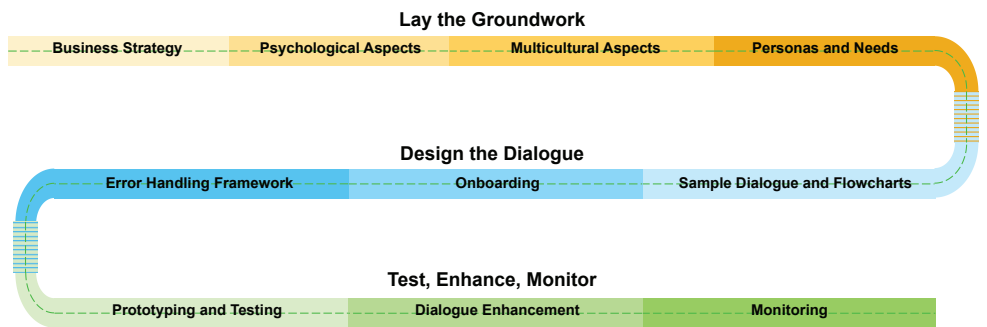


Figure 1: Some key principles of conversation design

data and determining your business goals, you define a return on investment (ROI) statement for your chatbot and compare the costs of designing and maintaining your chatbot against projected savings.

- **Scope**

Based on the user research data, you identify the most common topics which, together with your ROI statement, determine the scope of your chatbot. You also define any required back-end integration into other systems.

- **Use cases**

A chatbot use case is an action that can be handled in a conversational interaction. When designing your use cases, you filter the scope by removing anything that is complex. Each use case should be small and simple with no more than 2–3 interactions between the chatbot and the user. An example of a simple use case is “Create vacation request”. You build conversational dialogue flows along each use case.

- Maxim of quality: Say only things that are true.
- Maxim of relevance: Provide information that is relevant.
- Maxim of manner: Use the appropriate style and tone of language.

Personas: Creating characters and their needs

Good chatbots are based on well-designed conversations, so you have to know who you are designing the conversation for and what type of character your chatbot has. Also, both your user and your chatbot will have needs that must be met for the conversation to run successfully. It is advisable to work together as a team to create these personas and gather feedback from users.

- **User persona**

You may already have a user persona for your product, and you can enhance and

Psychological aspects: Ensuring acceptance and trust

Human psychology plays a large role in acceptance and trust even with machines. We all attribute human feelings, beliefs, and motivations to objects, especially those we can talk with. In the 1970s, the philosopher Herbert Paul Grice explained in his cooperative principles how humans talk with each other. He defined four maxims that can be useful when designing conversational dialogue (see Figure 2).

- Maxim of quantity: Be as informative as necessary.

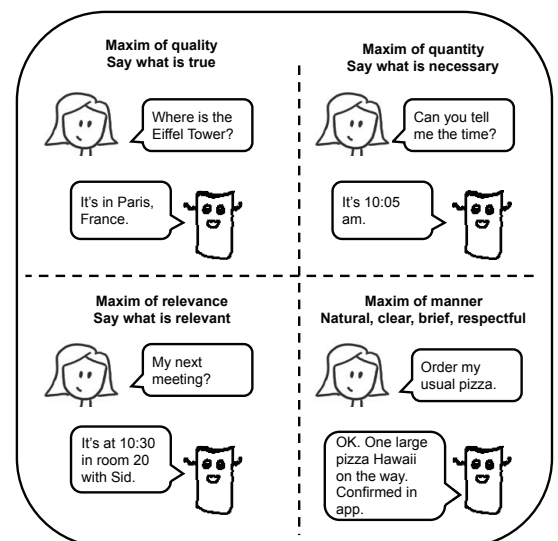


Figure 2: Examples of the four maxims

adapt this persona for the chatbot. If not, create the persona from scratch. Using the research data that you gathered when validating the business case ensures the persona is a good fit for potential users. The user persona needs to feel real, so make sure your persona has a name, personal information, and work details. In addition, use an image of a real person.

You finalize the user persona by defining its requirements. Therefore, you specify aspects such as work goals, working preferences, and information it needs to receive from the chatbot to perform the task. You also need to consider any expectations or concerns that the persona may have when using the chatbot.

• **Chatbot persona**

Your chatbot persona should be aligned with your company brand, the industry segment, and the user base. A chatbot for an insurance company will have a very different persona than one for a pizza delivery company. As with the user persona, you need to make the chatbot persona seem as real as possible, with an avatar and a personal history that covers the chatbot's experience, skills, and background. When defining the characteristics and the style of language it uses, it may help to think of the chatbot as a company employee and a peer of the users. You outline a standard vocabulary and phrases that include elements such as greetings and small talk. Moreover, you need to take into consideration the cultural aspects of your users, which can affect how you design the persona and the conversational dialogue. You proceed by specifying the needs of your chatbot. Moreover, you determine the information that the chatbot can or must provide to the user as well as any information it may need to ask to complete a task. You also define the channels on which the chatbot will be available, the languages it speaks, and any integration with back-end systems.

Designing the conversation

Now that you have completed the groundwork, you can move on to the conversation design.

Sample dialogue and mapping

An initial sample dialogue is the easiest way to get started with the conversation design. It is also a low-cost way of determining if your design works. You create a sample dialogue for one use case at a time. A good way to create a sample dialogue is through role play, with one person playing the user and the other performing the chatbot. The role players study the use case and personas and have a conversation based on the use case. The conversation should be straightforward and successful. You can record the conversation, transcribe it, and then map each piece of the dialogue to a flowchart.

Mapping the dialogue to a flowchart will give you a good overview of the conversation and make it easier to enhance, correct, and adapt the conversation. You can use online tools to create the flowchart or just sticky notes on a wall, using different colors to highlight what the user says and how the chatbot responds.

Creating the chatbot introduction

First impressions can influence all kinds of interaction, especially between humans and machines. Therefore, you need to introduce your chatbot to users with a clear and helpful greeting, and you want to provide different versions of this greeting for returning users. In addition, you set realistic expectations by listing the main capabilities of the chatbot, letting users know what your chatbot can do.

Error handling framework

Understanding how to deal with users when things go wrong ensures a higher chance of maintaining acceptance, trust, and a positive user experience. For this, you need an error handling framework. Misunderstandings will occur no matter how well you design the conversation. If the conversation goes off track, you will have to remind the user of the chatbot's capabilities by managing user expectations. This draws the user back into the conversation. You give users options that prompt them to act, and if the conversation gets stuck, the chatbot must admit it and ask the user for more clarification. You should avoid loops of "I don't understand" by providing users with alternative ways forward, such as the option to talk with a human agent or create a support request.

Prototyping and testing

You should have a pool of testers, including potential users, to test your prototypes. The testers'

feedback is then used to revise the conversational dialogue. Prototyping and testing take place every step of the way, even before you create the chatbot on the platform.

• **Low-fidelity prototypes**

You can build low-fidelity prototypes of your dialogue flowcharts, introductory texts, and error handling framework. There are several different methods that you can use for this.

- Table reads are rather like a quality review. Originating from the TV soap industry, they work well with conversational dialogue too. During a table read, the conversational dialogue is spoken by role players, with testers providing feedback that is used to revise the dialogue.
- Using chat apps, you can also test your dialogue with role players. You provide the "users" with a test case describing one simple use case. The "chatbot" should have the dialogue readily available to respond to the "user" according to what you have designed. The issue here is that the "user" can easily diverge from the expected path, so the "chatbot" has to be well prepared for the unexpected.
- Paper or digital mockups are a great tool to validate your dialogue and use cases with real users. These mockups also test user interaction with the chatbot as they can include elements such as buttons and cards, as well as the dialogue.

• **Platform prototypes**

When you start building your chatbot in the platform, focus on one use case at a time. You test, correct, and revise the use case based on tester feedback before adding the next use case. In this way, you gradually build up the complexity of your chatbot. You will find it easier to adjust and refine the dialogue in this way rather than building everything at once. And you'll achieve success much faster, ensuring a better user experience.

Enhancing dialogue

When editing conversational dialogue, you apply advanced copywriting techniques. Here you can check different elements, such as the correct use of error handling, expectation setting and management, and the natural-sounding

use of language. You also examine the style and tone of the chatbot responses against the defined persona.

Moreover, you ensure you have made use of conversational elements such as explicit confirmations, where the chatbot repeats what the user has said and requests confirmation before doing something. This is especially important in scenarios that have a high financial or emotional impact, as well as in scenarios where users have little confidence in the chatbot. This way, users still feel in control and are assured that the chatbot is doing exactly what they requested. An example of an explicit confirmation is:

User: "Pay invoice 1234."
Chatbot: "You want to pay invoice 1234 for 20,000 US dollars. Is that correct?"

Multicultural aspects

If the audience of your chatbot is multicultural, you need to adapt the conversational dialogue to fit all cultures. In doing so, you have to avoid making any assumptions about language and culture.

If you are going to provide your chatbot in different languages, you may find your best option is to create the chatbot from scratch in each language. A standard translation process won't work well for conversational dialogue, which is based on natural-sounding language and cooperative principles.

In an ideal case, you would work closely with linguists, regional stakeholders, and researchers who are experts in language nuances, cultural and regional differences, and traditions.

You also need to check every aspect of your chatbot for biases and remove or alleviate them.

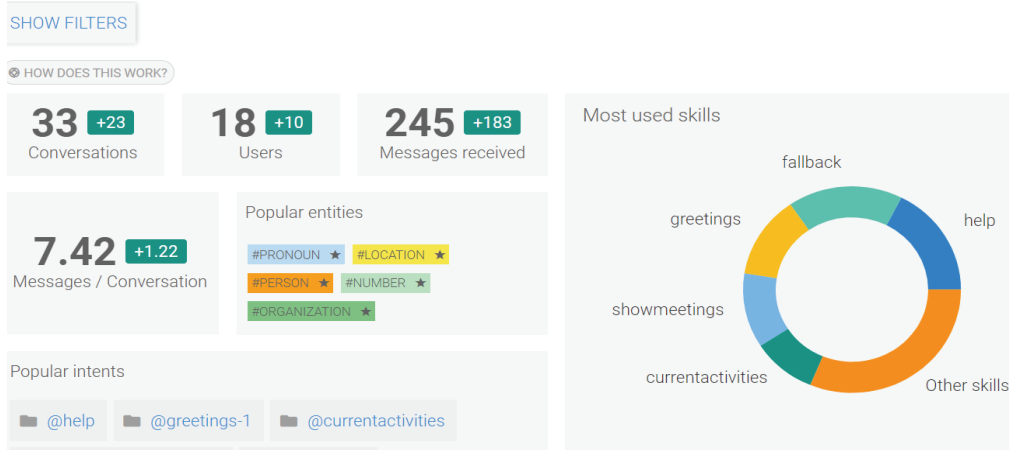


Figure 3: Example of chatbot analytics for monitoring purposes

Biases can be found in the data you are using (e.g., a narrow data set), in outdated concepts and assumptions (e.g., all pilots are male, all flight attendants are female), as well as in the inherent subconscious prejudices of humans.

Monitoring

Once your chatbot has been released, you need to monitor its usage during its entire lifetime. By analyzing conversation logs in your chatbot platform, e.g., by looking for direct or indirect feedback and common misunderstandings, you can adapt and enhance your dialogue.

Summary

Conversation design is key when building good chatbots, but it's not just about using a more human-centric language in our writing or even about designing a simple conversation. A lot goes into ensuring people keep interacting with a chatbot and enjoy the experience. The above-mentioned principles give you an idea

of what is involved in conversation design and can help you navigate this new style of communication. Designing chatbot conversational dialogue might be challenging, but it is also exciting and rewarding. And it is a field that provides us with an opportunity to grow.

ABOUT THE AUTHOR

Marianne Macgregor

has worked for SAP SE for over 20 years, and since 2016 has mainly focused on conversation design. Currently, Marianne is a project manager for an internal conversational AI project. She has also created and teaches basic and advanced training courses on conversation design.



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Further reading

- For a detailed overview of the conversation design process, see my chapter "May the bots be with you: Getting to grips with chatbot conversation design" in *Yearbook 2020* published by the European Association for Technical Communication – tekomp Europe e.V.
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Next-generation content analytics

When technical content is no longer tied to printed pages or other static formats, it sheds light on how users interact with it. Dynamic content delivery provides unprecedented insights that can benefit not only documentation teams but the entire business.

Text by Fabrice Lacroix

Pioneering computer scientist Grace Hopper once remarked that the most dangerous phrase is, “We’ve always done it this way.”

Tech doc analytics is one area where doing things the way they’ve always been done is not only common but costly. Next-generation content analytics platforms offer the sorts of advanced analytics that tech doc teams need, but also have the capacity to power transformation right across the business: from content delivery to support to product design.

Image: © GaudiLab/istockphoto.com



Waking up to weak web analytics

As long as we've had technology and sophisticated products, we've had technical documentation to support users. Whether delivered as a spiral-bound manual, a QR code linked to a PDF, an app on a smartphone, or HTML pages on a website, the core focus of technical documentation remains the same.

The analytics, though, change significantly with the way content is delivered. What is measured and what is capable of being measured is intrinsically bound to the delivery method and format of the technical document.

Take a traditional, hard-copy guidebook. Supplied with the product it supports, it is consumed entirely offline and the manufacturer and retailer have no knowledge about how much of the guidebook is read, or if it even is read. The sole analytical indicator is the 1:1 ratio of guidebooks to products, a barely useful statistic.

You might imagine that the same guidebook delivered as a PDF might offer more analytical insights. After all, counting total downloads of a PDF is trivial and, with some basic web analytics, you might also find out where those downloads are coming from. Yet download counts don't tell you much more than that someone clicked a link. There is no way to know if the PDF was read, how much of it was read, what part of the document was useful, or if it was shared with another person, a team, or an entire company. Was the answer found immediately and the file discarded? Did the document become a critical resource, a daily tool in someone's workflow? On questions like these, the analytics remain silent.

HTML and web-delivered documentation are only marginally better. Web analytics are purpose-built for reporting which pages were accessed, how users arrived on the page, and at what point they left. But how much value exists in such web analytics for online technical documentation? It all depends on how the guidebook is divided into different HTML pages.

Web analytics platforms like Google Analytics have been built for marketing content: short and incredibly specific webpages. As a result, an entire guidebook rendered as a single page won't tell you what on the page was useful. Of course, you might make the content more granular to be more precise about what is accessed and read, but the UX suffers: clicking deeper and deeper into the web version of a 500-page guidebook

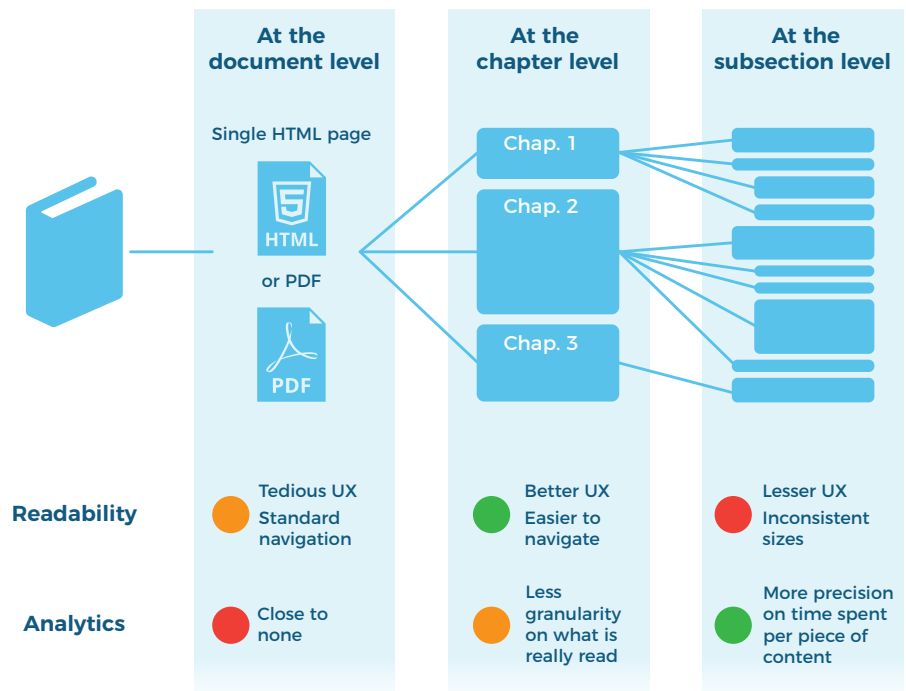


Figure 1: How content static publishing creates an unsolvable trade-off between UX readability and analytics validity

rendered across 500 different HTML pages is a recipe for user frustration. Sacrificing readability to get more reliable metrics is a losing proposition. As we now understand, the move from paper manuals to PDFs to distributing information on web pages offers rather limited analytics gains, as we are still using inadequate tools. Today, with dynamic delivery platforms, the publishing of technical documentation has evolved yet again, and it has created a new opportunity to revisit how analytics for tech doc usage should be done. All too often teams simply embrace web analytics software ill-suited to delivering strong, unbiased analytics because "we've always done it this way." It's time to leave this thinking behind.

Next-generation content analytics

The dynamic delivery of technical content represents an inflection point for tech doc analytics. Dynamic delivery means that documents are no longer tied to a printed page, an unchanging PDF, a web page, or any other pre-generated and static format. Instead, technical content is assembled according to the context and the profile of

the user and adapted to their device. Because the application controls the rendering, documents are created on the fly by assembling fragments, and the result is a virtual web page that hides the underlying structure of content. Hence, it can be infinitely granular without impacting the user experience or overwhelming the user as thousands or tens of thousands of static web pages can.

This new mode of content delivery is an opportunity for a new approach to analytics. New measures and new ways to measure emerge as content rendering and analytics work together. For most businesses, this is the first time that they'll gain access to analytics that don't just state that a product was sold, a PDF was downloaded, or a web page was accessed, but explain how the content was interacted with.

Next-generation content analytics can track how long a section of text is displayed on a screen and identify what part of a technical document is most important to the user. This is now possible because the smart layer between the user and the content – the app UI that displays the content – tracks every user interaction: where users click in a document, what they open, how they navigate through a topic or guide, where they bookmark content for later review, and when

that bookmarked content is revisited. When users search technical documentation, this smart layer also tracks what they search for and which search result they choose from a results page.

Purpose-built content analytics generate the sorts of insights that tech doc teams need so that they can invest time and effort in the documentation that is going to have the greatest impact on users. Algorithms unpack patterns and trends in the data that help identify links between queries and topics.

These insights are easy to ingest too, no matter how granular the content might be. At Fluid Topics, some of our customers have more than 500,000 snippets, topics, and technical documents. Rendering each as a static web page and using a traditional web analytics platform to gather pageview metrics would be an exercise in futility as a tech doc team attempts to parse tables of half a million lines. With content analytics, on the other hand, these 500,000 elements are contextualized and synthesized, leveraging metadata and content structure, and the gathered insights are presented on simple-to-understand dashboards. The advantages of next-generation analytics over the “business as usual” web analytics are clear, at least for the tech doc teams in a business. But there is a tremendous value for other parts of the company that is ready to be exploited too: The same analytics platform that generates insights

for tech doc teams can help in driving the transformation of the entire company.

From tracking stats to transforming business

There are dozens of ways in which next-generation content analytics can add value to a business. Four, though, stand out as particularly representative for their transformational impact.

Personalization

No other trend in the creation and consumption of content has revolutionized the field more than personalization. The personalization of search results, of store suggestions, of news content on a media site, of a video on YouTube – all of these

help provide a “stickier” content environment, a better user experience, and the capacity for serving users the content and documentation that they need – perhaps even before they even know they need it.

Next-gen content analytics have the capacity to detect the patterns in the consumption of technical documentation and automatically create categories of users. These user categories can then be served content, search results, and reading suggestions that are more relevant to them. This in turn improves their engagement with a company as users are offered a truly personal interaction and service experience.

Better products

Product managers can benefit from the insights of the next-generation analytics, too. Traditional

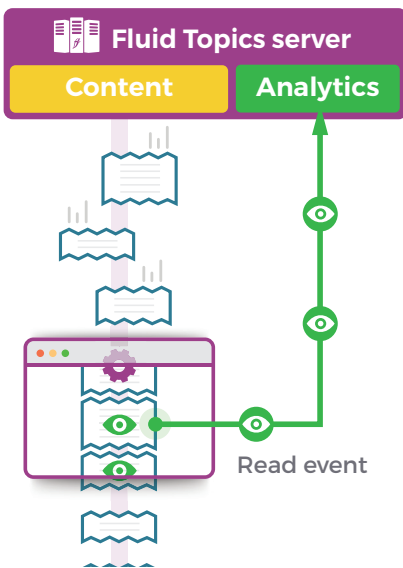


Figure 2: With dynamic delivery, the application that controls the display of content is also in charge of tracking user interactions and real content reading

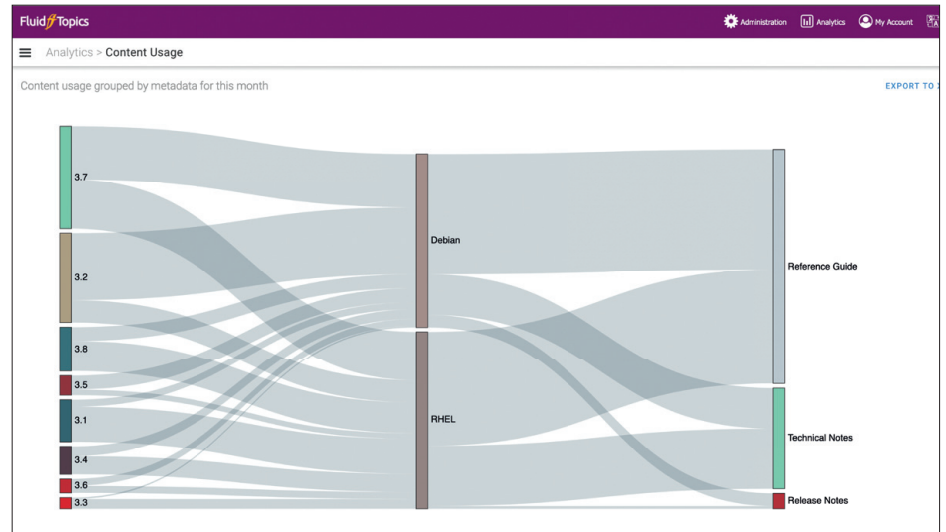
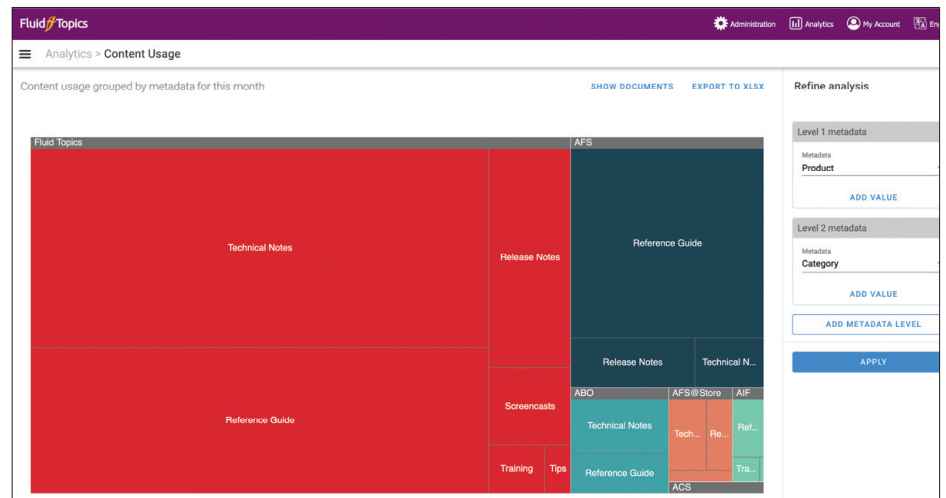


Figure 3: Purpose-built analytics leverage content organization to illustrate usage

standard analytics will tell a product manager that a particular user manual was downloaded 225 times and a troubleshooting guide 85 times. These metrics at the document level tell the product manager little about the concerns of the readers: are they trying to learn how to use a feature? Do they want to know how to fix a problem? Without opening and reading the content itself, it is impossible to know.

Next-gen analytics, however, can add meaning to these metrics and report what it was in the user manual and troubleshooting guide that caught the reader's attention. What really drove engagement with both pieces of content might be something the product manager had not considered at all. By uncovering the interactions that users had with the technical content at a fine-grained level, identifying the search queries, and extracting the subjects talked about in these sections, the product manager is far better equipped to plan the development of the product in line with customer expectations.

Informed customer support

When it comes to customer support, next-gen analytics can empower support teams as never before. No longer will a support agent need to inquire if a user has read the manual. Instead, he'll have access at a glance to everything that a user has searched and read in granular detail. What's more, the support agent will have this knowledge in real time, so if a user is directed to read part of a manual and does, he immediately knows. This means faster and smoother interactions for the support agent and more effective ones too.

On the other side of that support relationship, the benefits that flow from the analytics improve the user's experience as well. A user who has already taken pains to solve an issue himself won't be di-

rected to read content or review documentation that he has already seen. Instead, the support experience will be fluid, personalized, and superior to anything that is informed by a page view coupled. Empowered support agents deliver better customer support, and customers, too, recognize the difference.

Predictive customer support

But customer support doesn't need to stop with empowerment. Fully featured next-gen analytics can drive predictive customer support, with positive flow-on impacts for support agents and users alike. Using cutting-edge machine learning trained on and consuming real-time data, it becomes possible to identify trends and correlations in support experiences. For example, analysis of content consumption around an issue might suggest that – after a 20-minute period of reading technical documents – 85 percent of queries around a particular search term result in a call to a support line. Knowing this and coupling this insight with sales volume data and product specifications can drive proactive interactions and help predict appropriate staffing levels for support teams. It will also allow support teams to receive a real-time warning when search term volume for a particularly problematic phrase spikes. Teams are thus better prepared for the volume and the topics of the calls.

Conclusion

It's time to reject any notion of "we've always done it this way" and embrace innovation in analytics.



Figure 5: Proactive interactions with users must be driven by real-time monitoring

Next-generation content analytics focus on user behavior to capture interactions with content at the finest level and derive truly valuable metrics. These metrics offer a real opportunity for businesses to transform their tech documentation into true business assets, and to transform other parts of their company too, based on the data, insights, and analysis they empower. They can lift the value of and generate a return on the investment in technical documentation that every company makes. Just as dynamic delivery of content sets a new standard for publication and delivery, it's time to require tech content and analytics to deliver more value and to choose solutions that support this evolution.

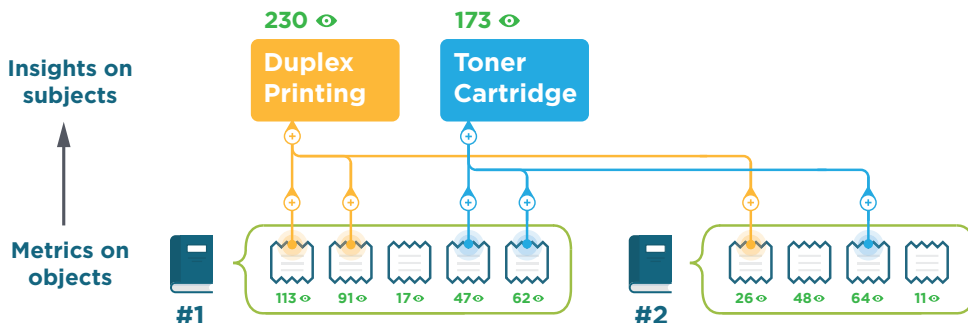


Figure 4: From objects to subjects: Coupling analytics and text-mining unveils what people read ABOUT, and creates a higher level of insights for product management

ABOUT THE AUTHOR

Fabrice Lacroix is a serial entrepreneur and a technology pioneer. He has been working for 25 years on the development of innovative solutions around search technology, content enrichment and AI. He is the founder of Fluid Topics, the leading Content Delivery Platform that reinvents how users search, read and interact with technical documentation.

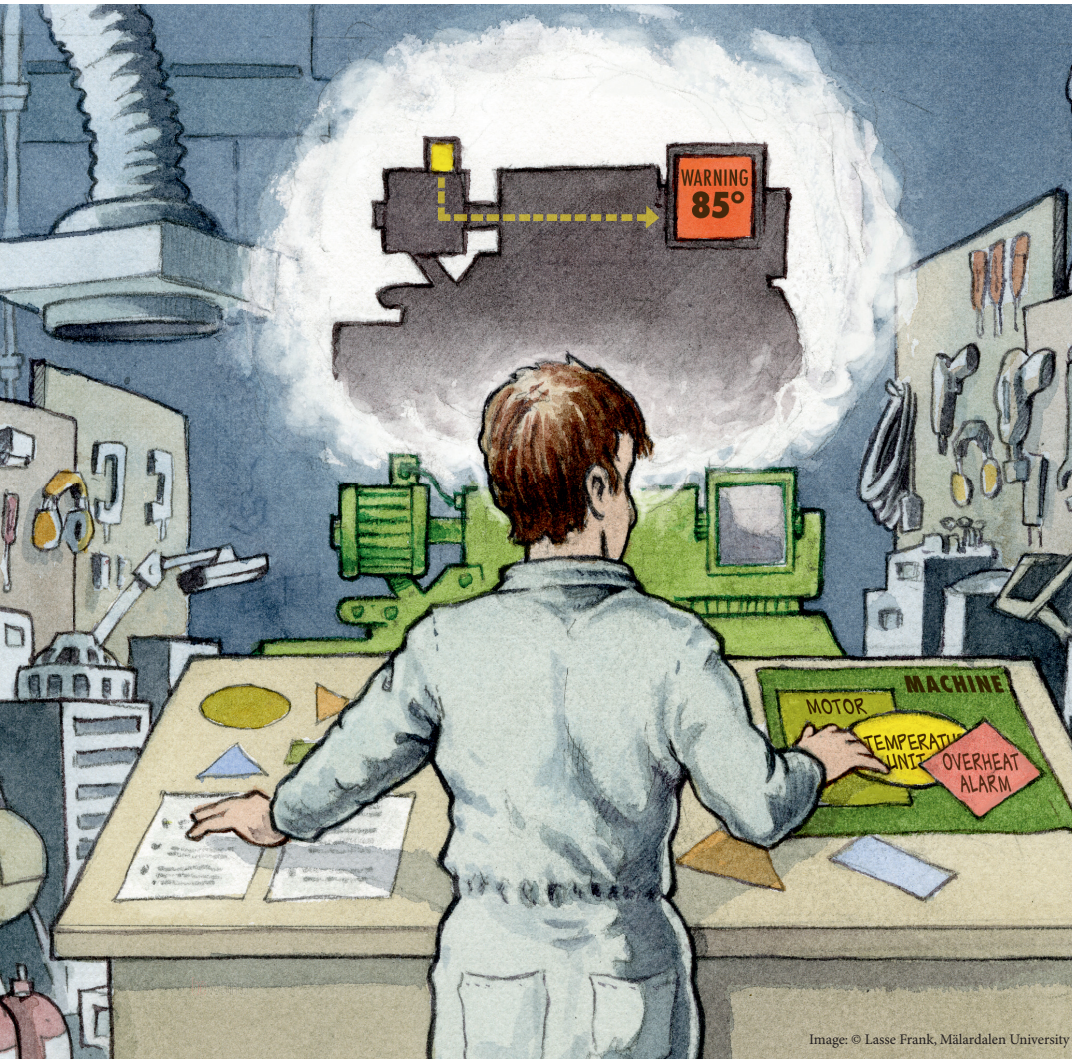


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Do we need to write conceptual information in manuals?

Technical communicators spend time on writing conceptual information, such as insights into how a product works. But is this relevant for the user?

Text by Jonatan Lundin



Most technical communication – in the form of PDF manuals, chatbots or microcontent, etc. – contains instructions guiding the user step by step. For industrial software and hardware, it often also contains conceptual information detailing, for example, which parts a system consists of and how it works. But while task-oriented information is a must in technical communication, what purpose does conceptual information serve for the user?

Having worked as a technical communicator for over 25 years, I find that there is uncertainty about the purpose of conceptual information. Technical communicators spend valuable time writing and translating it – raising the question of whether we could just skip it. After all, isn't that the principle of minimalism? This article discusses whether you should write conceptual information or not. I will first explain what I mean by conceptual information, then briefly talk about a design approach that urges us to skip conceptual information. Finally, I will touch upon research on conceptual information and draw my conclusions. Based on research in technical communication, this article makes the case that conceptual information has a purpose. You will learn why, how, and when it can support users to accomplish their goals.

What exactly is conceptual information?

Conceptual information describes the software or hardware. It can be structural – meaning that it describes what parts the product consists of and how these parts relate and fit together. It can also be functional, describing how the product works – for example, how a signal is processed in various hardware parts.

Conceptual information is sometimes referred to as declarative, system, expository or descriptive information – or simply as principles. It is sometimes embedded in the instructions or makes up a chapter of its own in the manual.

My experience is that technical communicators seldom write conceptual information from scratch. We get design and functional specifications containing conceptual information from other departments such as R&D. And when talking to software and hardware engineers, they might insist that the manual should contain the conceptual information. Sometimes, we simply include it in our manuals because we do not want to argue with the R&D department.

But we rarely get a chance to ask users whether they need conceptual information (perhaps they don't know themselves). So many technical communicators spend valuable time on writing and translating conceptual information without a clear consensus on who is going to read it, when, and for what purpose. But it does serve a purpose, as we shall see later in this article.

Why some say conceptual information should be slashed

Before we dig into the purpose of conceptual information, let's take a look at the design approach that questions its importance. Previous research by John Carroll [1] and his colleagues within the technical communication and human-computer interaction field has shown that novice users trying to learn new software learn by doing, thinking, and reasoning. When learning, users look for a meaningful context and meaningful tasks to work on. They relate new experiences to earlier experiences and prior knowledge. Furthermore, they learn from their mistakes.

According to this research, novice users are rather impatient and not willing to invest time in reading about the product before using it. This is a para-

dox of the active user, as many difficulties could probably be avoided if the user would invest in learning by reading before using the product. But instead, users dive into the unknown and only turn to the manual when they err. And users do make errors. In fact, they spend 25 to 50 percent of their time correcting errors. Such insight has led technical communicators to move from an expository information design approach, which supports reading-to-learn, to an instructional design approach that supports reading-to-do. This means that technical information becomes an aid that supports problem-solving in a work task.

John Carroll and his colleagues suggest that information design should guide and encourage active users to discover and explore the product on their own. It is assumed that when users are supported in performing real tasks instead of reading, they can then shape a relevant mental model assisting them in the use of the product. It all boils down to the objective that technical communication should enforce minimal obstruction on the users' learning-by-doing path – hence the name minimalism.

Carroll's research draws upon Jean Piaget's cognitive theory of assimilation, disequilibrium, and accommodation, which assumes that individuals shape their knowledge based on exploration. This theoretical viewpoint asserts that the world is structured and organized in a way that enables an individual to make sense of it by discovering and exploring it on their own. Nevertheless, to support individuals' learning traits, four major principles (each including several heuristics) are suggested for the design of minimalist instructions:

1. Choose an action-oriented approach
2. Anchor the tool in the task domain
3. Support error recognition and recovery
4. Support reading-to-do, study, and locating information

Design principles 1 and 2 emphasize supporting the user in starting to do real tasks, rather than beginning by reading conceptual information. Design principle 3 aims to prevent users from making errors. If they do make an error, the design should support them in detecting (recognizing and locating) it, diagnosing it (understanding the reason), and correcting it. Errors can be prevented by either placing hints in the instructions or hiding parts of a software application. The heuristics for design principle 4 recommend foregoing lengthy introductions describing how a product

works at the beginning of a manual, as this only becomes an obstacle hindering the user from getting started on real tasks.

Technical communicators often interpret "minimalism" as the goal of minimizing the number of words, to write concise language that reduces the number of pages. From my point of view, this is a misconception. Minimalism has little to do with the number of pages. If your starting point is a manual containing only a few pages, adopting minimalism might mean that you increase the number of pages. Nevertheless, minimalism emphasizes that conceptual information has no purpose in technical communication, at least not if it keeps the user from getting into real tasks.

The findings and suggestions of John Carroll and his colleagues contradict, to some extent, the research within the technical communication and psycholinguistics field on the effect of conceptual information on a user's ability to perform work tasks. There is some evidence that those users who read conceptual information and instructions show better effectiveness than users who only read instructions. [2] How can this be?

What is the purpose of conceptual information?

To understand why and when conceptual information serves a purpose, we need to understand what happens when a user interacts with a user interface and reads a manual. In other words, how does reading technical communication enable an individual to perform a task?

There is a consensus among technical communication and human-computer interaction researchers: Users interacting with software, devices or machines create a mental model that assists them in using it. According to this research, a mental model is, for the most part, depicted as a cognitive phenomenon the user creates in working memory as a result of seeing and interacting with a product. [3] A mental model is a mental representation that contains aspects of the device or machine that the user cannot see from looking at the user interface.

A mental model is often portrayed as a dynamic, unstable, and incomplete representation that changes as the user interacts with the product. However, there are different views of what a mental model contains. Some scholars consider a mental model to be a representation of the structure and function of a product. [4] Others view a

mental model as something that also contains a representation of how to use the product. [5] Some scholars make the theoretical assumption that the user infers what steps to perform and in which order by creating a procedural mental model in their working memory. [6] Such a mental model is formed based on what users know and recall as they see and interact with the user interface. If this model is insufficient, reading an instruction in a manual will help to create a more complete procedural mental model. This is because users will also create a mental model from reading, just as they create a model from interacting with the product. If the instruction does not cover detailed steps, the user must infer the missing steps from a system mental model on how the product works.

If this system mental model is, in turn, insufficient, reading conceptual information will help the user. The user can thus create a more comprehensive mental model of, for example, how the system works and why things operate the way they do, as compared to only reading instructions. Thus, the purpose of conceptual information is that the user can draw conclusions and infer actions that are not stated in the actual step-by-step instruction.

So, should I write conceptual information?

My experience and research point to the conclusion that there are design challenges related to

providing conceptual information. Users must be motivated to search and read it, which may seldom be the case. If the user finds the relevant conceptual information, they must understand it. Understanding means being able to create a mental model from reading, which reading comprehension research in the psycholinguistic field has shown is a tricky business. [7] To comprehend and recall what is read, readers need to have prior knowledge in the field they are reading about. If readers do not have enough prior knowledge about the product and task, they will face difficulties in creating a mental model from reading conceptual information.

Furthermore, the user may have prior knowledge in the field of the product and its tasks, but it may be inaccurate (thus, erroneous). Research has shown that if there is a contradiction between what readers know and believe in and the text, readers will resist engaging in conceptual change and instead stick with what they know and deem the text inaccurate. [8] Readers will either reject, ignore, or reinterpret what they read to fit it into the mental model they have already created.

Nevertheless, I think we need to write conceptual information but find other ways for the user to obtain it than searching and reading. In my research, I use the theory on learning and development of cognitive functions proposed by Lev Vygotsky. Vygotsky's theory is often depicted as the opposite of the cognitive knowledge theory of Piaget (which minimalism is largely built upon). So, Vygotsky's theory can give us new viewpoints that lend vitality to the technical communication field.

My conclusion is that a central purpose of conceptual information is to enable learning on what results can be achieved with a product. A result is something tangible and meaningful for the user. If users have relevant knowledge on what can be done (= results), they are in a better position to shape goals and plan how to reach a goal. This is because a goal and the intermediate steps to reach it can be viewed as the results a product is designed to deliver.

I propose a design method on how the user can learn about results. My method involves users using not only their eyes and ears but also their hands. As a complement to designing text and images, the technical communicator designs tangible (or digital) tokens, symbols that signify components of and results in a product. As users place the symbols into a model – like placing puzzle pieces – they shape a mental model while moving their arms and hands.

Details are available in my doctoral thesis:
<http://mdh.diva-portal.org/smash/get/diva2:1379527/FULLTEXT02.pdf>

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Jonatan Lundin works as an information architect at Excosoft and has more than 25 years of experience in the technical communication industry. He received his PhD from Mälardalen University in Sweden, where he is studying users' seeking and reading behaviors and how to design technical communication.



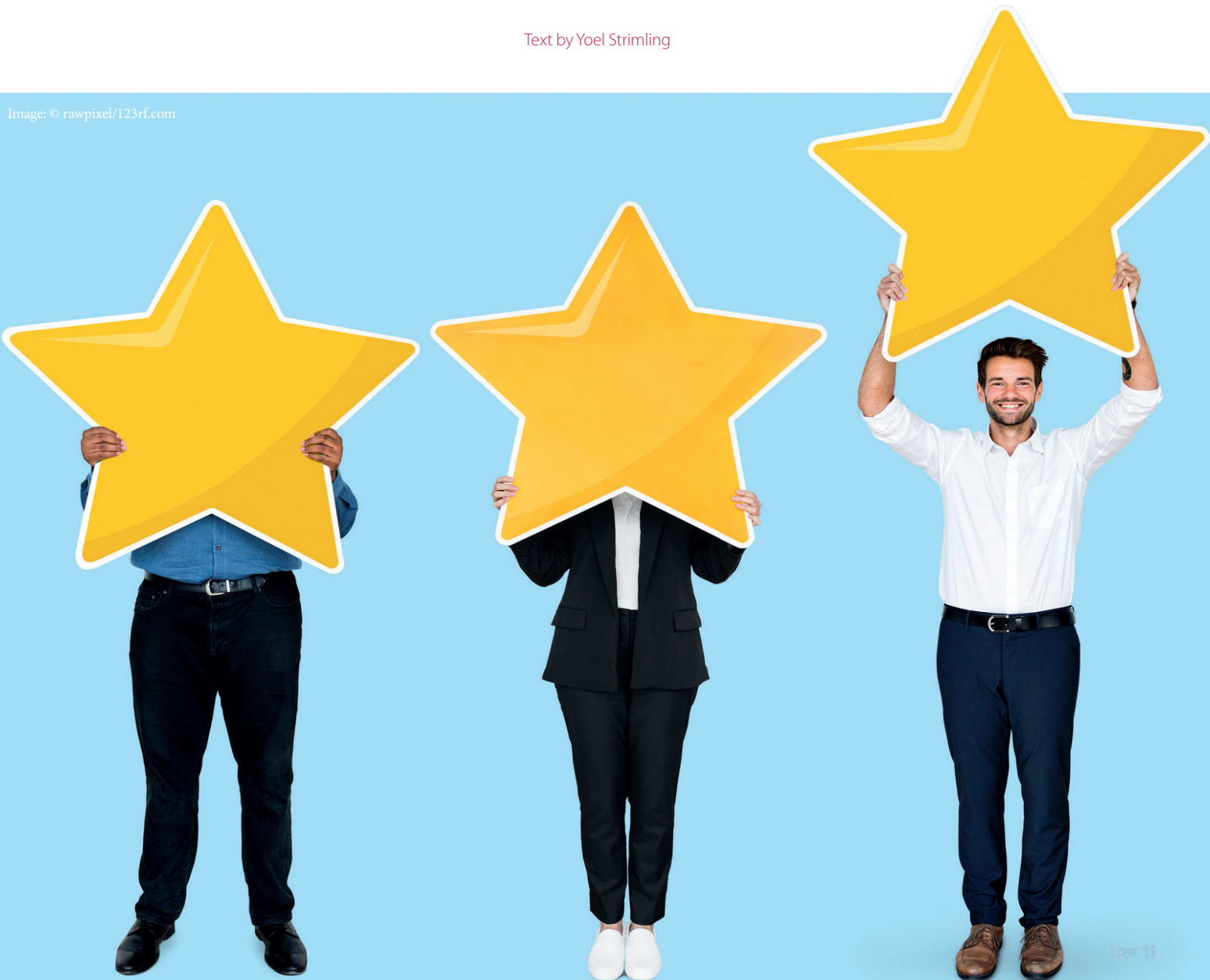
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What documentation quality means to readers

To improve the quality of the information we provide, we need to understand what information quality means to our readers. An actionable documentation feedback model shows meaningful results.

Text by Yoel Strimling

Image: © rawpixel/123rf.com



The best way to align ourselves with our readers' needs is to get direct feedback from them. But we also need to ensure that the feedback we get is clear and focused, and not vague and hard to implement. To collect feedback but be unable to act upon it because it is not clear to us what the problem is and what we need to do about it, is perhaps worse than not collecting any feedback at all.

To improve our documentation quality (DQ), the feedback we collect must be both **meaningful** and **actionable**:

- Meaningful feedback requires readers to focus only on the important issues.
- Actionable feedback requires us to be able to take what our readers tell us and do something about it.

This article proposes a preliminary, focused, clearly defined, and reader-oriented model for collecting meaningful and actionable DQ feedback, based on well-known, empirically tested information quality categories and dimensions.

Defining documentation quality

Before we can collect meaningful and actionable feedback from our readers about the quality of our documentation, we first need to understand what DQ means to readers.

To properly define DQ, we must meet the following criteria:

- **The definition must be from the reader's point of view:** Because readers alone determine if the document we give them is high-quality or not, any definition of DQ must come from the readers' perspective. We can come up with any number of quality attributes that we think are important, but at the end of the day, what we think is not as important as what our readers think.
- **The definition must be clear and unequivocal:** Both readers and writers have to "be on the same page" when it comes to what makes a document high-quality. Misunderstandings of what readers actually want from the documentation are a recipe for unhappy readers.
- **The definition must cover all possible aspects of "quality":** Quality is a multi-dimensional concept, with both objective ("meets requirements") and subjective

("meets expectations") dimensions, and we must be sure that any attempt to define it is as comprehensive as possible. A definition that emphasizes one dimension over another, or leaves one out altogether, cannot be considered a usable definition.

- **The definition must have solid empirical backing:** To be considered a valid definition of DQ, serious research must be done to give it the proper theoretical underpinnings. Years of experience or anecdotal evidence can act as a starting point, but if we are serious about our professionalism and our documentation, we need more.

Building a comprehensive definition of DQ

To meet all of these criteria, I turned to a fascinating study done in 1996 by Dr. Richard Wang (co-director of the MIT Total Data Quality Management Program) and Dr. Diane Strong (director of the Management Information Systems Program at the Worcester Polytechnic Institute). [1]

They developed a comprehensive, hierarchical framework of information quality attributes that were important to information consumers. Their

underlying assumption was that to improve information quality, they needed to understand what it meant to information consumers – information quality cannot be approached intuitively or theoretically because these do not truly capture the voice of the information consumer.

Their framework was made up of 15 quality dimensions, grouped into four quality categories – **Intrinsic, Representational, Contextual,** and **Accessibility**. Subsequent research on this framework has found that it works very well in identifying and solving information quality issues, and that its underlying methodology (information categories and dimensions) are robust and applicable to real-life situations.

Applying Wang & Strong's information quality categories and dimensions to document quality, we get the following definitions:

- **Intrinsic DQ (IDQ):** The information in the documentation must have quality in its own right. This category is made up of the following dimensions:
 - **Accurate:** The information in the documentation is correct, reliable, and certified free of error.
 - **Believable:** The information in the documentation is true, real, and credible.
 - **Objective:** The information in the documentation is unbiased (unprejudiced) and impartial.

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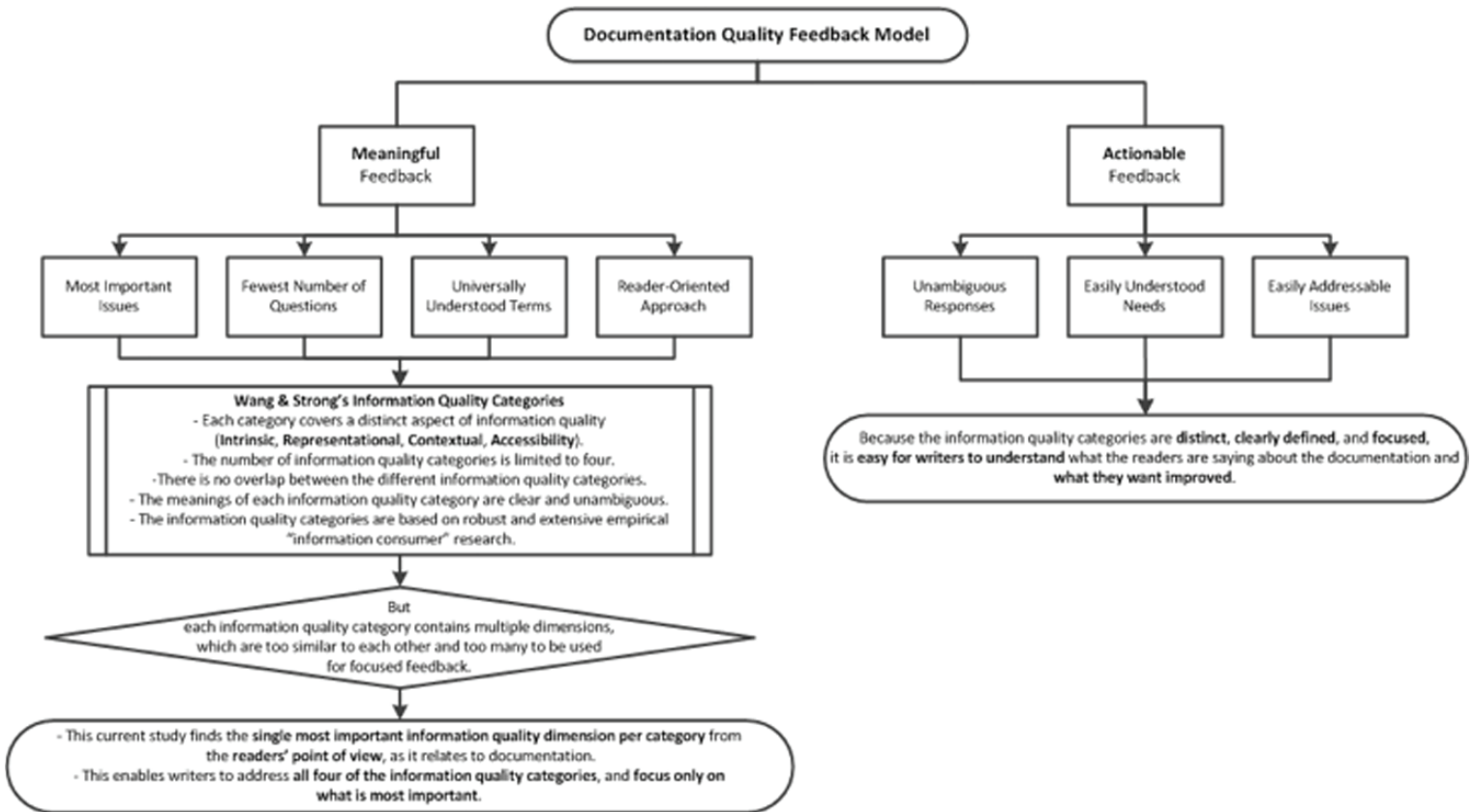


Figure 1: DQ feedback model

- **Reputable:** The information in the documentation is trusted or highly regarded in terms of its source or content.
- **Representational DQ (RDQ):** The information in the documentation must be well represented. This category is made up of the following dimensions:
 - **Concise:** The information in the documentation is compactly represented without being overwhelming (that is, it is brief in presentation, yet complete and to the point).
 - **Consistent:** The information in the documentation is always presented in the same format and is compatible with previous data.
 - **Easy to understand:** The information in the documentation is clear, without ambiguity, and easily comprehended.
 - **Interpretable:** The information in the documentation is in an appropriate language and units, and the definitions are clear.
- **Contextual DQ (CDQ):** The information in the documentation must be considered

- within the context of the task at hand. This category is made up of the following dimensions:
- **The appropriate amount:** The quantity or volume of the available information in the documentation is appropriate.
 - **Complete:** The information in the documentation is of sufficient breadth, depth, and scope for the task at hand.
 - **Relevant:** The information in the documentation is applicable and helpful for the task at hand.
 - **Timely:** The age of the information in the documentation is appropriate for the task at hand.
 - **Valuable:** The information in the documentation is beneficial and provides advantages from its use.
 - **Accessibility DQ (ADQ):** The information in the documentation must be easy to retrieve. This category is made up of the following dimensions:
 - **Accessible:** The information in the documentation is available or easily and quickly retrievable.

- **Secure:** Access to the information in the documentation can be restricted, and hence, kept secure.

Based on Wang and Strong's IQ framework, I set out to create a model for collecting meaningful and actionable feedback from readers, based on how they define DQ. To be credible, this model must:

- Focus only on the most important issues
- Contain the fewest possible number of questions
- Use universally understood terminology
- Approach the issues from the readers' point of view
- Collect unambiguous responses from readers
- Enable writers to easily understand and address readers' issues

Wang and Strong's IQ framework enables us to meet all of these criteria:

- There are only four IQ categories:
 - Intrinsic
 - Contextual
 - Representational
 - Accessibility

- Each category covers a distinct measurement of information quality with no overlap between them.
- The categories are based on robust and extensive user research, and their meanings and dimensions are succinct and clearly understood.

Unfortunately, there are a few drawbacks with directly using Wang and Strong's information quality framework for collecting DQ feedback:

- The categories do not lend themselves easily to the creation of feedback questions – for example, we cannot ask readers, "How was the intrinsic quality of the documentation?"
- The gradations between each category's dimensions are too fine to be used for focused feedback.
- There are too many dimensions for practical use.

Given these issues, I focused on limiting the number of information quality dimensions I could use to define DQ. My approach was to find the single most important information quality dimension for each of the four categories (as readers rated them), which would then be used to represent the entire category. These four DQ dimensions (one per category) would then serve as the basis for a DQ feedback model. A schematic diagram of the proposed DQ feedback model is shown in Figure 1.

Methods

A questionnaire was developed asking readers to rate Wang and Strong's information quality dimensions by their perceived importance on a nine-point Likert-type scale, (1 = "extremely important" to 9 = "not important at all"). The questionnaire was sent to customer service personnel in various companies, who were asked to send it

on to their readers. This was done to ensure that a broad, worldwide range of readers from different fields answered the questionnaires, and that the people answering the questions were the people who actually read and used the documentation. The dimensions were sorted by information quality category, and the mean weight of each of them was calculated – the lower the weight, the more important the dimension. For each information quality category, the dimension with the lowest rating was considered to be the most important and represented the entire category.

Results

A total of 81 readers responded to the questionnaire, but only 80 of them rated all of the IQ dimensions. The following figures show the ratings for each of the DQ categories (these are weighted averages; the lower the number, the more important the dimension):

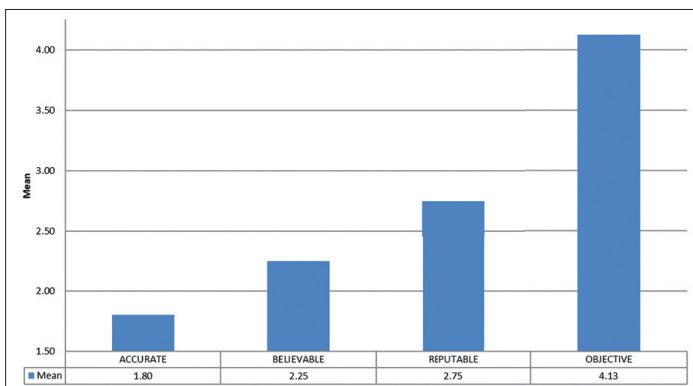


Figure 2: IDQ ratings

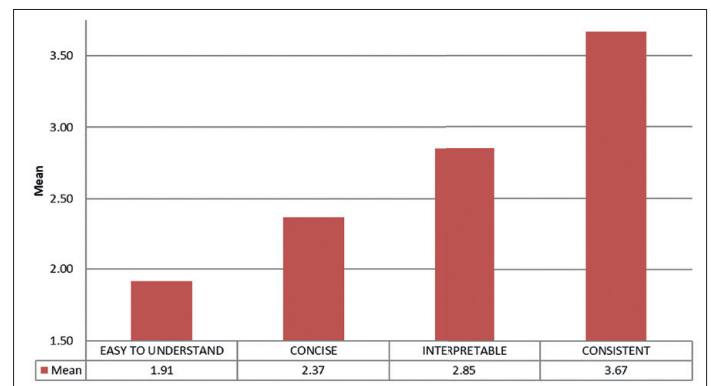


Figure 4: RDQ ratings

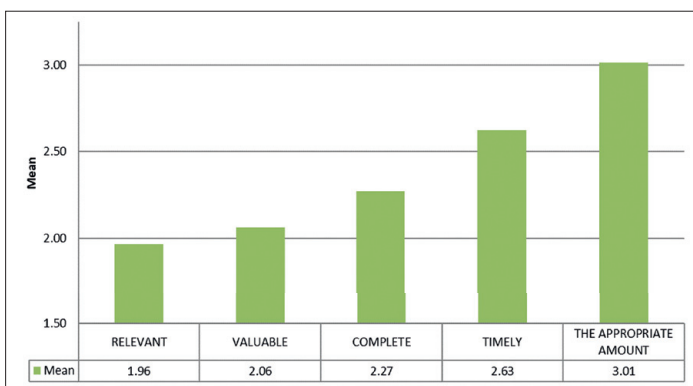


Figure 3: CDQ ratings

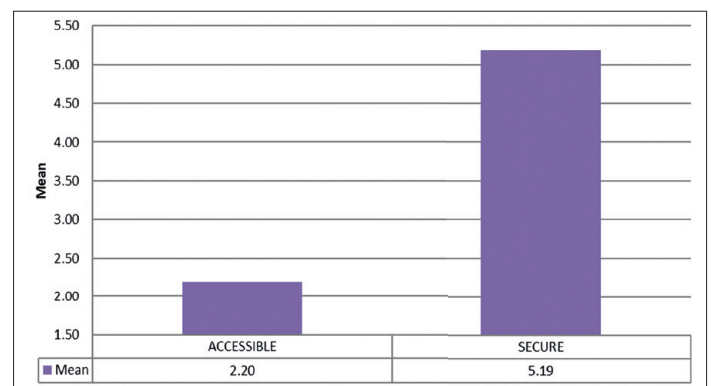


Figure 5: ADQ ratings

Analysis

The goal of this study was to create a model for collecting meaningful and actionable DQ feedback based on Wang and Strong's information quality categories and dimensions, using readers' definitions of DQ.

The results of the readers' ratings show that readers expect the documentation they get to be accurate, relevant, easy to understand, and accessible (AREA). Although this might seem self-evident, it provides a strong empirical underpinning for the claim that DQ can be defined using a small yet comprehensive set of clear and unambiguous IQ dimensions.

Practical applications

This study takes Wang and Strong's information quality categories and dimensions and applies them to DQ. By asking readers to rate the different dimensions that make up each category, I was able to find the single most important IQ dimension per category and create a reader-oriented DQ definition:

- Intrinsic = Accurate
- Contextual = Relevant
- Representational = Easy to Understand
- Accessibility = Accessible

Because these IQ categories are distinct, clearly defined, and focused, we can use the representative DQ dimensions to easily understand what our readers are telling us about the documentation (meaningful feedback) and what they want improved (actionable feedback).

The proposed DQ feedback model asks readers only the following questions:

1. Could you find the information you needed in the document?
2. Was the information in the document accurate?
3. Was the information in the document relevant?
4. Was the information in the document easy to understand?

These four questions cover all aspects of DQ and can be applied to all methods of collecting feedback. For example, technical communicators can sit in on customer product training sessions and

ask the participants to note any problems they come across in the documentation. Working together with trainers, technical communicators can collect a great deal of meaningful and actionable feedback from real users by asking them to focus only on the four AREA DQ dimensions when they work with the documentation.

Providing reliable methods and metrics for measuring DQ

The AREA DQ dimensions that make up the reader-oriented definition of DQ at the heart of this proposed feedback model can also be used to classify and sort existing internal or external feedback. This can then be presented to management as clear and reliable metrics about the documentation that will help determine where more emphasis might need to be invested. For example, if the feedback received indicates that a majority of the issues are about the accuracy and relevance of the documentation, then management can make a clear decision about who in the organization is responsible for addressing these issues and can later compare before-and-after feedback to see if the percentage of these complaints has decreased.

Similarly, technical communicators (who, by and large, are responsible mainly for the easy-to-understand dimension) can show their managers how good writing can lower complaints about this issue.

Conclusion

This article presents only a preliminary study intended to create a framework for a DQ feedback model based on empirically tested and distinct information quality categories and dimensions, and using a reader-oriented definition of DQ. Deeper statistical analyses were done on the results to validate their reliability and robustness; this is outside the scope of this article (for the full study and further applications of the model, see Strimling [2]). Nevertheless, it is clear that this empirically based model can enable technical communicators to collect meaningful and actionable DQ feedback; anecdotally, technical

communicators who have used this model in the field have reported successes; I hope that you will achieve this as well.

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Let's talk terminology!

If you are working in the field of technical communication, chances are you are using terminology on a daily basis, though you might not always be aware of it. So, what exactly is terminology?

Text by Stine Jensen



Let's start with a brief definition: Terminology is

the vocabulary (terms) of the professional language within a given field

Like general language, terminology develops in line with new inventions, technologies, and methods, and thus reflects the reality of its users – in this case, their professional reality. You might think that terminology is standardized. After all, this is the format in which it is often found, e.g., on Google, in professional dictionaries, in word lists or glossaries published by authorities, in publicly accessible terminological databases such as the ones published by the eurotermbank [1], etc. But terminology per se is not standardized and consolidated. There is as much variety in terminology as there is in professional language.

What you see on Google is the finished terminology product. What you don't get any insight into are the steps that led to the product: the terminology work or research. Terminology work is the research performed to find different terms with the same meaning or for the same concept within a given field. This research is often carried out by terminologists who might also be specialized in terminology management, theory, etc. They are not necessarily subject matter experts or users of the terminology that they are collecting. This is one of the reasons why the collaborative aspect of terminology work is so important when involving subject matter experts.

Terminology work forms the basis of a terminology product by documenting the result of the terminology research in whatever format, to a smaller or larger extent. In terminological databases, the term variety is usually listed with details such as sources, dates, definitions, context examples, and preferred use. A case in point is IATE. [2]

Sometimes you encounter the preferred use as such signed by the enterprise that created it, for example with the wordlists of the Danish Defense. [3]

Terms can be completely different from the words used in general language or identical to them but different in meaning. For example, in the word list of the Danish Defense, you will find the term "perimeter defense".

According to the United States Department of Defense, "perimeter defense" is

"a defense without an exposed flank, consisting of forces deployed along the perimeter of the defended area. (US DoD)"

Perimeter Defense (US DoD), n.d.

Other examples are "arthritis", which according to Collins Dictionary is

"an inflammation of a joint or joints characterized by pain and stiffness of the affected parts, caused by gout, rheumatic fever, etc."

Arthritis Definition and Meaning | Collins English Dictionary, n.d.

and "COVID-19", which according to the WHO is

"an infectious disease caused by a newly discovered coronavirus."

Coronavirus WHO, n.d.

"Word" on the other hand is an example of a word with different meanings.

According to the Cambridge English Dictionary, a "word" is

"a single unit of language that has meaning and can be spoken or written"

WORD | Meaning in the Cambridge English Dictionary, n.d.

This is the meaning for "word" in general language. But "word" is also a Microsoft computer program, which I have been using to write this article. To be strict, the correct name is "Microsoft Word", but we call it "Word", and so does Microsoft, even though it is capitalized. [4] Another example could be "activation". According to Cambridge Dictionary, "activation" is

"the act of making something start or making it start working".

ACTIVATION | Meaning in the Cambridge English Dictionary, n.d.

However, in an employment policy environment "activation", according to IATE, means

"a set of measures to encourage jobseekers to become more active in their efforts to find work and/or improve their employability, which aim to apply the principle of mutual obligations whereby benefit recipients are required to accept job or training offers as pre-conditions for

obtaining benefits, while receiving an adequate level of training, job-search assistance and counselling."

ACTIVATION IATE - Entry ID 902534, n.d.T

Terminology is not limited to the professionals within a given field but includes anyone who understands the respective terminology, including third parties, business partners, technical writers, translators, etc. A translator, for instance, can specialize in technical translation. Third parties gain special importance, for example, if a dictionary is produced and published, or the term is collected in a publicly accessible terminological database. This is one of the reasons why it is so important to share your terminology and perhaps even initiate a collaboration on your terminology with a third party.

Let it flow!

Terminology reflects professional reality. If this reality is altered by inventions or new developments, new terminology emerges as a reflection of this changed reality. An example of new technology could be "AI", "robotics", "HTML", "Smart devices", "self-driving car", etc. The role of terminology management is to ensure that (technical) communication flows without conceptual misunderstandings.

Unmanaged terminology leaves room for uncertainties and might result in machines not working or even safety issues. The changing reality that a new invention or technology might create is the reason why it is essential that once collected and documented, the terminology is maintained and updated. Maintenance is a step of terminology work that is almost as important as the terminology research itself.

Terminology or general language?

In one way or another, we use terminology every day, although we might not be familiar with the term itself. To make things more complicated, terminology is a profession with a professional reality, meaning that it has its own terminology, the "terminology of terminology" [5], which might explain the unfamiliarity with the term (and meaning) among "terminology laypeople" and professionals from other areas.

Term familiarity is one thing. Another thing is our consciousness of using terminology. Our professional reality, language, and terminology become part of our reality, our world, and our understanding of the world, which is all reflected in our language. We have all met people who are professionals within their field who talk to you using terms that you are unfamiliar with. We might not always recognize the terminology we use as terminology, thus confusing it with general language.

In our professional life, we are often surrounded by people who are familiar with our world and share our view of it. This means that they are also more or less familiar with the terminology that we use, either through us or because they might be direct terminology users and have access to it themselves.

However, when we meet people who are not familiar with the terminology we use, they might not be able to understand what we are saying, due to their worldview and the linguistic knowledge they have from general language. We are not always conscious of the terminology we use. This unawareness tends to occur mostly when the words are identical to the terms but conceptually different.

Scenarios in which we tend to use terminology consciously are the medical and legal fields. Here, the awareness tends to be greater because the exchange between professionals and laypeople happens more frequently (e.g., through legal language). This is the case with our example from before – “Arthritis”. Another example is “precedent”, which according to Cambridge Dictionary is

“a decision about a particular legal case that makes it likely that other similar cases will be decided in the same way.”

PRECEDENT | Meaning in the Cambridge English Dictionary, n.d.

Professionals who are conscious about using terminology will typically also be better at communicating it to others. [6]

Specialization

Some fields are so familiar with terminology that efforts have been made to avoid crucial mistakes. This is particularly relevant in the medical field, where Latin terms are regularly used. Transla-

tors might be specialized in the medical, legal, economic, or technical field. These are not just specialized areas but independent fields with respective university degrees.

Terminology is the vocabulary of a profession and thus a specialization. If the professions overlap, the terminology is shared and *accessible* across professions. A good example is the term “well-being”, used in pedagogy, psychology and medicine.

“Mental health is defined as a state of well-being in which every individual realizes his or her own potential, can cope with the normal stresses of life, can work productively and fruitfully, and is able to make a contribution to her or his community.”

WHO | WHO Urges More Investments, Services for Mental Health, 2012.

The multitude of degrees, professions, and sub-areas that overlap illustrate the complexity and importance of terminology. In this way, terminology is closely related to knowledge management. The accessibility or non-accessibility as well as the complexity and interrelation of the knowledge fields behind specific terminologies might explain why terminology can seem complicated, difficult, and unmanageable. This might also be the answer to the question of why terminology management, let alone terminology collaboration, is not always carried out: Why complicate further an already complicated task such as terminology work?

So why collaborate?

If terminology is already managed, and third parties or terminologists who are not subject matter experts are performing terminology work, it is essential to involve subject matter experts and/or terminology users. At best, this could serve as a validation step in the working procedure.

If you outsource text production, translation, etc., it is highly recommended to share your terminology with the third parties ahead of the project. This helps to avoid the necessity of damage control, which can significantly increase outsourcing costs. Ideally, you would invite all actors involved with terminology – including third parties – to actively contribute. You could even experiment with open-source platforms and terminological databases such as Wikipedia and Google Translate.

Terminology collaboration significantly improves the quality of terminology work.

Less is more

If terminology were an established profession and terminology work was a given, the ending of this article would be very different. But considering our work reality, the most important thing is:

- Deal with terminology
- Do it right
- Collaborate
- Keep it updated

Terminology can be overwhelming. Start small, and let it grow from there!

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Continuous localization 2.0 – The need for speed of global content continues

More content types have found themselves joining a continuous localization workflow. With updates needed more frequently than ever before, how are you navigating your continuous localization maturity journey?

Text by Dave Ruane

Image: © DKosig/istockphoto.com



Watching my nine-year-old playing a game of Fortnite – switching from the English version on one device to the Spanish version on another – I was reminded of the multilingual content world we are living and playing in. The content of games and many other products has become increasingly complex and needs to be updated continuously across devices and platforms.

We are in the midst of what has been labeled the **fourth industrial revolution**, also called the “Intelligence Revolution”, driven by Big Data and Artificial Intelligence (AI). Today, we have access to more data than ever before, allowing AI to grow smarter, faster, and more accurate than ever before. This has increased the expectations for new content and updates, growing at an exponential rate. In the first quarter of 2020, a total of **33.6 billion app downloads** were registered in the Apple App Store and Google Play Store – the highest quarterly number ever measured.

Managing global content in this fast-paced world, where change is the only constant, needs a clear strategy. We call this continuous localization 2.0. Continuous localization can help us to:

- Get content out in time whenever we need to
- Achieve an improved global customer experience through better brand content
- Remove localization redundancy – fewer processes, fewer costs, fewer headaches

Continuous localization – managing the unmanageable

What has changed in the last years to make continuous localization an important business tool? Adoption has grown and technology has improved. Demand for adoption drives the creation of more and better connectors and technology which, in turn, facilitates further adoption and so on. Service providers have come to understand that this is an evolution and are adapting their offerings and technologies accordingly. Continuous localization is an extension of the continuous delivery methodologies of global content while maintaining a seamless content workflow and user experience. Continuous localization and continuous globalization (including internationalization)

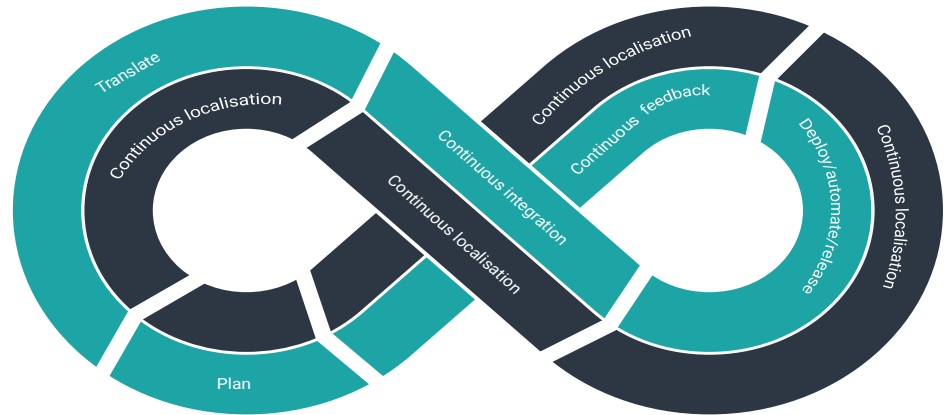


Figure 1: Continuous delivery workflows are non-stop

Source: Forrester Research, Inc

recreate user experiences in other locales and geographies without noticeable delay.

Elements of continuous localization 2.0

For a continuous global content workflow to function, the following elements are essential:

1. Globalization strategy

A clear globalization strategy should include localization-ready content built for purpose as well as structured content design with context blocks that are shared among teams. This includes a clear market strategy identifying what content is delivered where and in what frequency. Having a clear overview of the updated content changes that need to be reviewed or localized is essential. Modularized XML-based systems and smart localization hubs enable this at scale. For example, if a documentation team has ten thousand files as part of a sprint cycle, but only 42 of these have changed, you only need to send these 42 files.

2. Integration systems

Integration systems are a key part of any continuous localization ecosystem. All content repositories need to be integrable with the translation workflow – a seamless, one-system process. Full end-to-end connectivity is a basic need and eliminating any offline activity is essential to avoid wasting time or resources. Integration has become a crucial path to achieving continuous localization. For smooth integration, you should consider the best-of-breed technologies out there, including Neural Machine Translation



Figure 2: Essential elements of a continuous globalization strategy

engines such as Systran, and translation quality and productivity benchmarking tools such as TAUS DQF.

3. Traceability

The global health crisis has forced us all to become more familiar with traceability this year. In a global content context, it is about having an audit trail for each change made during update cycles, knowing how many changes have occurred, where and when they occurred, where the latest content can be found, and who signed off on it. It is near impossible to manage a high-flux continuous localization change management environment without robust traceability.

To give you an example: During the translation of a pacemaker manual into Spanish, “four weeks” was translated into “four months” concerning the battery replacement interval, as

revealed by regulatory audits. The result could have been a potential product recall but was minimized to reshipping manuals, due to traceability and the immediate ability to find the root cause and make the required adjustments. Having an audit trail increases risk mitigation for translated materials. This becomes more important with continuous updates for content that is modularized into smaller and smaller chunks. This is a space to watch as traceability of all global content becomes more of a basic need for enterprises.

4. Localization technology hub

A robust localization technology hub that adapts and works in the cloud is essential for continuous localization workflows. The technology stack should be highly adaptive, flexible, extensible (with open API architectures), and have a solid AI framework. The mantra “If something can be automated, it will be” is true here. For optimal efficiency, all translation workflow steps and administrative tasks should be driven by process automation, which connects all stakeholders. A central localization hub automates the entire localization cycle from the content hand-off and delivery of translated content to full-blown integrations with third-party applications.

Consider the fragmented software landscape in an organization where regular updates of content take place. Imagine the localization department in a manufacturing company that hands off content for translation every Wednesday and requires it back by the following Monday. Manuals and technical documentation are sent for translation in batches via email and back and placed in the content system – a tedious, error-prone process. A content system connects localization managers to the translation management system to automate hand-offs from multiple content systems. The localization technology hub needs to be able to adapt and extend as new systems are connected. This is an essential part of continuous localization 2.0.

Turning continuous localization into a success

Several initiatives will help you smooth out the bumps on your continuous localization journey.

1. Executive buy-in

Not getting the executives on board right from the start is a bit like buying a one-way ticket for your dream get-away. Sure – you can enjoy your holiday and forget about life for a while. But at some stage, you will have to deal with the return journey, and the later you leave it, the higher the price. Trying to bring a culture of change to sprint cycles including development teams requires executive buy-in. Getting executive buy-in requires you to map out a clear vision with clear gains, which is the key to long-term gains with continuous localization.

☞ **Tip:** Build support from the top down. Be proactive and ready to avoid pushback.

2. Set clear and simple first goals

Define a clear set of specific goals to achieve in the first six months. With continuous localization, teams often try to translate everything in the first few months. This adds additional strain and costs to organizations and is prone to falling short or failing outright.

☞ **Tip:** Open a conversation about your goals and needs early on and involve all departments so that people see the value of localization. At some point, this will require a thorough content audit to see how the content currently performs, and how it can be leveraged to further growth in strategic markets.

3. Set up a continuous localization working group

The impact of working groups is underestimated. Your group should include a language supply chain expert, a technology expert, and product experts. Keep the group to about five stakeholders, so long as each key content lifecycle function is represented, and the group is given the autonomy to make recommendations that are implemented and has executive support (see executive buy-in above).

☞ **Tip:** If you only have localization and marketing people in your working group, you risk missing key decision-makers to enact real change. Continuous localization means continuous adaptation, so having a high level of change agility is essential. Drive new innovative processes rather than just executing blindly – agile localization managers have innovation deeply ingrained in their mindset and team’s culture.

4. Document everything

Designing and implementing continuous localization strategies is a dynamic activity. All procedures need to be written and centralized, as they will change. A content organization will need to undergo cultural and role changes to enact continuous localization, and part of this is having everything well documented. Automating is a goal that will be achieved as maturity increases, but having well-documented information about what is automated and what is planned to be automated is the key to success.

5. Adapt the technology

Continuous delivery trends are fairly predictable – deliver more, faster, and in smaller pieces, and have more people in the loop. This means the technology you use needs to adapt to deal with smaller updates, more connectivity requirements, and more stakeholders being involved in the process. Digital transformation is driving future changes, and your technology needs to be ready. As a simple rule of thumb, don’t consider technology that is not meeting today’s integration standards.

6. Embrace modularity

If a cross-organizational global content architecture is a final goal, where you can cross-propagate (leverage) many segments already standardized in your set of languages, then you have to modularize. Modularization makes massive amounts of content manageable, trackable, interconnected, and dynamic. It enables faster turnarounds as smaller chunks of content can be processed in parallel in a smart localization hub. You get many tiny translation requests instead of a few massive jobs, which means turnaround times and the bottom line are hugely impacted, both in terms of speed and cost. Modularization has also made for more transparent pricing and business models.

Process ownership

A key consideration is process ownership. Do you decide to fully own the process? Do you build the internal teams and own the technology, or outsource all or part of this? The trend in recent years is towards more ownership of systems, managing security and IP, and integrating technologies and solutions.

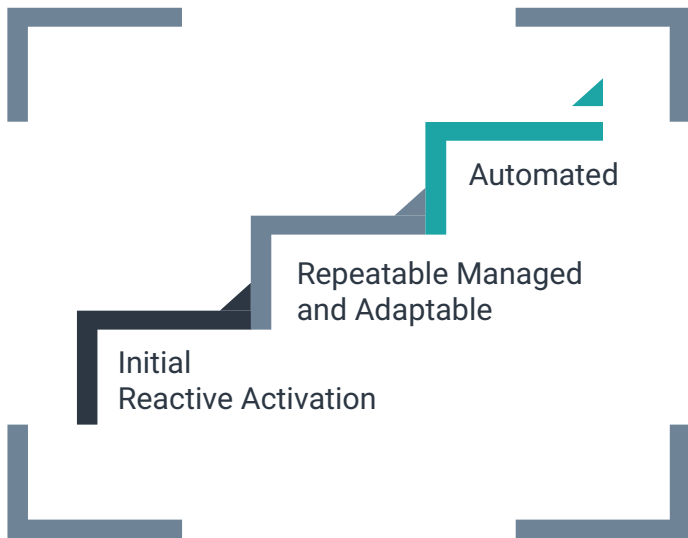


Figure 3: Maturity model for continuous localization

Source: © XTM International

If you decide to own the process, you will need to get the infrastructure in place to deliver. If not, you will need to get a continuous localization supply chain that will deliver it for you.

Maturity model for continuous localization 2.0

As you decide to take on continuous localization, there are various stages that you will need to follow. Mapping out some levels of maturity in the model can help your organization see where you are and where you want to go.

1. Initial reactive activation

In this initial stage, ad hoc processes are starting to emerge. These are not yet formal or transparent, and the level of uncertainty among stakeholders is high. Some of the steps include getting an executive sponsor and familiarizing yourself with technology options and their limitations. Moving from a traditional episodic release system to a new continuous model, there can be a tendency to force change. Teams start to push past what is possible and have sprint models, which are not manageable for all the stakeholders. But moving to more frequent updates can result in a greater need for fixing mistakes and more supplier management, leading to a significant increase in costs.

Continuous delivery means that content can be in a continuous state of *work in progress*. You have to identify the point when the change has the lowest impact on content localization. As companies mature through continuous localiza-

tion, thinking becomes more business- instead of product-oriented. I recommend teams to get through this stage as easily and as fast as possible. Ask yourself: Do we have the optimum translation sprint cycle for all content types? Are we using the right supply chain and the right technology? And will they still be the optimum choices in two or three years' time? Continuous localization is dynamic.

Tip: To get teams on board, ask them about the frequency needed to translate content. Look for the content creation patterns and question how you can match these patterns.

2. Repeatable, managed and adaptable

At this point, you might feel that things are fairly well controlled. You understand your content and the level of change that is needed. You understand your supply chain and what it can handle. You have robust technology in place that enables continuous localization updates and is flexible to changing requirements. You define and adapt sprint actions to fit requirements, which is made easy because you already have executive support and your continuous localization working group. You can even decide to adapt the localization sprint cycle to more closely mirror the development cycle.

3. Automated

During this stage, localization processes are an integral part of the company's strategy and all planning and releases are based on it. There are established, well-implemented systems, and tools and processes are transparent and recognized across the company.

You can now handle things like *hotfixes*: this can be a single word that needs to change, but only in the translation. Most likely this type of request will come from a language QA team or community feedback.

Reporting is end-to-end, and your focus is on monitoring and ensuring metrics are on course. You focus on adapting and fine-tuning. You let AI systems monitor and control what is going on. By

learning from data and monitoring the level of change in content, AI engines learn automatically how to adapt your sprints when needed. Your technology manages all integration, automation, and connectivity, leaving your teams to focus on ways to make content experiences better, knowing that the translation workflow ecosystem is well under control.

Avoid the localization maturity shuffle

In its *Localization Maturity Model*, Common Sense Advisory talks about the tendency of good intentions being replaced by returning bad habits. Instead of forward movement towards maturity, a company takes one or two steps backwards. Root causes can include a regression to older processes, having less expertise, legacy technology, or losing the support of business sponsors. The repercussions are clear: budget overruns, delays and rework – causing time-to-market and quality to suffer. So, keep your dancing shoes on the dancefloor, and avoid the localization shuffle.

Continuous localization and globalization are great enablers in a content-driven economy across all industries. For some sectors such as video gaming, it forms the backbone of their localization strategy. The sooner the elements of the story, characters, and dialogues are localized into multiple locales, the better the game experience and the more players will sign up. Are you ready to play?

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Dave Ruane has been working in the localization industry since the mid-nineties and has worked in technology, client solutions, account management, sales, marketing, and consultancy roles. He currently manages digital content and partner strategies at XTM International, a developer of Translation Management Systems.



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How language influences purchasing decisions and support needs

Are customers of non-English speaking countries comfortable purchasing and using high-tech products that do not deliver a localized customer experience? CSA Research surveyed business users across the globe to find out.

Text by Dr. Donald A. DePalma

Image: © fotogestoebe/123rf.com



Business users of technology are largely assessed on one thing: doing their job. Whatever the industry or specialization, it's essential that they perform their tasks correctly and quickly. Their companies expect the results of their work to be accurate, timely, and compliant with business, industry, and legal requirements, which often vary by country. These imperatives – accuracy, efficiency, and compliance – depend on the ability of users to take advantage of the features and functions of the high-tech software, hardware, and telecommunications gear and services they employ for daily tasks. That means being able to comprehend what they read and, when coupled with local compliance, raises the issue of localization. To determine how much localization matters to corporate users of these high-tech products and services, CSA Research surveyed 956 business users and decision-makers in 24 non-English-speaking countries, including Germany, Poland, and Turkey (Figure 1). For this “Can't Read, Won't Buy – B2B” report, we asked participants in their native languages about their firms' high-tech purchasing criteria and where they go for support when they have problems. In addition, we separately analyzed data that we collected from a second survey of 8,709 consumers in 29 countries for a companion report based on B2C preferences, “Can't Read, Won't Buy – B2C”.

Our survey focus – Localized buying criteria and technical support

We asked our survey respondents about their use of high-tech gear and services in buying and work situations where products may not have been adapted to the locale – that is, the language and geographical location of the survey-taker.

- **High-tech buying and support.** We analyzed responses of participants in 24 non-English-speaking locales to questions that focused on two issues: the criteria they apply when purchasing high-tech products and services, and the actions they take when they need technical support for what they have bought.

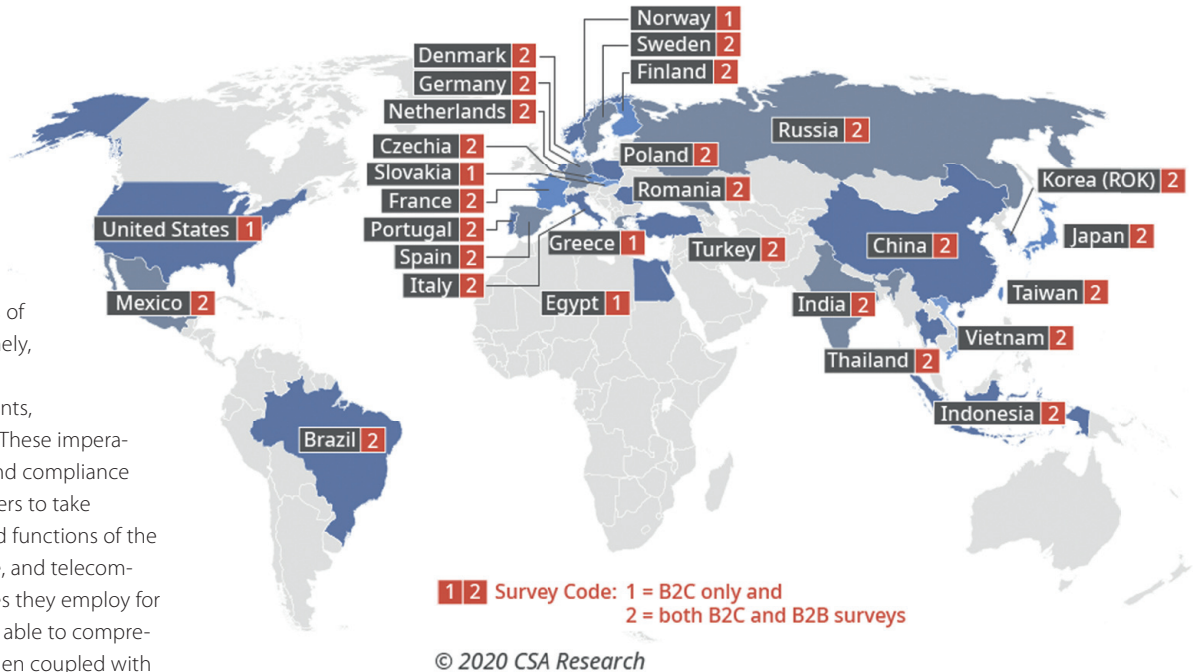


Figure 1: Countries surveyed for “Can't Read, Won't Buy” research series

- **English-language comprehension and decision-making.** We asked respondents to self-assess their ability to read and make decisions in English, a frequent scenario in companies around the world. Many businesses use English-language products and services because multinational headquarters mandate them to enforce global consistency or because no localized versions are available. Respondents expressed a high level of confidence in their ability to use such products across our survey sample, regardless of country.

Not just English – any language that is not native

We always take care in our analysis to note that both these surveys address not just the question of localizing English-language websites, apps, and products for non-Anglophone markets – but also the business value of meeting the expectations of people using them. The same concerns that business users have about making buying decisions or getting technical support apply to any language that they don't understand well enough.

For example, offering German as the primary language on any site outside the DACH

region (Germany, Austria, Switzerland) and some central and eastern European countries wouldn't make much sense. It doesn't matter which language is used – if business buyers and users can't read it, they won't stay for long on a website or use an application very effectively, and they're unlikely to easily resolve problems. It's the same for consumers – our “Can't Read, Won't Buy – B2C” report provides consumer-oriented data and analysis of the same preference and behavior issues.

Some major findings from our 24-nation survey

Our analysis of technology-using business people in the 24 countries across an array of English-language products and content confirms that many hope to take advantage of huge volumes of information. However, their behavior when visiting Anglophone sites or using English-language products depends on their command of English. We found that:

- **Written English is widely understood by our tech-centric respondents.** There's a very high self-assessed competence in English among sample participants – but a lower estimation of their IT staff's capability to support English-language products and

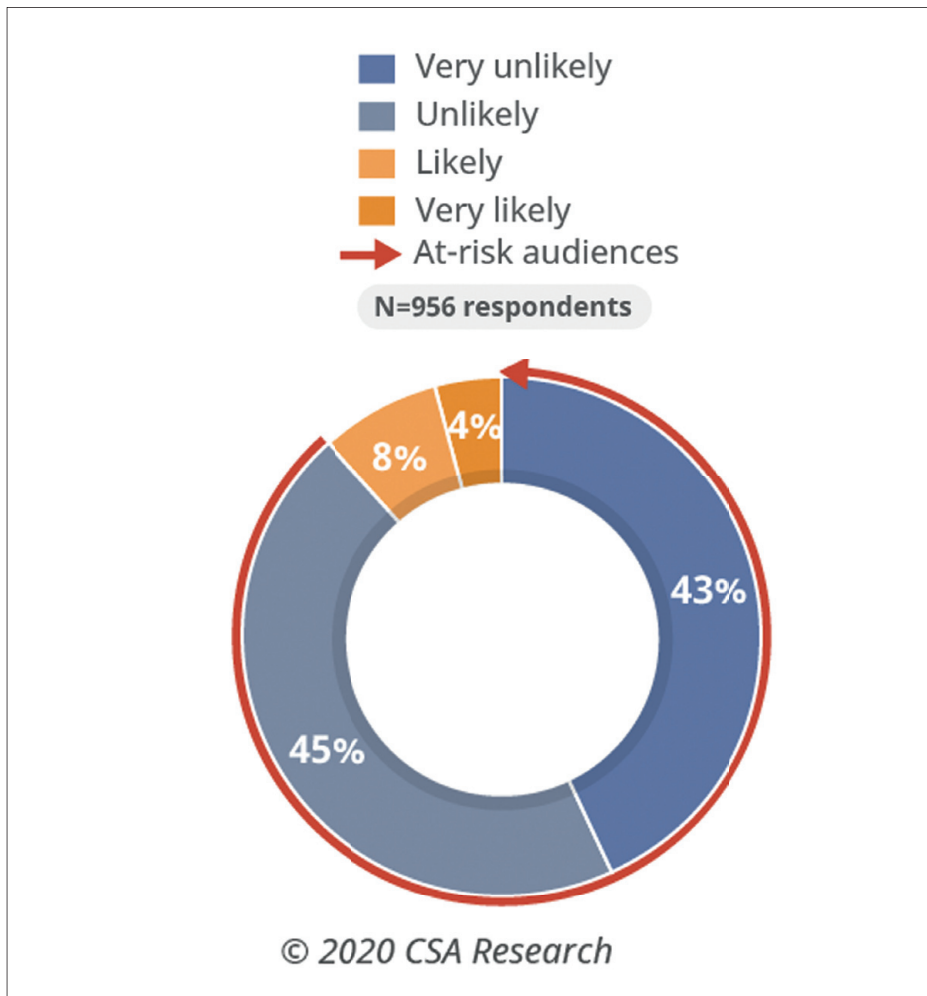
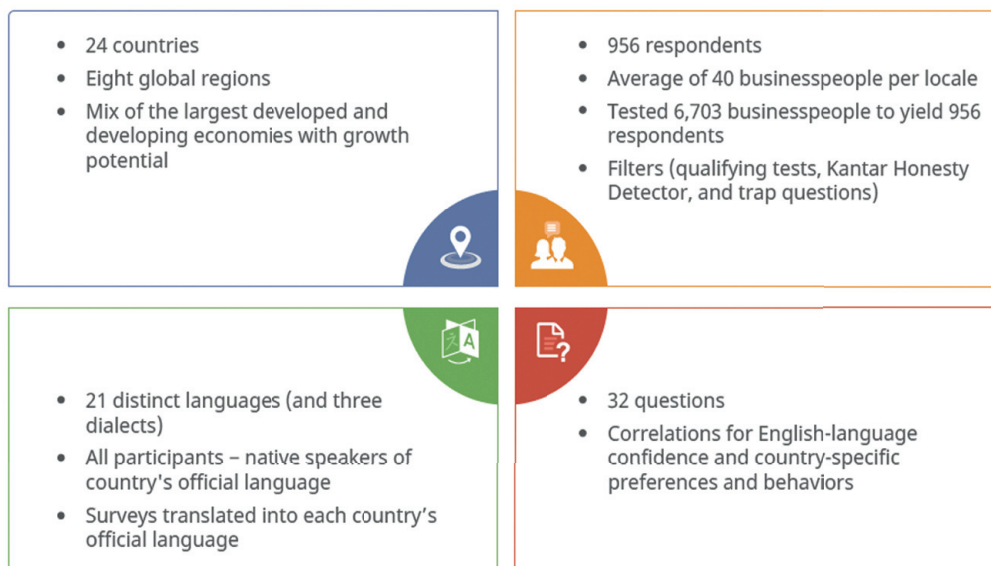


Figure 2: Purchasing likelihood with untranslated mail and chat support



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Figure 3: “Can’t Read, Won’t Buy” – B2B survey demographics

services. The vast majority of our respondents characterized their reading proficiency in English as confident (46%) or good (39%). They viewed their IT staff’s proficiency somewhat less – at 35% confident and 37% good, respectively. The role of the respondent is telling: 36% of IT decision-makers say that IT is perfectly capable of supporting English-language products and services, but only 25% of customer support staff shared that sentiment. In fact, a larger percentage of support staff (26% overall) indicated IT cannot support such products and services at all.

Note that we did not test or challenge respondents on whether they in fact comprehend English as well as they claim. We asked simply how confident they feel in reading content and conducting transactions. We acknowledge that both anecdotal evidence and academic studies show self-assessment to be a flawed measure in that people tend to over- or under-estimate their ability. For example, Germans downplay their comprehension while Romanians often rate it higher than it probably is. They applied that same self-assessment criticism to how well they thought their IT teams could support them in English – but not as severely as our Japanese and Russian respondents.

• **Confidence in English-language ability doesn’t translate into behaviors.**

We found a major disconnect between the level of respondents’ self-assessment of English proficiency versus preferences and actual behaviors that favored their native language. More specifically, most respondents grade themselves quite highly in using English for everyday high-tech purchasing, decision-making, and usage scenarios. However, they favor localized variants by a wide margin – 70% or more – when buying products. Similarly, they strongly favor technical support in their local language.

• **Very few companies use English as their official or everyday language.**

Survey-takers were nearly unanimous (80%) in that their company’s official means of communication is the national or official language – for example, 90% of German companies mandate German as the corporate language. Given this finding, it’s no surprise that the most commonly used language in their department is also their own (86%). But

when we consider the language they prefer to use when researching, buying, or obtaining support for high-tech projects, their own language isn't quite as dominant (63%) – and even less so (57%) for those who spend 75–100% of their day on a computer. At the staff levels we analyzed, English is not the language of global business, but it is widely available in high-tech products used by their companies.

- Business buyers strongly favor local-language products and websites.** Whether they are researching and buying online or evaluating products for use by their colleagues, our survey respondents preferred information, manuals, and user interfaces in their own language rather than in English. This predilection begins during the research phase of the buying cycle, extends to interacting with products, and continues to post-sales technical support. For example, 81% of participants were more likely to buy a product with presales, marketing, and product information in their language, while 88% preferred post-sales support in their language. Almost two-thirds (63%) of respondents who used high-tech products daily or weekly did not have documentation and interfaces translated into their native language.
- Many buyers would pay more for localization.** Even though some products are poorly localized, they meet the needs of many companies – 76% of our sample would buy a product with poor-quality localization instead of English. However, two-thirds (67%) said they would pay up to 30% more for a localized solution. Imperfect or not, respondents would opt for localized user interfaces, documentation, and technical support.
- Two alternatives to translation serve a lot of business users.** We asked about a relatively common website occurrence – bad translation – and found that many business users preferred that option to no translation at all. We also asked about using third-party machine translation such as Google or Yandex, solutions that many people turn to in the absence of translated content on a website. We found frequent usage and high levels of satisfaction with these generic MT solutions. However, in many cases the customer experience will be diminished by the absence of brand-specific terminology and other elements.

Who responded to our survey?

To provide reliable and robust data demonstrating the significance of language for delivering a powerful global customer experience (CX), CSA Research surveyed 956 business users of technology in 24 locales and analyzed their responses (Figure 3). We had the survey professionally translated into the local language of each country, which in the case of Chinese, Portuguese, and Spanish involved national dialects. We used Kantar, a global leader in survey panels, to ensure that we obtained a representative sample of the countries surveyed.

We applied a combination of filters, trap questions, and Kantar's Honesty Detector to exclude respondents who didn't meet our requirements for a representative sample.

What does this data mean for companies selling high-tech gear?


The disconnect in language experience behaviors and preferences should push companies developing high-tech gear – software, hardware, telecommunications, and other sophisticated electronics – to localize wherever possible. Our research shows that it will deepen brand reach in target markets, increase stickiness in accounts, reduce the expense of support caused by missing or inadequate localization, and strengthen customer loyalty through a more personal customer experience overall. After all, what is more personal than language?

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community members tackle today's challenges and get prepared for post-pandemic times.

The benefits of going virtual

While we are all looking forward to the day when we can once again gather face-to-face, online has become the new normal for the time being, and we have come to discover its many benefits:

At this year's tcworld conference you can

- Find the right contact person, service provider, or long-lost work colleague at the click of a button: Maintain your profile in our new event app to pinpoint connections.

- Join virtual meetings or discussion groups to exchange ideas and experiences during our interactive coffee breaks, evening programs, and much more. Book appointments with (potential) customers, exhibitors, or speakers.
- Choose to watch the sessions live or any time that suits you. The chat groups, which are available for each session, will remain open even after the conference has ended.
- Enjoy greatly reduced conference rates. We are directly passing on to you the savings from eliminating the congress center rental costs. Of course, you will also save on travel and accommodation expenses.



Don't miss

In this sweeping keynote by [A] founder Cruce Saunders, hear a vision for how to resurface latent value in organizations by reimagining how content is modeled and managed.

As an industry, do we see content structures in a single limited form? It's time to move towards a kaleidoscopic understanding of content's structure that can adapt itself.

The future requires flexible models and a nimble content supply chain. New patterns for content intelligence enable context-adaptive experiences. Multi-channel delivery serving chatbots, voice assistants, Augmented Reality, embedded systems, and consumer devices. And, we need to be ready for any other unique formats the future can throw at us.

Conference topics

The program of this year's tcworld conference and tekomp fair reflects our community's wide spectrum of expertise. Even during the presentations, you can chat with other conference participants or ask the speaker questions. The conference offers 24 online sessions per day. The diverse and inspiring topics include:

Innovation and trends

- Content creation
- Intelligent delivery of user information
- Artificial Intelligence
- Analysis and content strategy
- New user interfaces, new learning, new documentation

Basics of technical communication

- Legal requirements and standards
- Professional writing
- Visual communication
- Technical videos
- User experience
- Scripting and tools
- Software documentation

Supporting processes in TC

- Language and translation technologies
- Technical translation
- Terminology

Topics around TC

- Career management
- Project, team, and cost management

Digital fair and social gatherings

Our event app will guide you through the virtual tekomp fair. Here, you can learn about products, attend tool presentations, or arrange to chat with or speak to a consultant from the exhibiting business. All exhibitors are virtually active with their own profiles in our event app. There, you can find information about their products, follow tool presentations, arrange consultation appointments via video call, or chat. Currently, there are already over 70 exhibitors (the list of exhibitors is available at <https://tcworldconference.tekom.de/fair/exhibitor-index>).

In online discussion groups, people can exchange information or enjoy relaxed meetings and conversations with colleagues in virtual cafés.

Register now

Help us keep our community together during these unprecedented times. Join us at this year's digital tcworld conference and spread the word among your colleagues. We look forward to a successful joint tcworld conference 2020!

"Learning new things is the central aspect of tekomp. To meet and exchange, network and experience the technical communication community, virtual tekomp will offer a full range of options to chat among yourselves as well as with speakers and exhibitors." Michael Fritz, CEO, tekomp



events

tcworld 2020 / 2021

Content Marketing World

📅 October 13-16, 2020
 📺 Online
 🌐 www.contentmarketingworld.com

ATA Conference

📅 October 21-24, 2020
 📺 Online
 🌐 www.atanet.org/events/

tcworld conference 2020

📅 November 2-6, 2020
 📺 Online
 🌐 <https://tcworldconference.tekom.de>

TAUS Data Summit

📅 November 10, 2020
 📺 Online
 🌐 <https://www.taus.net/events/conferences>

Expolingua

📅 November 20-21, 2020
 📍 Berlin, Germany
 🌐 www.expolingua.com

Languages & the Media 2020

📅 New date: December 14-16, 2020
 📍 Berlin, Germany
 🌐 www.languages-media.com

DeepLearn

📅 New date: January 11-15, 2021
 📍 Milan, Italy
 🌐 <https://irdta.eu/deeplearn2020/>

rescheduled!

International Conference on Interdisciplinary Studies in Education Research & Technology

📅 February 24-27, 2021
 📍 Dubai, UAE
 🌐 <http://laeconference.com>

TAUS Massively Multilingual Conference & Expo 2021

📅 March 29-31, 2021
 📍 San Jose, CA, USA
 🌐 www.taus.net/events/conferences

rescheduled!

MadWorld 2021

📅 New date: Oct 3-6, 2021
 📍 Austin, TX, USA
 🌐 www.madcapsoftware.com/madworld-conferences/madworld-2021

rescheduled!



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TRAINING & CERTIFICATION



TCTrainNet is an English-language international online training and certification program for technical communication. The curriculum and learning materials were developed by leading professionals and experts from both industry and academia in accordance with the tekomp competence framework.

TCTrainNet offers two course types on a different course level: The **TCTrain Professional Course** and the **TCTrain Expert Course**. Both prepare you for international certification as "Technical Communicator (tekomp)".

This training offers you:

- Trainer-supported elearning program in technical communication
- Optimal work/study balance with various start dates
- Flexibility – learn anywhere and anytime
- Interactive learning material incl. implemented stages of learning

TCTrainNet is managed by

technical communication
tcworld



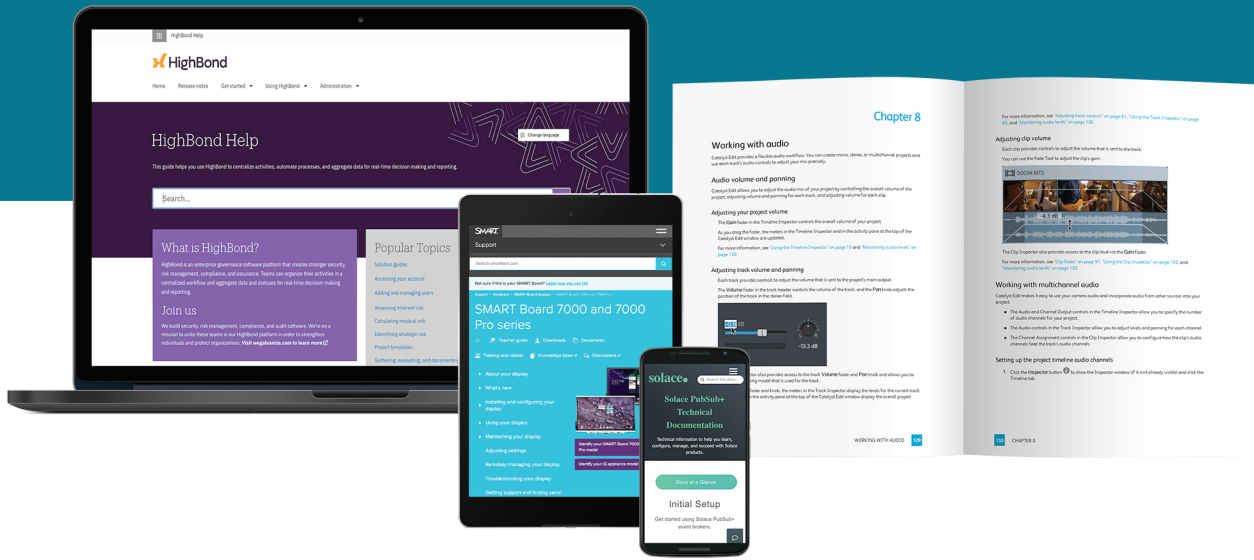
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