

magazine for international information management

# tcworld

November 2019

## Learning to learn with machines

How can we adapt to a hybrid society in a hyperconnected world?



Instruction videos are the new marketing gold

From structured content to automated video creation

The challenge of being a translator – and a client – in the age of AI

Neural Machine Translation revolutionizes the industry



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### **From the editor**

#### **Towards a hybrid society**

Has there ever been a more exciting time for futurists and Sci-Fi nerds? If you ask, for example, Ray Kurzweil about the future, you will learn that we are on the verge of a major evolutionary breakthrough. The inventor and Google engineering director predicts that by the 2030s, we will live in a world of nanorobots – intelligent machines the size of a molecule that, when inserted into our neocortex, can extend our brain's capacity to unpredictable limits. It would not just be like inserting a computer into our brain, it would be like inserting thousands of computers into our brain.

Following Kurzweil's theory, our brain last underwent a major evolution 200 million years ago when we developed our frontal cortex: "This quantitative expansion of neocortex was the enabling factor

for us to take a qualitative leap to invent language and art, science and technology. No other species has done that."

But our unique human brains won't stop there: "Over the next few decades we are going to do it again. We are again going to expand our neocortex – only this time we won't be limited by a fixed architecture of enclosure. It will be expanded without limit. That additional quantity will again be the enabling factor for a qualitative leap in culture and technology."

"Our thinking," the creative inventor concludes, "will then be a hybrid of biological and non-biological thinking. And the non-biological thinking part will grow exponentially."

While this theory might still sound very hypothetical to many of us, what is undeniable is that our society is already undergoing major changes. We are entering a hybrid

society, in which biological and artificial intelligence are merging at a mind-blowing pace (see our focus article from page 12). Whatever the problem or question, we have become very accustomed to directing it at machines – be it a chatbot, Siri, Alexa or any other intelligent application or device. In fact, we have started to treat these assistants as if they were human.

We have yet to see what changes this irreversible interconnection between humans and machines will bring to our society. As technical communicators and information experts, it will be our role to understand the impact this changing environment has on our users and help them to navigate through this new hybrid landscape of machines and humans.

Corinna Melville

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## Learning to learn with machines

The rapid advance of Artificial Intelligence and smart devices leaves our society with many social and ethical challenges. As machines gain more cognitive abilities, our own human cognitive mechanisms are set to change as well as we adapt to our new hybrid environment.

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## Instruction videos are the new marketing gold

A new technology enables the automated creation of videos from structured or modular content. With more and more users searching for videos to help solve their problems, this offers a huge opportunity to technical communicators.

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## The challenge of being a translator – and a client – in the age of AI

Neural machine translation has turned the translation industry on its head and left many language professionals in a state of insecurity. How can they find their place in this new landscape?

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# Five emerging technology trends with transformational impact

A research report by Gartner Inc. called *Hype Cycle for Emerging Technologies, 2019* reveals five distinct emerging technology trends that create and enable new experiences, leveraging developments such as Artificial Intelligence (AI). “Technology innovation has become the key to competitive differentiation. The pace of change in technology continues to accelerate as breakthrough technologies are continually challenging even the most innovative business and technology decision makers to keep up,” said Brian Burke, research vice president at Gartner. The Hype Cycle report highlights innovation profiles that can help businesses to assess the potential business opportunities of emerging technologies.” The *Hype Cycle for Emerging Technologies* is unique among most Gartner Hype Cycles because it

gathers insights from more than 2,000 technologies into a succinct set of 29 emerging technologies and trends. This Hype Cycle specifically focuses on the set of technologies that show promise in delivering a high degree of competitive advantage over the next five to 10 years (see Figure 1).

## Five emerging technology trends

### Sensing and mobility

By combining sensor technologies with AI, machines are gaining a better understanding of the world around them, enabling mobility and manipulation of objects. Sensing technologies are a core component of the Internet of Things (IoT)

and the vast amounts of data collected. Utilizing intelligence enables the ability to gain many types of insights that can be applied to many scenarios.

For example, over the next decade AR cloud will create a 3D map of the world, enabling new interaction models and in turn new business models that will monetize physical space.

Enterprises that are seeking to leverage sensing and mobility capabilities should consider the following technologies: 3D-sensing cameras, AR cloud, light-cargo delivery drones, flying autonomous vehicles and autonomous driving Levels 4 and 5.

### Augmented human

Augmented human advances enable the creation of cognitive and physical improvements as an integral part of the human body. An example of this is the ability to provide superhuman capabilities such as the creation of limb prosthetics with characteristics that can exceed the highest natural human performance.

Emerging technologies focused on extending humans includes biochips, personification, Augmented Intelligence, emotion AI, immersive workspaces and biotech (cultured or artificial tissue).

### Postclassical compute and comms

For decades, classical core computing, communication and integration technologies have made significant advances largely through improvements in traditional architectures – faster CPUs, denser memory and increasing throughput as predicted by Moore’s Law. The next generations of these technologies adopt entirely new architectures. This category includes not only entirely new approaches, but also incremental improvements that have potentially dramatic impacts.

For example, low earth orbit (LEO) satellites can provide low latency internet connectivity globally. These constellations of small satellites will enable connectivity for the 48 percent of homes that are currently not connected, providing new

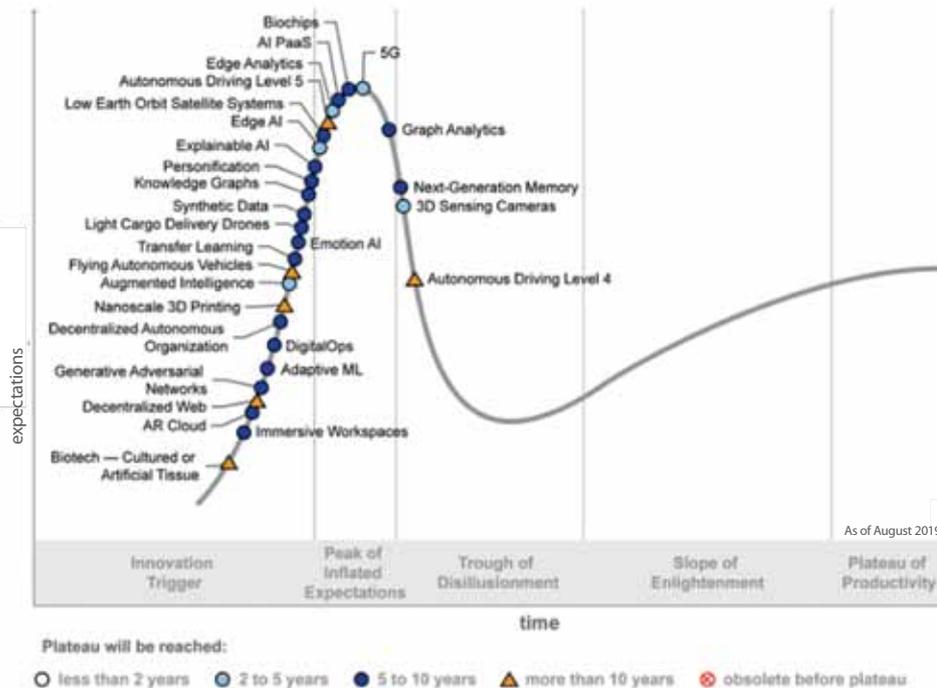


Figure 1: Hype Cycle for Emerging Technologies, 2019

Source: Gartner (August 2019)

opportunities for economic growth for unserved countries and regions. "With only a few satellites launched, the technology is still in its infancy, but over the next few years it has the potential for a dramatic social and commercial impact," said Mr. Burke.

Enterprises should evaluate technologies such as 5G, next-generation memory, LEO systems and nanoscale 3D printing.

### Digital ecosystems

Digital ecosystems leverage an interdependent group of actors (enterprises, people and things) sharing digital platforms to achieve a mutually beneficial purpose. Digitalization has facilitated the deconstruction of classical value chains, leading to stronger, more flexible and resilient webs of value delivery that are constantly morphing to create new improved products and services.

Critical technologies to be considered include: DigitalOps, knowledge graphs, synthetic data, decentralized web and decentralized autonomous organizations.

### Advanced AI and analytics

Advanced analytics comprises the autonomous or semiautonomous examination of data or content using sophisticated techniques and tools, typically beyond those of traditional business intelligence (BI).

"The adoption of edge AI is increasing for applications that are latency-sensitive (e.g., autonomous navigation), subject to network interruptions (e.g., remote monitoring, natural language processing [NLP], facial recognition) and/or are data-intensive (e.g., video analytics)," said Mr. Burke.

The technologies to track include adaptive machine learning (ML), edge AI, edge analytics,

explainable AI, AI platform as a service (PaaS), transfer learning, generative adversarial networks and graph analytics.

This year, Gartner refocused the Hype Cycle for Emerging Technologies to shift toward introducing new technologies that have not been previously highlighted in past iterations of this Hype Cycle. While this necessitates retiring most of the technologies that were highlighted in the 2018 version, it does not mean that those technologies have ceased to be important.

The research is part of the Gartner Special Report "Hype Cycles: Five Priorities Shape the Further Evolution of Digital Innovation." This research collection helps organizations identify opportunities that enable the creation of new business and operating models.

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## SPI GLOBAL LAUNCHES DUBBING SOLUTION

Content solutions provider SPi Global has released SmartDub, a solution that enhances Text-to-Speech (TTS) technology to generate synthetic voices. The solution relies on generations of phonemes to create words and sentences, allowing for improved accuracy in pronunciation and enhanced alignment with geographical and cultural preferences. The semi-automated processing functions available in SmartDub enable wider ranges of voice processing than traditional human sound bites.

[www.spi-global.com](http://www.spi-global.com)

## SDL AND BYNDER PARTNER

Translation solution provider SDL has announced a strategic partnership with Bynder, and the availability of a new SDL Tridion Sites 9.1 Connector for Bynder's Digital Asset Management (DAM) platform. The SDL Tridion Sites allows users to effectively manage a multitude of digital properties, and scales to any number of sites, channels, languages and brands. With the SDL Tridion Connector to Bynder DAM, customers can manage their Bynder-stored digital media (images, videos, and documents) directly in SDL Tridion Sites 9.1.

[www.sdl.com](http://www.sdl.com)

## LIONBRIDGE FOR RELATIVITY INTEGRATION

Lionbridge, a provider of localization services, has announced Lionbridge for Relativity, a plugin solution available in the Relativity App Hub that enables translation for law firms, corporate legal departments and e-discovery service providers through Relativity's platform.

[www.lionbridge.com](http://www.lionbridge.com)

## TRANSPERFECT ACQUIRES MOGI GROUP

TransPerfect, a provider of global business services, has announced the acquisition of MoGi Group, a provider of video game services and gaming solutions such as localization, player support and community management.

[www.transperfect.com](http://www.transperfect.com)

# Customer experience reaches new heights in India

Research firm Forrester has released the rankings from its *India 2019 Customer Experience Index (CX Index™)*, which show that firms enhanced their CX quality with most brands improving their scores and not one realizing a decline.

Based on a survey of more than 10,000 customers in India in 2019, Forrester's CX Index methodology was used to benchmark the CX quality of 39 brands in six industries. This year, four brands ranked excellent, which no brand managed to do previously. Furthermore, 33 brands delivered good CX, up from 19, and only two brands continued to provide mediocre CX. Despite improved scores, most brands were unable to differentiate themselves and the quality of their CX remained on par with their competitors'.

"We see that Indian firms are transforming their culture to become customer-centric and adopting design practices to improve customer experiences,"

said Amit Bhatia, Forrester senior analyst. "However, only brands that can differentiate themselves will reap the benefits of better CX. Brands that want to break away from the pack should focus on emotion: How an experience makes customers feel has a bigger influence on their loyalty to a brand than effectiveness or ease in nearly every industry."

Forrester's CX Index helps brands identify the key drivers of a positive CX for their customers to prioritize efforts. Even a minor improvement to a brand's CX quality can add crores of rupees of incremental revenue by reducing customer churn and increasing share of wallet. Additionally, superior CX leads to reduced service costs and lowers the cost of customer acquisition through word of mouth. CX leaders grow revenue faster, drive higher brand preference, and charge more for their products.

[go.forrester.com](http://go.forrester.com)



Image: © Anton Balazh/123rf.com

# Worldwide smart home devices forecast to maintain steady growth

The worldwide market for smart home devices is expected to grow 23.5 percent year-over-year in 2019 to nearly 815 million device shipments, according to the International Data Corporation (IDC) *Worldwide Quarterly Smart Home Device Tracker*. Worldwide shipments are forecast to reach more than 1.39 billion in 2023 with a five-year compound annual growth rate (CAGR) of 14.4 percent.

“Driving the market’s growth over the next few years is a combination of downward pressure on prices from intensifying competition; rising adoption of smart assistants; and rising consumer awareness of the conveniences, costs savings, and energy reductions that smart home devices provide,” said Adam Wright, senior research analyst, Internet of Things: Consumer.

The United States will represent the lion’s share of unit shipments in each year and will grow at a compound annual growth rate of 9.5 percent over the forecast period, reaching more than

560 million units shipped in 2023. China is the second-largest country by shipment volume in each year but represents the highest growth rate at a CAGR of 22.6 percent between 2019 and 2023, followed by Canada with a CAGR of 19.9 percent and Western Europe with a CAGR of 14.7 percent.

“Content and services are going to be at the forefront for the smart home market as video entertainment products such as the Fire TV or Chromecast will serve as an on-ramp for consumers entering the world of connected home products,” said Jitesh Ubrani, research manager for IDC’s Mobile Device Trackers.

Video entertainment devices are expected to maintain the largest volume of shipments, accounting for 29.9 percent of all shipments in 2023 as falling prices and advances in functionalities – such as 8K, higher refresh rates, HDR, larger sizes, and integration with smart assistants and streaming platforms – lead many consumers

to upgrade their sets. Home monitoring/security devices like smart cameras and smart locks will account for 22.1 percent of the shipments in 2023 with a CAGR of 18.4 percent. Growth in smart speakers and displays is expected to slow to single digits in the next few years with 8.7 percent year-over-year growth in 2022 and 4.7 percent in 2023 as the installed base of these devices approaches saturation and consumers look to other form factors to access smart assistants in the home, such as thermostats, appliances, and TVs, to name a few.

Inhibiting the market’s growth over the next several years are ongoing concerns about security and privacy, consumers’ price sensitivity to up-front and ongoing costs of devices and services, and the rising economic uncertainty stemming from the volatility of financial markets across the world.

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# The TC professional: a true Jack-of-all-trades

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Text by Leah Guren

The dinner party was well underway. The setting was the lovely home of a good friend, complete with stunning views of the city at night. The guests were charming and intelligent. The food and wine were excellent. With all these ingredients, it was no surprise that the conversation flowed easily. We shared stories and laughter, and let the subject morph naturally from topic to topic, touching on movies, travel, nutrition, international packaging laws, pets, and medical advances. I had been happy to listen and add a comment

or two. I honestly don't remember what my small comments were, but at one point I realized that everyone was looking at me.

"Excuse me," said one gentleman, "but what exactly do you do?"

It seemed that my comments had revealed a strangely eclectic knowledge of seemingly unrelated (and wildly useless) trivia. My fellow dining companions, on the other hand, had excellent knowledge limited to their specific fields. My lack of focus confused them.

I had to explain technical communication and my role as a consultant and trainer. "Every time I take on a new client, I learn something else. I have to learn about their products, their technology, and their area of expertise. I really am not an expert in any of these fields; I merely know a little bit about a lot of things."

One woman, a professor of linguistics, looked concerned. "How can you function if you don't have a specific skillset?" she asked. In a room full of specialists, my Jack-of-all-trades approach seemed to make people uncomfortable.

## Generalism is dead

I interact with hundreds of TC practitioners and students every year. I have seen the shift in focus over the past 20 years. Once, students embraced the concept of uncertainty and were willing to accept that they would have to continue to learn throughout their career. But now, I hear a different attitude:

- "Tell me exactly what I need to know."
- "Show me what I have to do."
- "Why can't you just give me a template to fill out?"
- "Why do I have to learn <subject>?"
- "Why does it matter if I don't understand <concept>?"

Sadly, industry itself reinforces this narrow view. Companies place ads that emphasize narrow specialization, sometimes to the ridiculous level of specifying the version of a DTP application they prefer. Ultimately, they will get what they ask for: drones who know how to do a set of tasks by rote, with no understanding of broader issues, no ability to do their own analysis, and no skills in creative or innovative thinking.



Image: diephosi/istockphoto.com

From the practitioners' side, this is also a loss, as narrowly defined skills are the ones most easily outsourced.

## Long live generalism

My dinner companion may have thought that I had no skillsets, but that is far from the truth. As an experienced professional TC, I know many things at a more detailed level than most people outside of our profession, including:

- user/audience analysis and UX
- English grammar, syntax, punctuation, and usage
- design and layout, including what works and why
- standards and regulatory issues that impact our work
- structuring content for effective use
- writing global-ready content and dealing with localization issues
- communicating with graphics
- taxonomy, navigation, and signposting
- using dozens of different software applications to get the job done

## The blessings of a generalist mind

In the past 12 months, there has been a flurry of TED talks and journal articles embracing generalism and the importance of creative problem-solving. Suddenly, companies are noticing that we generalist Jacks-of-all-trades outperform specialists when it comes to solving complex problems that span corporate silos. While engineers and developers may fixate on a technical solution, an experienced and skilled TC may be far more likely to look at the big picture and see content challenges above and beyond the deliverables for a single product.

It is dangerous to make assumptions about people in a profession, but there are some traits shared by TCs who consider themselves generalists:

- **We read a lot.** We read all the time. Technical journals, novels, essays, magazines, newspapers, product labels, and when in a pinch, the back of a box of cereal. We are insatiable readers, which may be either the root of our language skills or the result of them. In any

case, we read far more than the population norm. And all this reading exposes us to a lot of information, most of it at best merely tangential to our work.

- **We have a good memory for words.** Go see a movie with a TC, and they will quote back great swaths of dialogue afterwards. An artist may remember the images and colors and patterns, but a TC remembers words. We always remember meaning, usually remember most of the words, and sometimes nuance. To a non-TC (i.e., "normal" person), this may appear to verge on the savant end of the scale. It doesn't. It is simply that our emphasis on communication gives good verbal memory.
- **We are good with software.** We learn the concepts quickly and then become self-sufficient and find the functionality we need within a new UI.
- **We think technology is pretty cool.** You can't live a happy life in hi-tech if you don't enjoy some of the geekier aspects of what we produce.
- **We are good at trivia.** You want us on your team at the pub quiz. This comes from our pleasure of learning and reading, coupled with our ability to remember words (rather than just remember the shape of information).

Beyond that, it is dangerous to make sweeping assumptions. We come in all sizes, shapes, ages, genders, and nationalities. We are far less uniformly stereotypical than the awkward software engineer or the über-hip designer. We are just a bunch of people who have become really good at learning a little bit about a lot of things.

## Let's teach generalism

Yes, there are many specific skills and core competencies that someone needs to learn when entering our profession. But as an instructor, I want to urge other trainers, professors, and curriculum developers to support and encourage generalism. Encourage knowledge outside the immediate scope of a project. Build in ways to reward lateral or innovative thinking. Ultimately, as a Jack-of-all-trades, a TC can be a valuable asset in any organization.

Do you have an opinion about specialization vs. generalism? Let us know!

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Room: C9.2/C5.1



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Thursday, Nov 14

Time: 16.15-18.00/  
11.15-13.00 CET

Room: C4.1/K1



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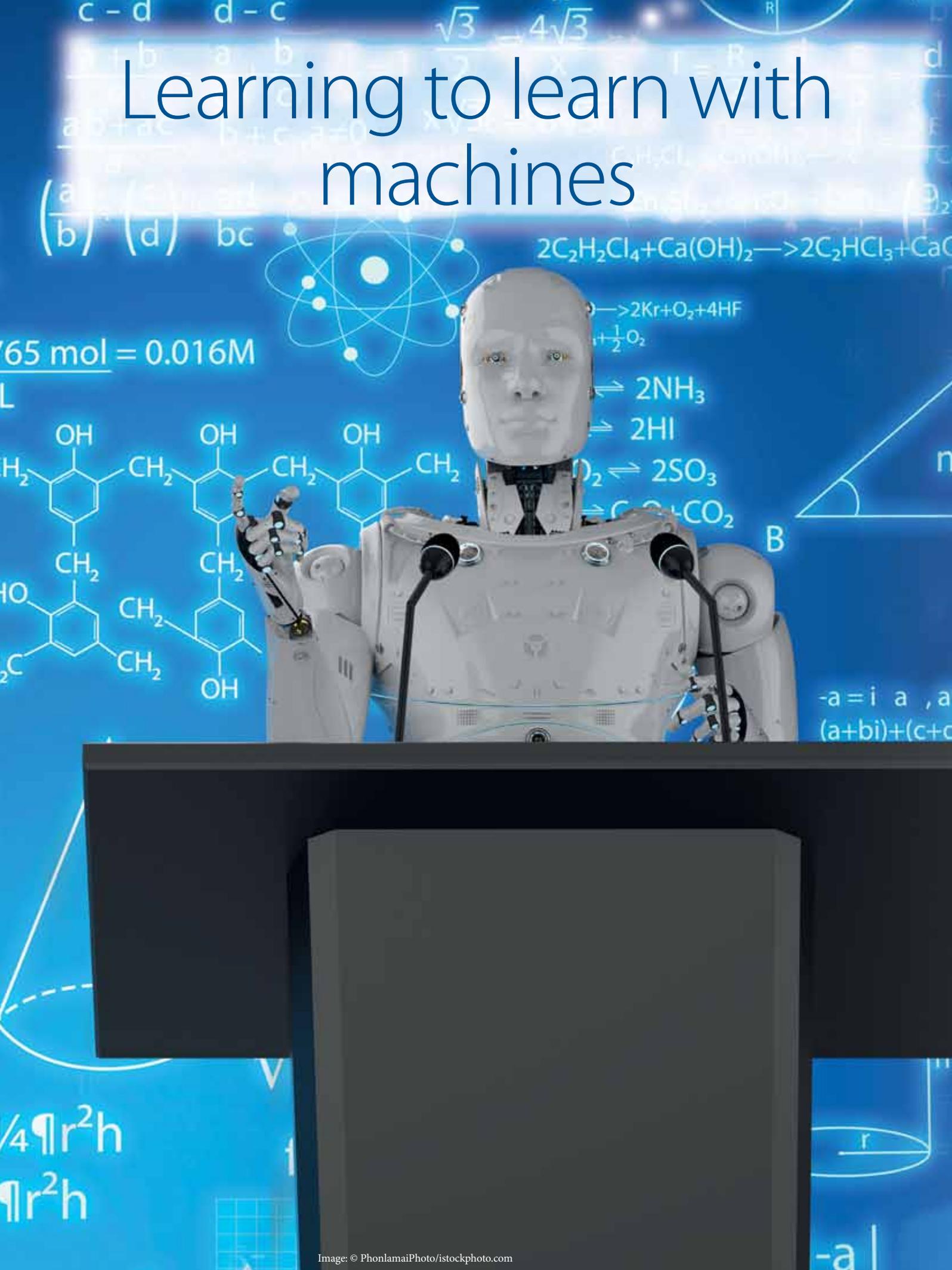
### ABOUT THE AUTHOR

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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# Learning to learn with machines





The rapid advance of technology provides our society with many social and ethical challenges. How can we guide users through a world fostering a society of machines and humans?

Text by Ray Gallon

Greetings, readers, here's a riddle for you to solve: Figure 1 below presents part of a Spanish family tree, showing how Spanish naming conventions work. If you don't already know this, take a look at it, and see if you can figure out the family names for Marta and Carlos at the bottom of the chart.

In all probability, you had no problem deducing the answer\*, even if you knew nothing about the subject beforehand. The chart provides enough of an example that most people are able to generalize from the examples to a new case.

This capacity to generalize is key to many learning situations. It is pivotal to designing user assistance. Roger C. Schank, researcher in Artificial Intelligence (AI) and machine learning, and a specialist in learning by doing, refers to "scenes," similar to, for example, a set of steps in a procedure, or the whole procedure itself. In any given context, we acquire multiple scenes that contribute to a set of interrelated activities that Schank calls "Memory Organization Packets" (MOPs). In UX terms, an MOP might be the set of procedures needed to complete a task.

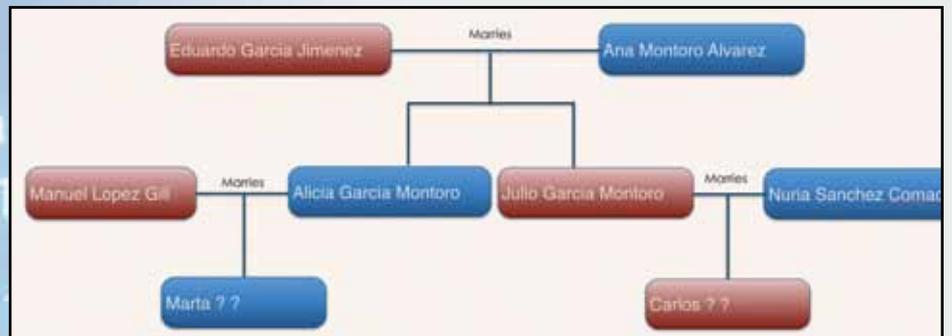


Figure 1: Diagram showing Spanish naming conventions. What will the family names be for Marta and Carlos?  
Source: Ray Gallon, *The Transformation Society*

\* Answers: Marta Lopez Garcia and Carlos Garcia Sanches

Schank says that we generalize a scene from one MOP to another. For example, when we learn a scene, such as recognizing a friend and greeting them at a party, we can easily transfer appropriate behavior to meeting a colleague in a professional context (Schank, 1995).

Generalization, in one form or other, is central to a number of theories of learning and cognition, and plays an important role in the training of machine learning algorithms.

## Gestalt – the whole is “other” than the sum of its parts

Gestalt psychology, which was very fashionable in the seventies, is based on a holistic view of how the brain works:

- It tries to understand how we acquire and maintain stable percepts in a noisy world.
- It assumes that the brain is holistic, parallel, and analog, with self-organizing tendencies.
- The human eye sees objects in their entirety before perceiving their individual parts.

This last point would seem to be contradicted by the most recent research in brain function and perception. The modular doctrine of vision (Zeki & Bartels, 1998a & b; Aleksander & Dumall, 2000) proposes that the visual brain consists of many distributed perceptual systems, each one responsible for the processing of different visual attributes. Research shows that color is perceived slightly earlier than form, and processed almost simultaneously, and that movement is perceived about 50 milliseconds after form (Viviani & Aymoz, 2001). Nonetheless, all of this modular, asynchronous perception is interpreted and merged together by our brain for operational reasons, perhaps reinforcing the holistic orientation of gestalt.

In this holistic, analog, parallel processing system, gestalt psychology suggests that we make generalizations not only by analogy, but also by similarity and grouping. Thus, we see a “man in the moon” because features on the lunar surface are grouped in such a way as to suggest a face. We can also, using a process called reification, interpolate shapes that are not physically present, as in Figure 2, where we can see a sphere that is not actually drawn. We infer it and generalize it from our previous



Figure 2: Reification: the sphere is perceived, not drawn.

Source: Slehar at English Wikipedia - Commons, Public Domain

knowledge of the sphere form, our acquired visual grammar, and our holistic vision. In other words, we fill in the blank spaces to complete them. John Carroll calls this *inferential learning* and in his seminal writing on minimalism in technical communication, he states that users anchor their learning better when they need to do this kind of work, rather than having everything explicitly laid out for them (Carroll, 1990).

## Constructivism – from inference to social knowledge building

*Generating a new idea means systematic combination and recombination of various meanings, which come from the social and cultural environment.*

Nikita Basov, St. Petersburg State University – Bielefeld University

It seems impossible to speak about “reality” without mentioning “perception.” In fact, what we view as real is, most often, our perception of what is real. We like to think of science as representing facts, but “in reality” (pun intended) science is a *constructed model* that we use until it no longer works for us. Then we discard it for a new model that works better. The classic example is when we exchanged the Ptolemaic geocentric model of the cosmos for the Copernican heliocentric one. Our models

are built from a mixture that includes empirical observation, abstractions from mathematics and logic, and our cultural filters and biases. A theory or model becomes “knowledge” when there is consensus about it. It took a long time for Copernicus’ theory to achieve that consensus, and Galileo was condemned to house arrest for defending it. Yet today, it is considered a “fact” that the planets revolve around the sun. Thus, knowledge is constructed socially, and depends on first-hand experiences (as in learning by doing). The learning theory known as constructivism is built on this principle:

- Self-directed learners act on the environment to acquire and test new knowledge.
- Instructors function as facilitators, not knowledge sources.
- The learning context is central to learning itself. Learning is an active, social process.
- Learners collaborate to arrive at shared understanding.

John Carroll’s *The Nurnberg Funnel* (1990) tells us much the same thing in different words. If we want users to be able to find the information they need quickly and easily, they have to be self-directed. They learn by doing, acting on the environment – i.e. the product. The “instructor” (in this case, user assistance) guides the users’ learning; it does not spoon-feed them. We are often enjoined to understand the users’ world – because that is the “learning context” in which they acquire expertise in our

products. That world includes interruptions, distractions, emotional swings, and interactions with colleagues who have different levels of expertise in the same product.

How many times, when learning new software, have you asked the local guru in your department for information about how to do something, or been asked by someone else?

How many times have you asked Siri, or Google, or a chatbot?

Can you identify any one source as more reliable than the others?

## Hybrid learning

The rapid growth of deployed Industry 4.0 technology is creating an extra-sensorial field of interaction that amplifies human capabilities, not only in time and space, but also in memory (human and digital), cognitive processes, and social problem-solving. Machines are becoming protagonists and are building their own communicative layers. Humans already interact with machines as if they were human on some level (Siri, Alexa, Cortana, chatbots, etc.). How far will we go in building a hybrid society of machines and humans? How will this affect learning processes – for both? No one person can hold a whole culture, or the compendium of knowledge in a field, in their head. As developmental psychologist Lev Vygotsky said in the 1930's, knowledge is developed and spread throughout communities, and is acquired by interacting in society (Vygotsky, 1978). In the near future, we are not only going to be sharing learning experiences and knowledge in communities of humans, but also in the cloud with machines. This hybrid community of shared knowledge will include AI agents and interactions that will become as important as humans in many ways (Lorenzo Galés & Gallon, 2018).

So, if humans developed culture from social interaction, can a machine equivalent of culture arise from the Internet of Things? In IoT, machines are assigned unique identities and then connect with other machines in large networks, creating a decisional ecosystem based on algorithmic languages and machine codes. Are they capable of generalizing from one set of big data to another or from one machine equivalent of an MOP to another? There are researchers who think that generalization is almost the only way to develop intel-

ligent machines. It is important to note here that this is not a pipe dream about “conscious” computers equipped with artificial general intelligence. It applies to the narrow, domain-specific kinds of AI we know already.

Jeff Hawkins, inventor of the Palm Pilot, has always been interested in how the human brain works, and has started a research foundation dedicated to studying it. In his book, *On Intelligence* (2005), co-authored with Sandra Blakeslee, he postulates that the human neocortex functions by pattern recognition. We remember the characteristics of objects, situations, experiences, etc. and automatically create predictions of what will come next based on them. Some parts of the neocortex receive low-level input from the senses, for example. Combining this input (or the memory of it) – similar to Schank's scenes – with other inputs and memories, it creates more complex groupings (MOPs?) developing new layers of abstraction in the neocortex. Hawkins believes that this can serve as a unified model for both human and machine intelligence, even for artificial general intelligence.

Not only that, the plasticity of the human brain can provide a model for how we want Artificial Intelligence to function. Research is showing that the brain seems capable of learning to process signals from any sensor – for example, the auditory cortex can learn to interpret visual signals. In the same way, “a single deep learning model can jointly learn a number of large-scale tasks from multiple domains,” according to Lukasz Kaiser at Google Brain, Aidan S. Gomez from the University of Toronto, and their team, who have successfully demonstrated the passage of machine learning from image to text with sufficient accuracy:

*We demonstrate, for the first time, that a single deep learning model can jointly learn a number of large-scale tasks from multiple domains. The key to success comes from designing a multi-modal architecture in which as many parameters as possible are shared and from using computational blocks from different domains together*

Kaiser, et al., 2017

Machine learning can be implemented using a simple, recursive routine, with dynamic access to a large quantity of examples (stored as big data – again analogous to scenes). More concretely, the process is a hierarchy of unsupervised searches,

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where the output of each one is used as input to the next:

*Deep learning is all about hierarchies and abstractions. These hierarchies are controlled by the number of layers in the network along with the number of nodes per layer. Adjusting the number of layers and nodes per layer can be used to provide varying levels of abstraction. In general, the goal of deep learning is to take low level inputs (feature vectors) and then construct higher and higher-level abstract "concepts" through the composition of layers. The assumption here is that the data follows some sort of underlying pattern generated by many interactions between different nodes on many different layers of the network*

Rosebrock, 2017

The network layers can be located anywhere or spread throughout the Internet.

In short, humans and machines each develop their own flavors of MOP from reusable scenes – much as we do when using structured authoring models such as DITA. Reuse of these scenes implies generalizing their application from one MOP to another. The networking of these MOPs produces experience, culture, and finally, what we refer to as intelligence. This happens at individual levels, inside the brain or inside a computer, and also in networks of individuals: human-human, machine-machine, and hybrid (human-machine).

## Connectivism – learning is more important than knowing

Given the emphasis on networks at multiple levels – from individual to community to global scales – it should not be surprising that the most recent evolution from social

knowledge building puts most of the focus on the communicative ecosystem and posits that a learner gains more from the act of learning than from possession of knowledge. The connectivist theory, which is an evolution of constructivism, states:

- Knowledge is activated in the world as much as in the head of an individual.
- It exists through people (and by extension, machines) participating in activities.
- Learning is the process of creating connections and elaborating a network.
- Learning is more critical than knowing.
- Perceiving connections between fields, ideas and concepts is a core skill.
- Currency (accurate, up-to-date knowledge) is the intent of learning activities – and requires nurturing the networks.

Activating new knowledge in the world demands personal and collective investment. This means that emotions also play an important role. On a primary level, we all know the feeling of emotional satisfaction when we have successfully learned a new task that is useful for our working or personal lives. Emotional connections, which are parallel to the shared knowledge networks and communications networks in any knowledge building process, need to be part of the equation we information experts formulate when we design how users will learn about technological products in a future that includes AI and IoT. And because technology cannot have intrinsic emotions or ethics, it will be our role to create adequate systems of governance, and to make sure that good governance is practiced throughout our processes.

## Conclusion

The collective, connectivist vision presented in this article comes from the need to consider human-machine interconnection and communication in a world where connectivity has unknown limits. Humans are going to experience unpredictable cognitive changes just by merging their goals and actions with those of AI agents. This implies social, epistemological, and philosophical challenges that redefine what it means to be alive in a hyperconnected, hybrid society.

As machines gain more cognitive abilities, our own cognitive mechanisms will change too as

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a result of our interactions with them, and this coexistence will develop in a very organic way, creating a new model of society. Our challenge as information experts will be to keep up at the metacognitive level – to understand what is happening to human perception and cognition, and to be able to guide users who are entering this world and help them navigate it with ease and pleasure, but also with the vigilance that this level of advanced technology requires.

### ABOUT THE AUTHOR

**Ray Gallon** is president and co-founder of The Transformation Society. He has over 20 years' experience in the technical content industries, including major companies such as IBM, Alcatel, and General Electric Health Care. He has contributed to numerous books, journals, and magazines, and is the editor of *The Language of Technical Communication* (XML Press).



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# Instruction videos are the new marketing gold

Videos have become our customers' most popular channel to find answers and solve problems.

But can we create a video for every use scenario in every language?

A new technology makes automated video creation a reality.

---

Text by Wouter Maagdenberg



It is a misconception that most YouTube visitors visit the platform for fun and distraction. Most YouTube visitors come to learn. According to a Google report, more than 70 percent of today's YouTube traffic is generated by people learning and searching for solutions to everyday problems. In response, the presence of instructional videos on YouTube, the second largest search engine in the world (owned by the largest search engine in the world), has skyrocketed. In the beginning, these videos were mostly created and distributed by users themselves, so-called *user-generated content*, but corporate presence is increasing.

How-to videos are everywhere and, with eight out of ten viewers indicating they are discovering new things as a result of watching them, it is no wonder that companies are increasingly recognizing the power of video instructions to stimulate learning, to increase their brand and product recognition, and to improve customer satisfaction. From product launches to aftersales services, customers are exposed to videos at every stage of the customer journey.

But not only compelling, sales-oriented videos help to stimulate sales and promote specific features. Buyers also consult videos to compare products or find out how something works. How-to videos are an effective way of demonstrating desirable product features, especially if they help elevate a product above those of competitors. Google studies reveal that 50 percent of in-store and online consumers watch videos before purchasing a product. Instruction videos are fast becoming a crucial part of customer support, maintenance instructions and marketing.

## Technical communication as a gate opener

Whether in B2B or B2C, whether selling products or offering services, buyers and users need the right information during acquisition, ownership and usage. Technical communication plays a major role in every step of the customer journey. Therefore, we need to understand what kind of information is needed and when. Neglecting this will cost us customers; poor execution will cause frustration and will ultimately affect the company in a negative way.

According to analytics provider GfK, the younger we are, the more we research online before we buy. Seventy-two percent of Millennials research and check their options online before making a purchase. These young peo-

ple also bring their behavior with them when they enter our offices and factories. They will use Google for anything they want or need to solve. And this approach is by no means restricted to young generations. We all have become obsessed with researching before we buy or decide, no matter how big or small the investment. And that is exactly why you, as a brand, should be the adviser these consumers are searching for.

On top of this, younger generations look for authenticity first. Traditional advertisements and commercials have a much lower impact on these audiences. Vlogs (video blogs), reviews, and recommendations are the way to catch their attention. Where commercials are often perceived as unreliable, vlogs and also branded how-to videos – when done correctly – are seen as a reliable source because of their authenticity and authority.

Authentic information, such as the branded user guide, is perceived in a far more positive light than slick marketing. However, today's generations are hard to reach via traditional paper and PDF; instead, they are focused on digital media. Being a trusted source is a great start, but getting your content within reach is vital for success. This provides both a great challenge as well as a great opportunity for technical communicators to become the source for these branded how-to videos.

Technical communicators have strong experience in creating and managing fact-based, modular content – which is the ideal source for the authentic and smooth experiences that users are looking for today, including how-to videos. Users are becoming more demanding as to how they want to get their information. It is vital for brands to feed them only the right information at the right time, both with regard to the specific content itself as well as how it is presented. Dumping a multilingual PDF of your product

manual on a smartphone is perceived as neither smooth nor helpful when all that is needed is a quick answer to a simple question.

## From manual to how-to video

Many users today prefer a how-to video over a written manual. Purely looking at the instruction value, video outperforms the written manual as well. This is due to how our brain works: We simply process audio and images more easily than text. According to molecular biologist John Medina, listening to a voice-over while looking at matching images significantly enhances the learning ability of our brain. The effect is enhanced when we simultaneously read a short text of what we are listening to, e.g. short bullet points.



Figure 1: The role of digital videos in our consumers' lives

Source: [www.thinkwithgoogle.com](http://www.thinkwithgoogle.com)

<sup>1</sup> Google/Magid Advisors, Global, "The Role of Digital Video in People's Lives", n=20,000, A18–64 general online population, August 2018.

<sup>2,3</sup> Google/Ipsos, Global, "How People Shop with YouTube Study", 18–64-year-olds who go online at least monthly and have purchased something in the last year, n=24,017, July 2018.

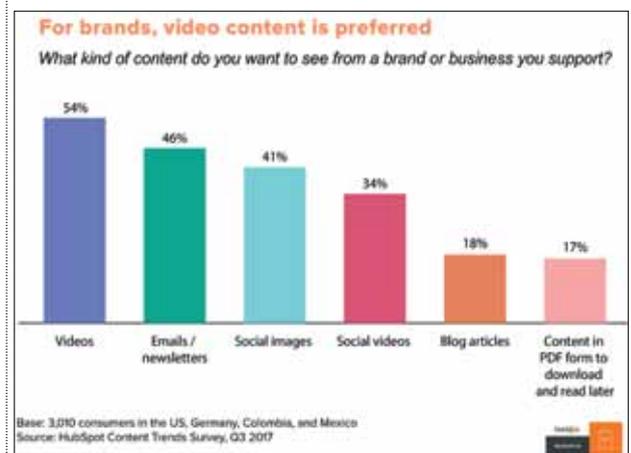


Figure 2: Our customers' content preferences

### The power of modular content for multipurpose publishing

For marketers, it is an immense task to create, curate, and publish on time all this requested information, especially within global companies. The greatest challenge they face is understanding how to create, manage, localize, and update this content at low costs without dependencies on external teams or agencies.

Technical communication teams, with their traditionally topic-based and single-source content creation methods, have a major advantage here. Their modular content, often stored in XML formats and DITA, gets adopted and promoted for all the obvious reasons, such as consistency, reuse and therefore cheaper localization, maintenance, and publishing. Specifically, for digital release, structured content embodies additional valuable characteristics: The way our content is curated and stored with the associated metadata and separate from any style or form makes structured content an ideal base for multipurpose publishing and reuse.

While we are aware of the advantages of modular content during the creation process, these advantages are not leveraged as much after publishing. Even in digital environments, we often find modular content published in the same way it appears on paper. The simplest way is to publish to a PDF and enable visitors to download the file – an obvious choice that serves various use cases neatly. But it is not all that handy when you just want a quick answer to a direct question: You might need to scan through several PDF documents to find the answer to your question. The once granular content has become one big chunk of content again, having lost most of its granularity and its prime accessibility features.

Publishing structured content as HTML already makes up for most disadvantages of paper and today's PDF. Compared to PDF, HTML allows each topic to appear on screen directly and separately, and immediately searchable via search engines and browsers. Still, this can no longer meet all of today's expectations. Audiences have moved to more visual environments, including social media and video platforms. They expect rich up-to-date information at hand, quick responses and interaction if needed. They're visually focused, with video being the most-viewed media. Not offering videos simply makes you unavailable to these large audiences and nonexistent to millions of people. Even search engines display the video results first nowadays. And if you do not have these videos in place, your competition probably does.

### From topics to how-to videos in an automated way

With the immense amount of content managed by technical communication departments, especially within global companies, it sounds impossible to transform it all into videos, let alone keep it up to date. Imagine what it would entail to produce how-to videos for all your topics in all your languages. It is indeed impossible. At least, if you attempt to solve this manually.

The good news is that it is not necessary to transform all your content into videos. There are clever ways to choose what videos you need to create first, such as using logs from your local call centers to get an indication of which videos to start with. But even then, there could be a large range of important topics. Also, the number of topics might be multiplied by the languages needed.

Once you know this number, the next step is to decide how to create these videos. For creating how-to videos, many companies use the same approach and methods as for creating commercials or marketing videos. This is a missed opportunity. Research shows that viewers value an instructional video on different grounds than a commercial. Whereas commercials must sell an experience or future enjoyment, the instructional video should immediately answer a question or solve a problem. It needs to be short and to the point. This is why these videos must be different.

It is important to create the right feeling and experience when producing commercials, but applying the same approach to how-to videos is often perceived as dull and distracting. The most important aspect of an instructional video is to clarify – even before the start – what specific purpose it serves. Viewers want to know right away: Does this video cover my exact problem? And what will I know after watching this video? These are main criteria for selecting the right video amid all the other search results.

In short, the first frame of your video is the most important one. Another important requirement is that the video (and thus the start screen, and SEO metadata) is offered in the viewer's native language. Hence, prioritize the financing of localizing your videos (and their metadata) for all your markets before spending too much money on (often redundant) actors and location.

### Single source to the next level: structured media

Fortunately, there is a solution to automating the creation of videos and keeping them up to date. This solution, offered by TXTOmedia, uses modular – or even better: structured – content topics to transform them into rich media, such as videos and interactive step-by-step media sliders. The technology transforms XML- and DITA-based files into animated and live action videos on the fly.

This technology can tie into content management solutions (CMS, CCMS) to make workflows even smoother. When done correctly, new, newly translated or updated text content automatically transforms into new or updated videos, and the system keeps track of compliance and updates. After an initial setup to make the technology understand specific structures and to define the look and feel, selected



Figure 3: The same XML-based content published as a PDF and as a how-to video

topics are published from within the (C)CMS to the TXTOmedia technology in an XML/DITA format.

### Animated videos

Upon arrival, the selected text is brought to speech, using automated speech services. The created audio fragments all together represent the video's timeline. Referred media and associated data in the XML enrich the visual experience and, together, they deliver the animated video, or a sequence of videos, in a media slider a.k.a. step-by-step video. This concept is based on the idea of fully reusing existing content and workflows and preventing any additional manual effort.

### Live-action videos

The technology can also replace the original referred media with newly added or enriched media, such as high-quality pictures or video fragments. In this way, line drawings from the original maintenance manual are now automatically replaced by filmed video fragments or screen captures, resulting in live-action videos.

### Making media multilingual

This method is even more beneficial when the CCMS contains all localized text content. From now on, when creating illustrations, product images, screen captures, or even live-action video fragments, one should avoid the use of language, written or recorded. All created imagery and video should be kept clean of text and audio, thus saving cost and time. The TXTOmedia technology will add the specified language automatically when generating the videos.

This allows the reuse of these images and video fragments in multiple situations and in all language variations. On-screen text, voice-over audio and metadata are associated based on the topic, language and situation. Style and content are kept separate until the videos are generated.

### Speed up production while reducing costs

The initial idea behind the technology of TXTOmedia is to enable video creation at scale in a cost-effective and manageable way. TXTOmedia often reduces video creation costs by 80-90 percent and brings production time down from weeks to minutes.

The reuse of content and media not only saves costs and precious time-to-market but also helps to prevent disconnected user experiences

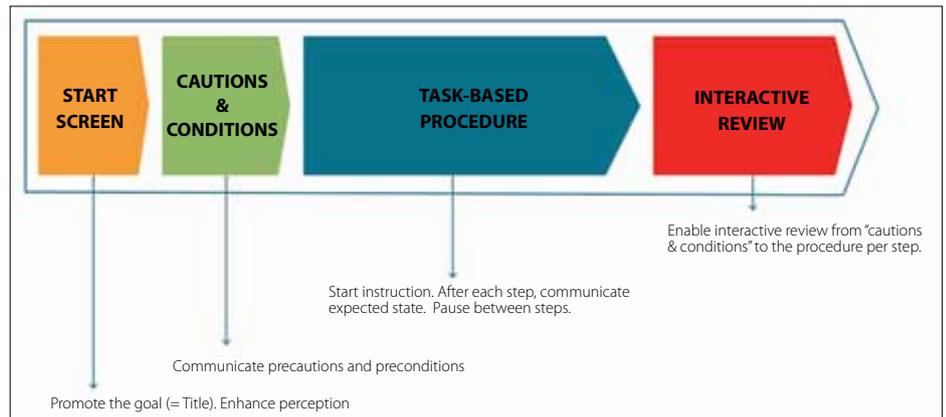


Figure 4: TXTOmedia video model for high-performance instructional how-to videos

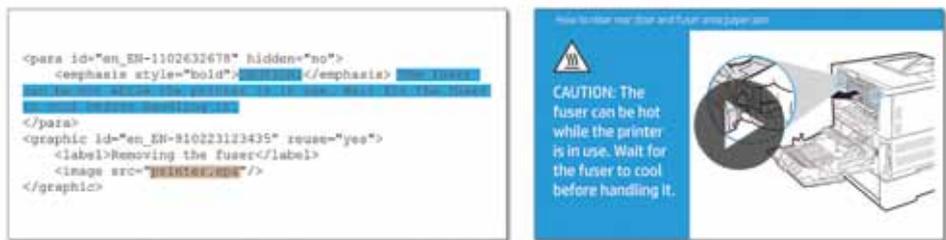


Figure 5: From XML/DITA to animated video Source: [www.txtomedia.com/products/structured\\_studio](http://www.txtomedia.com/products/structured_studio)



Figure 6: From XML/DITA to animated and live action video Source: [www.txtomedia.com/products/video-library](http://www.txtomedia.com/products/video-library)

during customer journeys. By reducing or preventing the need for manual post-production, TXTOmedia hopes to stimulate the availability of native-language videos, and to contribute to the accessibility of information, support and education for people around the world.

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### ABOUT THE AUTHOR

started his first tech company during his BA studies at Erasmus University in 1996 and sold his former company Calamares (Enterprise Video Content Management) to SDL plc in 2011. He left SDL in 2016 to start TXTOmedia. TXTOmedia technology transforms structured content into rich media in an automated way to produce interactive how-to videos on the fly.



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# Specializing DITA – the Relax(i)NG way

It takes a specialized tool to make your work most effective. DITA offers technical authors what a fine screwdriver offers a handyman: An instrument specifically designed for the job.

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Text by Jang Graat



When someone asks me how many elements there are in DITA, I answer “too many and too few”. This is because DITA, like other XML standards, defines its elements semantically. And how many semantic tags do you need to describe the content in your content domain?

The DITA standard contains the most used elements across most of the current content domains where it is being applied. But your content does not require all of those elements. At the same time, there is always something very special about your domain that others do not need at all.

DITA was designed for just such a diverse universe of content domains. And because of its design, it makes little sense to use DITA without customizing it. Using non-customized DITA is not understanding what DITA is all about. This article aims to take away your misconceptions and, most of all, your fears about customizing DITA. The first article (which appeared in the March issue of this magazine [1]) was about reducing the available elements. This follow-up article is about adding your own semantic tags to DITA without breaking away from the standard. Together, these two articles show you all you need to make DITA fit your content like a glove.

## Specialization – adding your own elements

Some jobs, although they can be done with a stick, a brick and a piece of rope, are much easier when you have special tools for them. In that sense, a screwdriver is a specialized stick, a hammer a specialized brick, and a chain a specialized rope. And there is no end to specialization. When you walk into a home improvement shop or a garage, you get the idea.

Specialist (or specialized) tools make your work more effective. This is true for authoring content as well. Technical authors have moved to using XML because of this: Instead of just making every other word bold or italic, it is much more informative to mark up some content as <term> or <api-name> or <keyword>. It also allows much better indexing and other processing of your content. Most of the elements in DITA are these special cases of more generic elements.

As an example, I will create semantics for measurement units [2]. With special tags for <length>, <weight>, <pressure> etc., automatic localization becomes a possibility. This article shows

how the <length> element can be added to DITA using Relax NG.

The steps involved in specializing DITA are:

1. Create a new file to hold your specialized elements
2. Copy existing element definitions to the new file
3. Rename the copied element patterns (use unique names)
4. Constrain the content models of the new elements (optional)
5. Edit the @class to allow generalization by DITA processing tools
6. Inject the new element as alternative for the base
7. Include the new file in your document shells

### Step 1: Create a new file

It is advisable to place your specialization file(s) in a new directory within the DITA 1.3 plugin for the DITA open toolkit. Make the new directory a sibling to existing ones, using the same naming conventions. For the measurement units specialization, I am going to create the file:

```
[DITA-OT dir]/org.oasis-open.dita.v1_3/rng/units/rng/unitsDomain.rng
```

### Step 2: Copy existing element definitions

Basically, specializing an element means copying an existing element definition, changing its name to a unique name, and optionally constraining its content model. This allows DITA processing tools to generalize your specialized element back to its ancestor and not choke on it. This means that you need to pick the right base element for your specialization. It needs to have at least all the child elements that you need in your specialized content model. Also, your base element must be valid wherever you want to make your new element valid.

The new <length> will have mandatory <amount> and <unit> children, each of which will only have text. As I want to have <length> become valid anywhere in my topics, I am basing it on the <ph>. Both <amount> and <unit> will be based on <ph> as well. In my unitsDomain file, I will therefore create three copies of the <ph> element definitions.

### Step 3: Rename the patterns

In the copies of the <ph> patterns, I replace each occurrence of “ph” with “length” (and simi-

lar for “amount” and “unit”). Showing only some patterns for <length>, the result is:

```
<define name="length">
  <ref name="length.element"/>
</define>

<define name="length.element">
  <element name="length" dita:longName="Length">
    <ref name="length.attlist"/>
    <ref name="length.content"/>
  </element>
</define>

<define name="length.attlist" combine="interleave">
  <ref name="length.attributes"/>
</define>

<define name="length.content">
  <zeroOrMore>
    <choice>
      <ref name="ph.cnt"/>
    </choice>
  </zeroOrMore>
</define>
```

You can guess the remaining pattern changes from the above examples. Note that the content model – which references a “ph.cnt” pattern – is not changed yet. This is done in the next step.

### Step 4: Constrain the content models

The new element should not allow everything that the <ph> base allows. I want to constrain the content model of <length> to only allow my new <amount> and <unit> elements (both mandatory). Note: Instead of a <unit> child element, I could have chosen an attribute. The advantage of an attribute is the option to limit accepted values, but rendering would require added code to make the unit appear in the output.

Each of these elements in turn only allow text. This means editing these content models as follows:

```
<define name="length.content">
  <ref name="amount"/>
  <ref name="unit"/>
</define>

<define name="amount.content">
  <text/>
</define>

<define name="unit.content">
  <text/>
</define>
```

To define the attributes allowed on <length>, I need to change the model for the attlist. I am going to remove some of the unwanted attributes and add a mandatory attribute for the measurement system, with a limited set of values to choose from (Note: I could have chosen other values, such as

“metric,” “imperial” and “us\_custom” or any other set of defining values. Those chosen seem to be convenient, as they already appear in locales):

```
<define name="length.attributes">
  <ref name="univ-atts"/>
  <attribute name="units">
    <choice>
      <value>EU</value>
      <value>UK</value>
      <value>US</value>
    </choice>
  </attribute>
</define>
```

The “univ-atts” pattern makes sure the attributes for the conref mechanism are kept on <length>. This allows me to reuse a <length> throughout my content. As I do not want to have the conref done on the <amount> and <unit> children, I will edit the attributes model for those elements to remove the “univ-atts” pattern included, you will have to add individual attributes from that pattern to your model.

### Step 5: Edit the class attribute

The magic of DITA (allowing you to add new elements without breaking the rules or tools) lies in the class attribute, which points to the ancestry of a specialized element. In the case of <length>, the value for @class lists a + sign (for domain specialization), the domain plus element name of the ancestor and the domain plus element name of the specialization.

```
<define name="length.attlist" combine="interleave">
  <ref name="global-atts"/>
  <optional>
    <attribute name="class"
      a:defaultValue=
        "+ topic/ph units-d/length"/>
  </optional>
</define>
```

### Step 6: Inject the specialization

At this point, the specialized elements are completely defined, but there is no way to enter them into the DITA content. Before I can start using the specializations, I have to extend the definition of the base element, so that the specialized elements appear as alternatives for the base wherever that base is valid. This is done in two patterns that are usually added at the top of the specialization file:

```
<define name="unit-d-ph">
  <ref name="length"/>
</define>

<define name="ph" combine="choice">
  <ref name="unit-d-ph"/>
</define>
```

The first pattern can be extended to allow more specializations in this domain (such as <pressure>, <weight> etc.) – in this case, all the alternatives must be wrapped in a <choice>. The second pattern activates the specialization. Wherever <ph> is valid in the existing content models, the

alternatives from the new units domain become valid, too.

### Step 7: Include the specialization

Before the new specialization can be used in actual DITA content, it has to be included in a so-called document shell. This is the starting point for validation of XML content. Each topic type for which you want the specialization to become available needs to reference the new domain file:

```
<include href="../../units/rng/unitsDomain.rng"/>
```

For completeness, the @domains of the root element for the topic should also be extended with a reference to the new domain:

```
<attribute name="domains"
  a:defaultValue="[...]
  (topic units-d)"/>
```

However, to my knowledge, none of the current DITA processing tools is really interpreting the @domains, so this step is not necessary to make the specialization work.

### Using the specialization

Once the document shell is extended with the new units domain (and assuming your XML editor allows direct validation from Relax NG files or

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you have transformed the Relax NG files into DTDs for validation), you can start using the new `<length>` wherever a `<ph>` is valid in your content. As the `@units` on `<length>` as well as its children `<amount>` and `<unit>` are mandatory, your editor will complain until you have the markup completed, as in this example:

```
<?xml version="1.0" encoding="UTF-8"?>
<concept id="TestUnits">
  <title>Testing length specialization</title>
  <conbody>
    <p>This is a test for measurement units</p>
    <p>The wall is <length units="UK">
      <amount>10</amount><unit>ft</unit></length>
      long and <length units="UK">
        <amount>5</amount><unit>ft</unit></length> high.
    </p>
  </conbody>
</concept>
```

Apart from forcing correct and complete markup, this specialization also allows automatic localization of the content. An XSL transform can change the `<length>` from the imperial (UK) to the metric (EU) system: Multiply the amount by 0.3048 and change the `<unit>` to "m". Of course, rounding will have to be added to prevent endless decimals, but the technique can be fully automated based on the specialized markup.

```
<define name="unitsAtt-d-attribute">
  <optional>
    <attribute name="units">
      <choice>
        <value>EU</value>
        <value>UK</value>
        <value>US</value>
      </choice>
    </attribute>
  </optional>
</define>

<define name="base-attribute-extensions" combine="interleave">
  <ref name="unitsAtt-d-attribute"/>
</define>
```

## Specializing attributes

In the above example, every occurrence of `<length>` requires entering the measurement system in its mandatory `@units`. Usually the entire topic, or at least a section in the topic, will be using the same measurement system for all its `<length>` elements. This prompts me to create a specialized attribute, which can then be made available on a large number of base elements at the same time.

Each specialized attribute must be defined in a separate file. The naming conventions use the new attribute name followed by "AttDomain". This file must be included in the document shell to make the attribute available.

To enable additional attributes on base elements, two extension points are included in the standard DITA files: These allow extending the

`@base` and the `@props` attributes. The `@props` is meant to allow conditional content. If you wanted to filter your content on a specialized attribute, you would normally choose to extend `@props`. In most other cases, you would choose to extend `@base`.

For the `@units` specialization, I am using the predefined extension point for `@base`. This makes the new `@units` available on all elements that include `@base`. The easiest way to create the new attribute is copying an existing attribute specialization file. I have copied the file "deliveryTargetAttDomain.rng" from the "base/rng" subdirectory to the file "unitsAttDomain.rng" in the "units/rng" subdirectory. The edits I need to make to this file are the following:

you should plan the names carefully. Otherwise, another specialization might cause naming conflicts with yours and limit the options to use multiple specializations in the same set of topics. And finally, you should really think your specialization needs through before putting them into practice: Try to look further than your immediate requirements and see if you have included all conceivable options in your content model. Once your specializations are going to be used in actual content, it becomes harder to change the model. Getting it right the first time is worth the extra effort of imagining all the possible use scenarios before you nail down the naming and content model of your specialized DITA elements. If you want a geek philosopher's advice, drop me an email.

## References

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- [2] I will present a more elaborate measurement units domain at this year's DITA Europe conference in Brussels. That presentation will also show an automatic transform of values from one measurement system into another.

Including this file in the document shell makes the `@units` available on every element that has `@base` included in its attribute list.

## Closing remarks

With the change to Relax NG for the definition of the standard DITA files, customizing DITA has become a very easy and straightforward job. The main part of the specializing job is choosing the base element to specialize from: Its content model has to accommodate at least all of the elements you need.

One of the key ingredients in creating good specializations is naming: Choose names that are easy to remember for the authors. At the same time, the element names must be unique and, if you are planning to pass your specializations to others outside your own organization,

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# IEC/IEEE 82079 and ISO 20607 on publishing information online

In 2019, two new standards saw the light of day: ISO 20607 and IEC/IEEE 82079. The trend of the paper manual becoming obsolete continues. A relief for many companies. But exactly how do we need to handle online instructions?

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Text by Ferry Vermeulen



Many European Directives, such as the R&TTE, LVD and EMC Directive, were repealed or replaced in 2016, allowing companies to deliver the user instructions for many products only online. The new standards on instructions for use also offer new opportunities. For many products, it is no longer required to supply the full manual in the packaging. This digitization is a pretty logical step considering that 85 percent of European households had an internet connection in 2016 [1], and Western Europe and Eastern Europe had a 75 percent and 60 percent smartphone penetration respectively [2].

In this article, I will discuss how you can legally digitize your product information, under which circumstances you can publish your documentation online, and in which cases print is still required. For this I will review the relevant parts of ISO 20607 and IEC 82079 that relate to online publication.

## What does European legislation allow regarding online publication?

Before 2016, the obligation to deliver printed instructions with the product was usually not included in a European directive itself. It could be found in the documents accompanying the directives, for example in the guide that accompanied the old EMC directive 2004/108/EC. This EMC guide stated:

*“The Commission services have taken as a bench-mark that the information provided to the end-user has to allow him/her to use the apparatus without any further steps on their behalf. (...) It is not accepted (in other cases than those stemming from the view above) that electronic media or a hyperlink is sufficient as an alternative to information in paper copy. The end-user has an absolute right to quick and easy use of the apparatus they have purchased with no further obligations (such as access to the internet).”*

With the introduction of the “New Legislative Framework” (NLF), dealing with the marketing of products, and the subsequent replacement of several product directives in 2016, only a few guidelines remain that state that a paper manual is necessary. In fact, the Blue Guide (last update: July 27, 2016), which was developed for the im-

plementation of this new product safety legislation, states the following:

*“Unless otherwise specified in specific legislation, whilst the safety information needs to be provided on paper, it is not required that all the set of instructions is also provided on paper but they can also be on electronic or other data storage format. However, a paper version should always be available free of charge for the consumers who request it.”*

This concludes that:

- Instructions, unless specified otherwise, may also be delivered in a different format with the product, rather than in print.
- Information about the safety/safe use of the product must still be delivered in paper form (hard copy) along with the product.
- Any company must, at consumer request, make a hard copy of the user manual available to the consumer.

## IEC/IEEE 82079-1:2019 and online publication

*IEC/IEEE 82079-1:2019 Preparation of information for use is the successor to IEC 82079-1:2012 Preparation of instructions for use.*

This international standard provides principles and general requirements for information for the

use of products. According to the standard, information for use is necessary for the safe use of a product, helpful for the efficient and effective use of a product, and often necessary to fulfill market, legal, and regulatory obligations.

The standard has been developed by two convenors and 23 members from nine countries. Therefore, it has broad international consensus. Compared to its predecessor, it contains some major updates. 82079 is a so-called *horizontal standard*: It does not apply to just a specific product or sector, but contains rules across sectors for almost all branches of the industry. The standard defines requirements for the content, structure, quality, process, media, and format of information for use. Information for use is considered an integral part of the supported product.

Content for information for use is based on three pillars: instructional information, conceptual information, and reference information. Information for use may include various information products that are selected, presented, and delivered in different media to meet the needs of different target audiences. The concept of information for use according to the new standard is illustrated in Figure 1.

The following items are new in 82079-1:2019:

- Change of title. In the new title, “information for use” is used instead of “instructions for use” and IEEE has been added as the co-developer (together with IEC). “Information for use” was used to indicate content that covers more

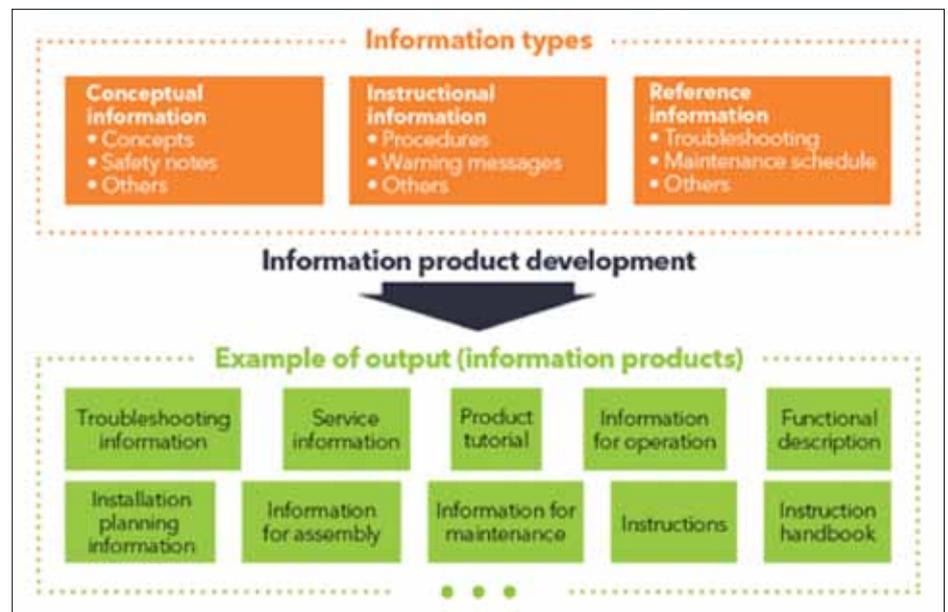


Figure 1: Information types can be used to create several information products.

than instructions/activities or operations to be performed.

- The standard's requirements are divided into those for *information for use* and those for the *information management process*. It includes a separate clause with requirements for the information management process. This clause does not apply to consumer products.
- The new standard describes clearly how to comply with both the requirements for information for use and the requirements for the information management process.
- The new standard includes a new clause named "professional competencies", which states that the creation of information for use shall be assigned to competent persons and even gives clear requirements regarding proficiency level.
- The principles of minimalism have been integrated into usability.
- To enable a safe, efficient, and effective use of a supported product, 82079 divides information for use into three information types. These information types consist of conceptual information that the target audience needs to understand, instructional information to be followed or considered, and reference information to be consulted when needed.
- The new clause on "structure of information for use" emphasizes the use of leading criteria for structuring.
- A new clause on the "media and format of information for use" is included. It covers the former section "presentation of instructions for use" and more. This clause is relevant for the publication form of the information for use.

Standard 82079 has become less strict regarding the media and format of the information for use, stating that it should be "based on the needs of the target audiences". Easy and permanent access to information is considered important and that the chosen media are durable. As possible media that can be used, 82079 specifies a combination of text, photographs, safety signs, graphical symbols and illustrations, video, animated illustrations, speech, Braille, AR, VR, etc. According to 82079, the conditions of use need to be considered when choosing the media and format. For example, in the case of low light, the medium should light up the text. Speech should not be used in a noisy environment. Paper should not be used in wet environments or clean rooms. Depending on the needs of the target audience, information for use can be provided inside the packaging, on or within the product, on the

packaging (but not limited to the packaging), on websites, or separately as collateral documentation. Consider the following items when formatting and presenting your online information for use:

- Make sure that downloadable information can be displayed on commonly used devices.
- Make sure that text fonts, safety signs and graphical symbols are clearly legible and follow the recommended minimum sizes.
- Maximize brightness contrast.

## ISO 20607 and online publication of instruction handbooks for machinery

ISO 20607 for Instruction Handbooks was developed by ISO, the International Organization for Standardization (whereas the new 82079 was developed by IEC/IEEE). Standards 82079-1:2019 and 20607 are related: The current ISO 20607 standard is based on the 82079 standard and can be seen as an enhancement to 82079 that contains additional guidelines for developing instruction handbooks specifically for machinery. Therefore, any guidelines as described in 82079 have not been repeated in 20607, such as the principles of minimalism or requirements for the information management process. The standard for machinery was developed due to the need to provide detailed safety specifications specifically for machinery. ISO 20607 also has a strong relation with the ISO 12100 standard for risk assessment and risk reduction.

As 20607 can be considered an addition to 82079, both standards should be applied when creating an instruction handbook for machinery. When you use both standards for the development of an instruction handbook, you create the highest possible presumption of conformity with the corresponding requirements for harmonization legislation.

Focusing on machinery and as an enhancement to 82079, 20607 covers the following topics:

- Content and structure of the instruction handbook
- Language and formulation/style guide
- Forms of publication

20607 creates much more freedom regarding electronic distribution of instruction handbooks, compared to how this was interpreted in the *Guide to Application of the Machinery Directive*. The Machinery Directive does require that "Before placing machinery on the market and/or putting it into service, the manufacturer or his authorized rep-

resentative shall provide, in particular, the necessary information, such as instructions." However, it is not mentioned in which format the instructions should be provided and if this must be printed and included with the product, or whether these can be provided online. The *Guide to Application of the Machinery Directive* states the following:

*"Section 1.7.4 does not specify the form of the instructions. It is generally agreed that all health and safety related instructions must be supplied in paper form, since it cannot be assumed that the user has access to the means of reading instructions supplied in electronic form or made available on an Internet site. However, it is often useful for the instructions to be made available in electronic form and on the Internet as well as in paper form, since this enables the user to download the electronic file if he so wishes and to recover the instructions if the paper copy has been lost. This practice also facilitates the updating of the instructions when this is necessary."*

Although the *Guide* is not legally binding, it has always been generally agreed that at least the health- and safety-related information should be provided in paper form, if not the entire user instructions.

This might change as soon as 20607 is harmonized. Section 7 of the standard describes that the instruction handbook must be provided as agreed with the customer, taking into consideration the local legislation of the country where the machinery is placed on the market and/or put into service for the first time. Basically, it means that it is required to fulfill the (European and local) legal requirements and, if requirements are absent, the contract shall be taken into account. The contract can also be an addition to local legislation. For example, a manufacturer must have an agreement that regulates the provided languages and publication forms. In principle, the handbook can be a paper handbook, placed on an electronic storage medium (such as a CD or USB stick, or on a device accompanying the machinery), published online, or it can be provided in a visual or auditory form.

## Conclusion

The paper manual is an eyesore to many marketers as well as information and UX designers. According to them, it does not align with the customer

journey. That's why the obsolescence of a paper manual is a relief for many companies, especially those within the consumer electronics market, who operate internationally and attach great value to cost reduction and customer experience.

The new standard provides more freedom regarding the publication. But how easy is it to provide instructions that are legally valid and only available online? When making your decision, you need to take into consideration agreements as well as local and European laws. In everyday life, determining what the possibilities are might still lead to confusion and discussion. Your decision will ultimately depend on:

- What kind of product do I have (machinery, electrical equipment, toy, medical device)?
- What legislation does apply and which standards do I want to apply?
- Who is my target audience and what are their needs?

- Where do I sell the product and what are the local regulations regarding the publication format?

Some say that there is still a lot to sort out and that there is no easy one-fits-all solution that can be applied to all member states. Others argue that the new standards offer more freedom. What do you think?

## References

- [1] [www.statista.com/topics/3853/internet-usage-in-europe](http://www.statista.com/topics/3853/internet-usage-in-europe)



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- [2] [venturebeat.com/2018/09/11/newzoo-smartphone-users-will-top-3-billion-in-2018-hit-3-8-billion-by-2021](http://venturebeat.com/2018/09/11/newzoo-smartphone-users-will-top-3-billion-in-2018-hit-3-8-billion-by-2021)

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# Beyond translation: Conversational content in a multilingual world

Conversations flow very differently in different languages and countries. But does your chatbot know that?  
Here is what to keep in mind when localizing conversational agents.

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Text by Dr. Arle Lommel



Chatbots, machine-authored text, and automated information retrieval and summarization: These topics are increasingly important to global businesses seeking to interact more efficiently with customers and meet their needs. Recent developments in this area have been spectacular, and AI-driven intelligent agents (chatbots and virtual digital assistants such as Siri, Cortana, and Alexa) are among the most visible success cases for machine-generated content. Enterprises look to these applications as ways to reduce costs, engage users, and create entirely new classes of goods and services. Unfortunately, as they seek to build these services, they very quickly run into walls that threaten the viability of their development efforts:

**1. Most intelligent content frameworks support only a handful of languages.**

The most common frameworks are essentially monolingual and built around English or Chinese, with some support for French, Spanish, German, or other major languages. Although it might seem trivial to localize strings in these development frameworks, this lack of language support is a problem.

**2. Speech technology still lags for voice-enabled applications.**

Although it is getting better, automatic speech recognition (ASR) still struggles with accents and nonstandard dialects, slang, unclear speech, and out-of-vocabulary items. Even a few misunderstandings can change the course of an interaction. Privacy concerns can make it hard to bring humans into the loop to improve outcomes.

**3. Lack of state in applications frustrates users.**

Data privacy concerns prevent developers from storing information on the history of user interactions with services. For example, if a phone owner asks Siri or a similar service for directions to Garmersheim in Germany, it can launch a mapping application. However, if, five minutes later, the user asks, "What are the top tourist attractions there?" these applications will not know what "there" means because their developers have no way of tracking what happened in the conversation moments before.

However, an even bigger problem from a localization perspective is that conversations do not

follow the same rules and expectations across cultures and languages. For example, a chatbot developed in the U.S. might ask, "What's your name?" early in a discussion, store the answer in a session variable, and use it frequently in dialogue, for example: "Thank you, William. When do you want to book that flight?" Individuals interacting with a chatbot in other markets might find the use of a first name in this fashion to be too informal or "American." Although it may be simple to re-engineer a conversational agent to avoid using first names, other problems are not as easy to resolve. Conversations flow differently in different languages and countries: When to ask for specific information – or even what to ask for – may not be the same.

Some translation vendors promote the idea that enterprises leverage machine translation as an "intercept layer" on top of a chatbot in order to avoid the expense and difficulty of translating it. However, even in cases where differences may not be immediately apparent, factors such as indirect ways of asking or answering questions can throw agents into confusion. For example, if a chatbot is built on U.S. English training data and asks a yes-or-no question to which a British user responds, "That would be lovely," this typical English response may cause the agent to stop, even without the need for translation. Add in the factor of machine translation from German to English or French to Chinese and small differences can quickly add up.

## Conversational agents pose a challenge, even for major enterprises

In CSA Research's examination of chatbots, many developers expressed a pessimistic outlook about their ability to deliver them in multiple languages. One of the largest developers stated that it assessed the likelihood of success for these projects at less than 30 percent. It subsequently abandoned its efforts to translate chatbots due to the high failure rate. It found that each language version, rather than being a translation, was effectively an independent development effort.

Some of the factors that lead to failure for localization of intelligent agents are:

**1. Lack of relevant training data outside of English.**

The current excitement around

machine learning applications can lead companies to unwarranted optimism around their projects. Data-driven chatbots and other agents require substantial amounts of relevant examples that have been labeled – usually by human curators – but this information may be unavailable in most languages. Data manufacture – the practice of creating relevant training data – is currently an expensive and labor-intensive task, and the return on investment may not justify it for most markets.

**2. Lack of natural language processing (NLP) tools in many languages.**

Chatbots and other agents frequently rely on technologies such as sentiment analysis – which determines whether comments are positive or negative – and entity identification, which finds references to specific objects, concepts, dates, locations, or other information and links it back to authoritative sources of information. These tools today exist primarily in English and a handful of European languages, but cannot be assumed to exist everywhere. To work around this limitation, some developers use machine translation, but errors in the results this technology yields can lead to disappointing outcomes.

**3. Lack of local knowledge.**

Most development efforts start in English and prepare scripts and templates to highlight expected use cases. Unless teams involve experts in the languages and countries they intend to do business in, they may find that seemingly reasonable design decisions end up creating downstream headaches. This is particularly the case when legal concerns apply to specific markets or when conversation sequence or expectations vary considerably from the source version.

**4. Feature creep.**

If development teams do not exercise discipline, the scope of their agents may expand over time. As they become more complex, the points of potential difficulty in localization multiply. Enterprises report the best success across multiple languages when they keep their conversational agents focused on specific tasks and limit their scope.

The situation with intelligent agents today is in many respects similar to software development in the 1980s and 1990s before internation-

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alization best practices emerged. As a result, companies are experimenting with various solutions, but clear guidance for how to localize intelligent agents is lacking.

## Steps to improve chances of success

Not every project will succeed. Work with conversational agents is a new and exciting field, but developers still have to figure out how to make them work around the world. Your goal is to improve the likelihood that you will deliver conversational agents successfully in various markets. If you are localizing them, you can boost your chances by doing the following:

### 1. Do more than translate strings.

Rather than creating translated versions of resource files and plugging them back into the source agent, treat each localized version as an independent product. Although you may be able to borrow some translated assets, be prepared to engineer language-specific solutions. The results may be more like transcreation than traditional localization, but they are more likely to meet expectations.

**2. Involve local experts early on.** Involve them in more than advisory roles. They need the authority to influence plans and production schedules, or you run the risk that development teams will ignore them and move ahead with plans that will not work internationally. As a result, language experts need to be an integral part of the development effort.

**3. Develop around a common set of capabilities.** Different frameworks for creating conversational agents have different feature sets. Many developers report difficulty when they build chatbots or other agents on a platform that supports certain functionality only to find that it is not available on common platforms in other countries. To address this difficulty, list the platforms and frameworks you will need to support for each market. These will vary from fully speech-enabled ones in some markets to simple SMS-based text agents in others. Based on what you want the agent to accomplish, find a path to success on a common set of features. If this is not possible, do as much as you can

and document the areas where you will need separate engineering effort for some markets.

**4. Be willing to scale back plans.** Management may want an intelligent conversational agent that can do everything, but such efforts will almost certainly fail when multiple markets are factored in. You are much more likely to achieve success with smaller, focused agents. This approach will usually deliver better results in your source language as well. If you need an agent that can address many needs, create a selection mechanism up front that routes customers to a purpose-built agent that meets their needs. In addition, even if you use a machine learning-based framework in your home market, you may find that a “rails-driven” agent will provide better outcomes in your target markets because it does not depend on the ability to understand unconstrained speech. This type of chatbot instead relies on simple questions with answers such as “Press or Say ‘Yes’ or ‘No’” to guide users down pre-defined paths, i.e. “rails”, to meet their needs.

Although localizing conversational agents is a challenge, increasing numbers of enterprises are successful in this area. Growing awareness of international issues and how they affect these applications is also helping to drive better support in frameworks, thus facilitating these projects over time.

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**Arle Lommel** is a senior analyst with independent market research firm Common Sense Advisory (CSA Research). He is a recognized expert in quality processes and interoperability standards. Arle's research focuses on technology, quality assessment, and interoperability.



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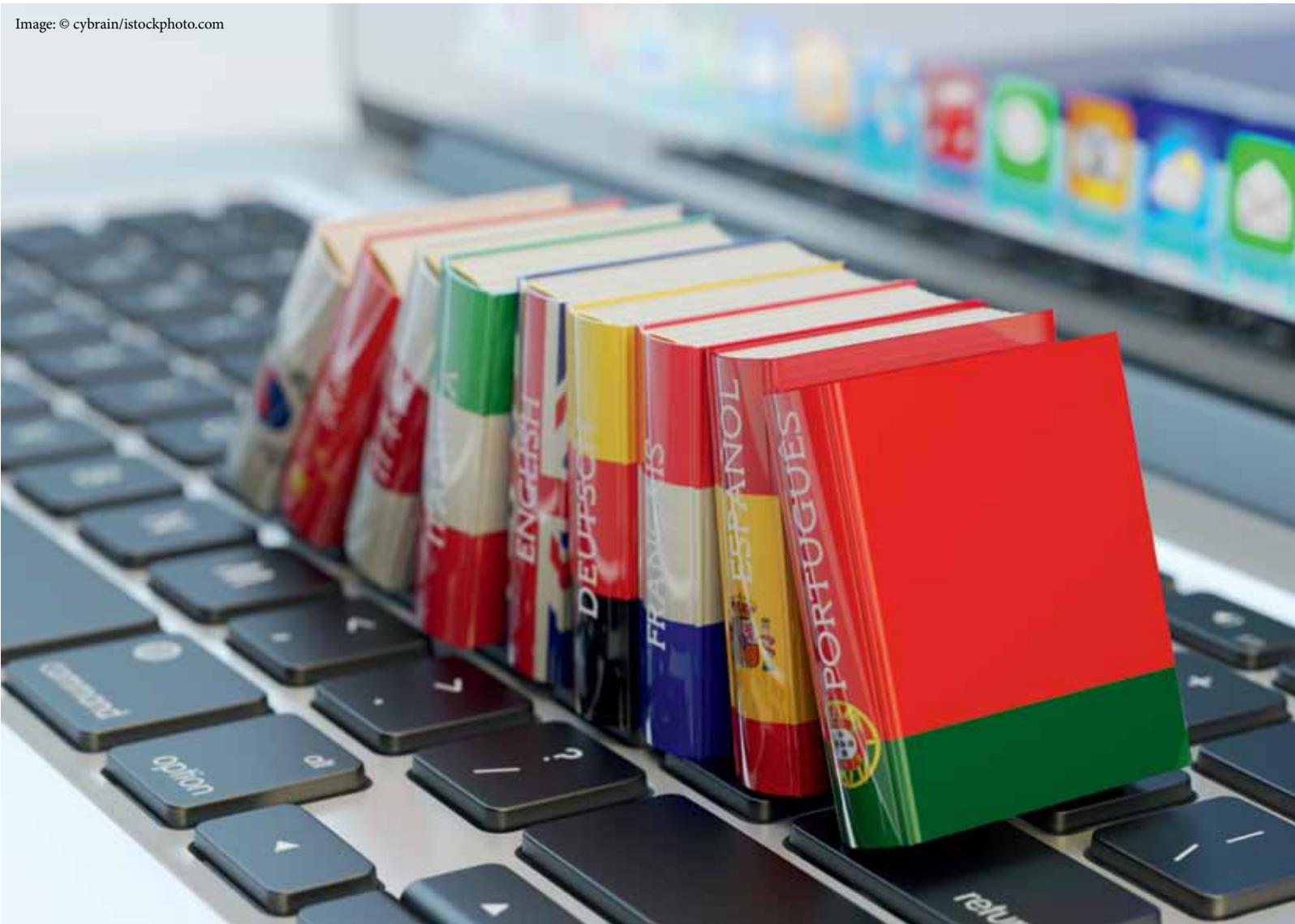
# The challenge of being a translator – and a client – in the age of AI

The arrival of Neural Machine Translation has turned the translation industry on its head. Time for companies to reap the opportunities; time for translators to find their place in this new landscape.

---

Text by Sara Grizzo

Image: © cybrain/istockphoto.com



Before Artificial Intelligence (AI) and Neural Machine Translation (NMT) materialized in the localization and translation world, the landscape of our industry was pretty straightforward. When it came to translating content written in language A into language B, two scenarios would open up:

In the first scenario, clients required spot-on translations that needed to be perfect in terms of terminology consistency, style adequacy, punctuation, grammar and spelling. In this case clients cooperated with professional linguists who relied on the different functions of CAT tools (translation memories, glossaries and QA options) in order to provide the necessary quality.

In the second scenario, clients chose to use machine translation (MT) – rule-based at first, followed by statistical engines in the early 2010s – for handling translation assignments that either involved highly standardized content, i.e. with relatively simple built sentences and no room for ambiguity, or required only a so-called “good enough” quality; this was often the case for gisting and internal communication. Of course, MT output needed to be checked and improved, so clients depended on translators willing to take care of the post-editing (PE).

Back then, translators weren't very keen on this kind of task; some of them reacted quite emotionally when the topic was brought up. Only a relatively small group of linguists were involved in post-editing projects. Many would turn down such assignments, mainly because they feared the work on the output would take way too long and not bring in enough money. Then came the true turning point for our industry, one that changed the landscape forever. Between the end of 2016 and the beginning of 2017, Google and DeepL announced they had eventually succeeded in developing their neural engines.

## The arrival of the Babel fish

These new engines have been able to perform much better than previous systems. They have delivered an undeniable improvement in terms of output fluency, a better understanding of the source text as well as the ability to make out mistakes in the source text. In addition,

NMT can cover a larger array of language combinations. Despite the downsides of this approach – lack of terminology consistency, added/missing content and plausible but misleading translations – the latest technology bears great potential.

For clients, this new development means they can apply MT to complex content, to more content types, to “new” language combinations as well as to different domains and applications. As a result, we now have plenty of different scenarios and a more multifaceted understanding of quality that very much depends on the client requirements, project specifications and/or turnaround times:

- **Human translation**, with linguists translating the source text in the traditional way, only relying on the technology aid provided by CAT tools
- **Post-editing within CAT tools**, where the bilingual files have been pre-populated with MT output (in this case quality requirements can range from light PE to full PE, with clients often preparing very clear guidelines about the standards the final text needs to fulfill and the mistakes that can be ignored)
- **Post-editing within online tools**, often developed by the clients themselves and integrated into the company workflows
- Human translation supported by machine translation and predictive typing solutions in order to improve the linguists' productivity (so-called “**augmented translation**”)

## But what about the translators?

Certainly, translators today can't deny the recent advances in technology and the improved output quality of the NMT engines, at least in some domains. With plenty of MT solutions available online and as plug-ins for almost every CAT tool, translators can run ample tests on different content and draw their own conclusions. People are no longer laughing at the online translations suggested by Google or other providers. Overall, linguists have developed an increasingly positive attitude towards MT. Many have already implemented it to maximize their own productivity. Or to get some inspiration in case they aren't 100 percent sure about the meaning of a specific sentence or just need

some brainstorming assistance around a certain term. For instance, the Thesaurus function available on the DeepL online interface is very popular among linguists.

But despite the obviously good performance of NMT and its potential as a productivity boosting tool, the translator community is generally unsettled by the changes occurring in our industry. Specifically, translators

- fear that at a later stage they will be replaced by the machines and will eventually become redundant;
- aren't pleased about machine translation being suddenly applied to every kind of content, especially those less suitable for MT, such as marketing content or creative texts;
- are aware of the hidden risks of NMT (added/missing content, output that sounds plausible but doesn't reflect the source text) and reluctant to take on post-editing because they are afraid of overseeing major errors and of having to take liability for these kinds of mistakes;
- find it generally difficult to take on light PE assignments as they are not used to delivering lower quality and to ignoring basic grammatical mistakes or style issues;
- don't like the idea of putting up with the MT output, providing them neither freedom to build their own sentences nor room for creativity;
- have concerns about the long-term impact of MT usage on the variety and liveliness of the target languages;
- feel a huge pressure on their rates and more generally on their productivity, because in general the turnaround times of translation projects are shortening drastically.

## Starting the dialogue

Sure enough, NMT is a rather disrupting development for our industry that offers great opportunities but also forces both clients and translators to review their business models. For all those involved, it's high time to redefine services, procedures and expectations, but most importantly to engage in a constructive dialogue with each other in order to find new ways of cooperation that suit everyone's goals and needs.

Translators – one interlocutor in this dialogue – ought to eventually come out of their comfort zone and start seeing themselves as not simply

linguists but as professional language experts with a wide set of skills. In the end, translation professionals have far more to offer than language knowledge and translational competence. For instance, they can provide deep insights into cultural diversity, have a strong understanding of quality, and can take on linguistic evaluations at different levels and in many applications.

I believe that the revolution our industry is currently undergoing offers a unique opportunity for translators to think about established services and possibly consider taking on new ones. Post-editing could turn out to be a clever addition to your own portfolio to offset the “quiet” weeks during the business year. On the other hand, translators could reach out to the clients who want to switch to post-editing in less suitable domains while expecting the same quality as a human translation. Here, translators could suggest a more translator-friendly use of technology. In fact, MT implementation in the CAT tool as a reference and not as an imposition could turn out to be an amazing productivity boost (what the client usually wants), whereby the linguist would keep control of the text and still ensure the expected quality. In order to be on top of the game, translators should be:

- **open** to new technologies and business opportunities, i.e. investing time in training and professional development, following the latest trends (not only in our industry), and reviewing goals and expectations on a regular basis;
- **proactive**, i.e. reaching out to clients in order to establish a dialogue, talking openly about processes and quality, offering consultancy and explaining needs and expectations;
- **out and about**, e.g. attending conferences and meetups; this is a valuable way of keeping in touch with both clients and colleagues, and of staying up to date.

Clients – the other interlocutor in the dialogue – depend on good post-editors in order to handle the ever-growing translation and localization volumes. Therefore, they should:

- **Make sensible use of technology** and not just use MT for any kind of content assuming that it will always work well and contribute to saving time and money. Instead, they should learn to make conscious decisions and use the best approach. Post-editing might be a good option for specific texts or special requirements, while for more demanding content, it could be better to leave translators more room

for creativity, either having them translating from scratch or offering MT as support, among other functions (augmented translation).

- If they decide to go for MT, it is crucial to talk to vendors and **explain the reasons** behind the switch to MT or its implementation: Is it for time reasons, for cost reasons, or for both?
- **Clearly communicate the expected quality**, providing specific guidelines with examples and checklists.
- Offer **post-editing training and feedback**, especially to translators who have little or no experience with post-editing.
- Allow **ramp-ups** for post-editing and possibly offer **transitional rates** so that translators can learn a new skill without significant revenue losses.

More generally, clients ought to reach out to translators exactly for the same reasons. For clients, it is very useful to find out about the processes and the work methods of their linguists, the issues and the concerns they might have while working on specific projects, the support they need and value, and finally some extra services they are able to provide.

I strongly believe that this kind of dialogue will foster better relationships between the different players in our industry and in turn, result in more and better business. Despite being unsettling,

NMT could in fact turn out to be an exceptional opportunity, raising the entire sector to a new level. Now it's up to each professional and each company to go and find their own place in this new landscape.

### ABOUT THE AUTHOR

**Sara Grizzo** is a freelance translator and post-editor based in Munich, Germany. She offers training



in machine translation post-editing for companies and fellow translators and loves to share her knowledge and experience in conference presentations, magazine articles, and her LinkedIn series.

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# Five factors to consider when localizing for India

From generational differences to regional pride, translating for India takes more than just words. Here are some tips to help you tap into one of the world's greatest markets.

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Text by Terena Bell



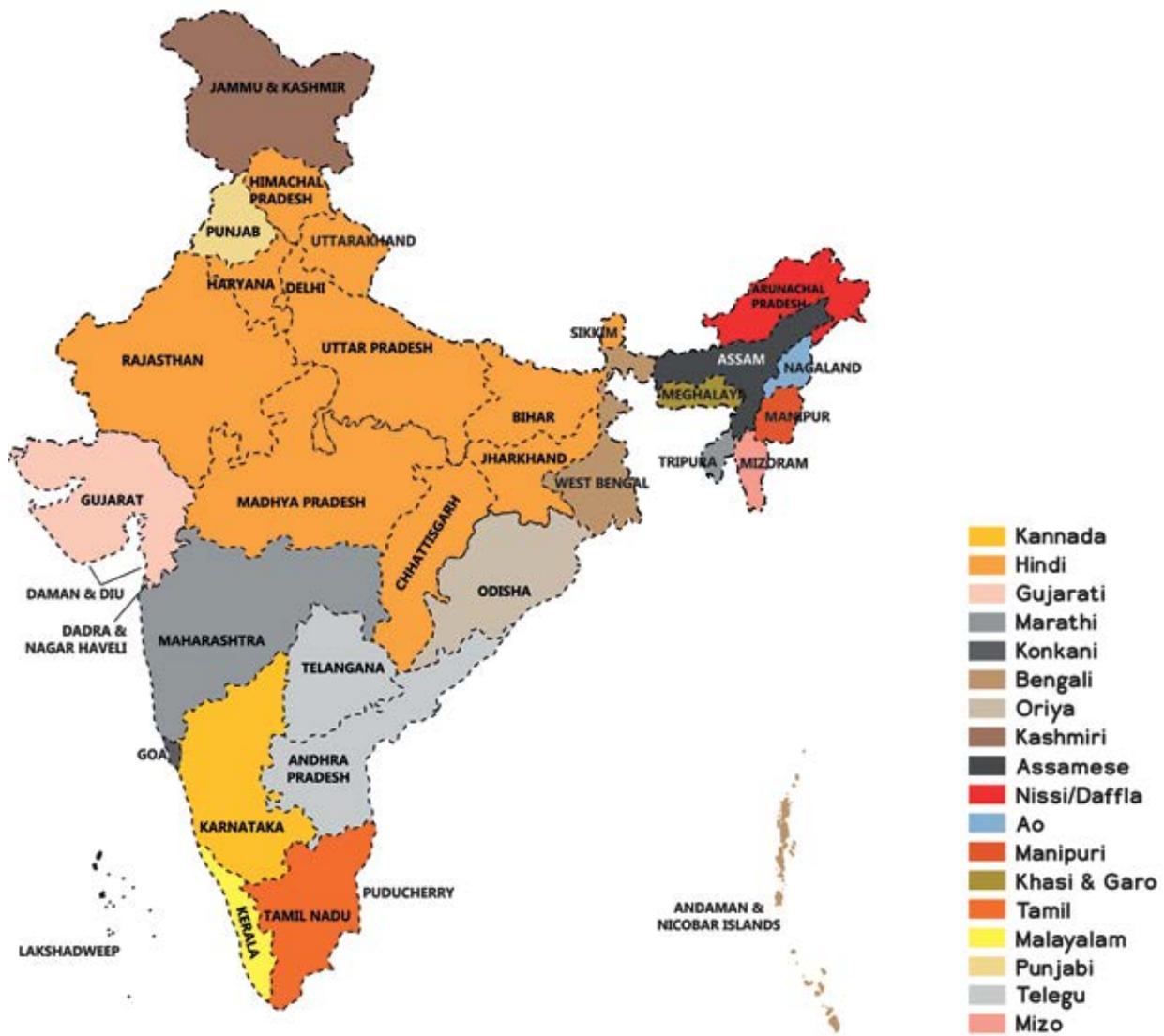


Figure 1: According to India's constitution, the country itself doesn't have a "national" language. Instead, there are 22 official tongues, which the Indian government calls "scheduled" languages.

By 2025, India will be the world's third-largest consumer market, with the largest middle class on the planet. By 2030, consumer spending should quadruple, thanks to a projected one billion residents who will then be online. If you want these people to buy from you, you have to translate your content.

Erroneously thought of as an "English-first" market, the country's current 1.37 billion residents speak 122 distinct languages with 1,599 dialects written in 13 different scripts. Only ten percent of the population speaks English.

So where do you start? How can translation buyers even dream of approaching such a linguistically diverse target market? Here are five key factors your company needs to consider in order for your localization efforts to succeed:

### 1. English-first is a myth

English-language dominance in India is a misconception, period. But because this myth has

historically been so prevalent, it's easy for global marketers to assume they can get by with English-only campaigns. Truth is that the ten percent who do speak English fluently speak it as a second language. Translation isn't something they and other Indian consumers want; it's something they demand, with 90 percent of Indian shoppers saying they expect full product and marketing localization. Seventy percent even consider local language content more reliable than information in English.

### 2. In India, linguistic diversity is a social and emotional reality

The large number of languages spoken in India is impressive. But statistics can't even begin to convey the powerful emotional forces that propel the country's linguistic diversity: The geographic boundaries of India's 29 different states were established along linguistic lines. People in the State of Bengal, for example, typically speak Bengali.

Assam residents speak Assamese. In Kashmir, Kashmiri is the language of the land. But that's not to say these are the only languages spoken there. No matter where they live, Indians tend to be multilingual.

This geographically driven linguistic divide also reflects ethnic, historical, and religious differences – belief sets and values that stretch further back in time than the histories of many Western nations. Even when individuals speak more than one local language, they may prefer to read or speak exclusively in their native tongue – not just out of obvious linguistic preference, but for cultural reasons linked to regional and cultural pride. When companies or people try to impose their language, this not only causes offense but can also wound deeply inherent pride.

Hindi, in particular, is problematic. It's India's most commonly spoken language – and its use is a hot topic of emotional national debate. Hindi is also one of the country's official languages, but

certain parts of the country refuse to recognize it as a “national” one, making its perceived penetration into non-native speakers’ daily lives a source of continuing controversy.

It’s no surprise, then, with such emotionally powerful elements at work, that consumer linguistic preferences play such a huge part in their buying decisions. Global businesses can navigate this complex linguistic landscape by localizing products, services, and content into the language that’s best linked regionally and culturally to their ideal target market. Choosing the right language also helps companies maximize market penetration across a broader, vibrantly growing Indian landscape.

The right translation services provider can help you determine the best languages, using demographics and insights like these to guide you:

- Hindi is currently the fourth most-spoken language in the world. Bengali is seventh and Punjabi is tenth.
- By 2021, a total 201 million Hindi speakers are expected to be online, far outnumbering India’s English speakers.
- That same year, 30 percent of Internet users are projected to speak either Bengali, Marathi, Tamil, or Telugu natively.
- By 2050, Hindi, Bengali, and Urdu won’t just be prevalent across India – all three languages will be among the top five spoken worldwide.

### 3. The smartphone is king

Right now, India is the world’s second largest smartphone market. Unlike Western consumers, who often buy technology to keep up with the Joneses, Lionbridge Country Head for India Sarath Divella says Indian consumers tend to buy for functionality: “They’re not status-conscious customers who are trying to show off or display their watch, phone, or any other items. They’re people who need the function of the product and then use it.” As a result, the products and apps they buy on their phones have to meet an actual need. 4G smartphones currently sell for as little as 60 euros and – in comparison – data isn’t that expensive either: approximately 0.23 USD per GB per month vs. 12.37 USD in the United States. Accordingly, mobile adoption is exploding, with India boasting the highest data usage per phone in the world.

This new mobile reach extends into India’s rural areas – a previously untapped market far less likely to speak English than urban consumers. Coupled with the Internet’s e-commerce and

demand generation abilities, hundreds of millions of formerly out-of-reach Indians can now become eager users of your product content. Mobile e-commerce and e-transactions are growing at an accelerating pace, transacted over platforms like the shopping apps Flipkart and Snapdeal, Amazon, and e-wallet app paytm. As commerce transitions from cash to cashless, Indians are also increasingly using these e-wallets to purchase.

By 2021, 536 million Indians are expected to use local languages online, completely eradicating that older myth of India as an English-first market. Capitalizing on this tech revolution means embracing localization.

### 4. It’s not just tech – the actual consumer is changing

India’s urban and rural areas have started to converge, sharing not just technological access but brand affinities, standards of living (on some level) as well as technology-driven purchasing patterns. And this isn’t the only change affecting Indian society and how people buy.

For starters, the country’s middle class is growing stronger. Roughly 50 percent of Indian households currently fall into this economic bracket and 80 percent are expected to be middle class by 2030. The middle class drives 75 percent of all of India’s consumer spending. Note, however, that just as there are differences in what “middle class” means in the United Kingdom vs. in the United States, India has its own definition: The term is fairly broad, covering everyone from street vendors whose big-ticket purchases are phones and televisions to upper middle-class technocrats buying cars and luxury items.

New generations are seizing buying power as well. Notably, Millennials (people born in the late 1980s and early 1990s) and Generation Z (between 1995 and 2010) are now shaping national consumer tastes. Nearly half of the world’s total Millennial population lives in either India (440 million people) or China (415 million). By 2030, a staggering 77 percent of Indians will be either Millennials or Gen Z.

Beyond sheer population numbers, these generations’ tech-savviness creates markets. As a group, they rabidly use the Internet and social media. Millennial reliance has made these channels key sources for insight on consumer spending. Millennials are knowledgeable buyers with the ability to quickly decide what they want and drill down through features to determine what a product truly offers.

Of course, middle-class Indians and Millennials are not mutually exclusive. But both groups do share at least one pivotal trait: Whereas age and income have traditionally driven consumption choice, now India’s largest deciding factor is whether a buyer has digital or online access through a phone. “When you look at many Indians in the 25-35 age range,” Sarath Divella continues, “they consume virtually all of their content and conduct transactions via their mobile phone. They’ve skipped over the whole idea of owning a physical desktop or laptop computer. They don’t fit the stereotype of people who own lots of devices. They often have one device and one only: their mobile phone.”

The more connected the consumer, the more likely they are to make educated purchases, to upgrade to premium, and to become loyal to a brand. As a 2014 study from localization research firm Common Sense Advisory indicates, they’ll turn to competitors if they can’t count on your company to provide product and service information in their native language: Fifty-five percent of global shoppers say language determines whether they do business with any given business.

### 5. There’s a big difference between what freelancers and a translation company provide

From a translation standpoint, the Indic languages themselves present such a diverse market that, in the past, buyers have sometimes relied on freelancers as opposed to partnering with professional localization companies. These freelancers typically worked ad hoc: moonlighting professors, foreign students, bilingual employees. The downside of working with people who understand the language but don’t know how to translate was overly formal, stilted translations that failed to capture the company’s true marketing message. For B2C products, which rely on vibrant or catchy advertising to sell, the product’s essence was lost. Not to mention managing freelancers is cumbersome, a logistics and quality-control nightmare when 22 scheduled languages are involved.

In moving from freelancers to a language service provider, companies gain back the time they lost managing resources, and ensure translations are overseen by a project manager charged with maintaining tone. The right localization partner will offer Indic languages as a specialization, not as an add-on just to augment German, French, or other European translations. A great partner will also provide insights like the current article, thus bringing nuance to your Indian content supply chain.

Here are some key traits to look for in a language service provider:

- Proven experience in global, multilingual marketing campaigns, specifically including both national and regional Indian markets.
- A full range of localization services, from translation and transcreation to copywriting and vocalization. Whether you need a voice app translated into Hindi or a website localized into Malayalam, choosing one single provider will save you from having to remake this decision every time you have a new need.
- Translation technology that allows you to choose between machine translation and human translation as needed. Engines should be well-trained in the target language, which isn't an easy feat. Not even Google Translate, for example, offers translation into all of India's languages.
- Technology integration that streamlines translation and localization with the tech platforms you already use.

- Access to continuous coaching from a partner who serves not as a vendor, but as an expert confidant and long-term localization advisor, answering any questions your company has about the Indian market.
- Sheer market know-how: As you go from state to state and language to language, India's customs, idioms, and culture change. You need a linguistic partner who not only can translate accurately, but who can also keep you and your content up to date with unique meanings and regionally specific cultural references.

### Tap in now

As daunting as all of this sounds, remember the world's largest and most innovative companies may be doing business in India, but they aren't the only ones. Businesses of all sizes are exporting into the country in order to tap into its booming market potential early. There may be 22 official languages in India, but there's one globalization strategy that's

perfectly right for you. And with the right localization strategy and assistance, a world of possibilities is waiting.

#### ABOUT THE AUTHOR

**Terena Bell** manages public relations for Lionbridge, a marketing, testing, and globalization provider



offering services in 350+ languages. In the past, she has worked as a reporter covering translation, and served as Secretary of the Globalization and Localization Association board.

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# 25 tips for successful presentations

Presentation skills are important for professional success. Delivering clear, professional, and useful presentations will help you share knowledge, drive initiatives, improve communication, and advance your career.

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Text by Nicky Bleiel



No one is born a great presenter. Giving a successful presentation takes a combination of planning, preparation, and execution. These 25 tips cover developing content, preparing slides, effective rehearsing, and tips for the day of the presentation that will boost your confidence and impress your audience.

## Lay the foundation

### 1. Identify your audience

Follow the technical communicator's mantra — "know your audience." For example, a presentation at your company may be less formal than a conference presentation, but the internal audience could be less homogeneous and create different challenges. These questions can help you identify your audience: What are they like? Why are they here? What keeps them up at night? How can you solve their problem? What do you want them to do? How can you best reach them? How might they resist? [1]

### 2. Determine your purpose

Speaking provides an opportunity to inform, persuade, motivate, or celebrate [2] (or a mix of two or more). Determine the goal of your presentation and write a purpose statement. Doing so will make it easier to decide what to include, and what to leave out. Examples of purpose statements:

"I want to teach tcworld participants how to collaborate in GitHub."

"I want to convince my manager that our team should switch to Markdown for our new project."

## Preparing your presentation

### 3. Don't start your slides in PowerPoint (or Keynote... or Prezi...)

Start in Word or Notepad instead. Write down all the points you want to cover, everything you need to research, and graphics you need to create or find. Listing each of your points on sticky notes can help you arrange your ideas quickly.

### 4. Avoid information overload

Cull your content so you aren't overloading the audience with every fact and figure you know

(and have gathered) about the topic. Your purpose statement can help you narrow down what you should include.

### 5. Keep slides simple

Unless you have a slide template you are required to use, you should consider a simple template that has good contrast, or a plain white background. This will give you more space for content, and won't distract from your message. Using animations (fly-ins and other effects) can help keep your audience from reading ahead, but avoid using them on every slide to vary the rhythm of the presentation. Don't overload slides with content. Bonus tip: Good sources for photos include Flickr (search "Commercial use and mods allowed" license) and Unsplash. Always follow the license terms.

### 6. Consider the venue

Consider room size and equipment when you create your slides. The room may have a monitor instead of a projector and screen. Monitors can have a smaller display area, which is fine in a small room, but an issue in a large one. If you plan to include videos, confirm that the room has an audio cable and speakers.

## Rehearsing

### 7. Install and test your software

Confirm that everything you need is installed on your laptop, including video conferencing software. Test any software you aren't familiar with. Know how to adjust the screen resolution on your laptop (conferences will usually post the screen resolution for their projectors).

### 8. Plan your demos

If your presentation will include a live demo, run through it and document the steps. It is easy to skip an important point (or include unimportant ones) if you don't have your demo planned out. As a backup in the case of technical difficulties, take screen captures of your demo and save them in a separate presentation.

### 9. Practice, practice, practice

Preparation will give you confidence, and will also improve your presentation in a number of small but important ways, including pacing and flow. Commit portions of the presentation to memory. If you are working on a conference

presentation, you could ask your work colleagues to attend a "lunch and learn" where they listen to your presentation and critique your talk and your style. Practicing will give you confidence, which will help ameliorate nervousness.

### 10. Strategize your segues

The flow of your presentation is important. When rehearsing, write down logical verbal transitions between slides. If you can't segue smoothly between one slide and the next, you might need to adjust the order of the presentation. After you have documented your transitions, you should add them to the "Presenter notes" area of your slides and (using Microsoft PowerPoint as an example) print the "Notes pages" for offline review.

### 11. Time your talk

Do a complete run through of your talk using the stopwatch on your phone or the "Rehearsal mode" in your presentation software. You don't want to run too short or too long.

### 12. Tackle fillers and nervous habits

"Fillers" are meaningless sounds or phrases we use to fill the silence. "Ummn" and "ah" are distracting and unprofessional, as are other nervous habits such as twirling your hair. The best way to break these habits is to record video of your rehearsal with your webcam or phone and analyze it for issues. Once you are aware of these behaviors, you can eliminate them with practice.

### 13. Anticipate questions

Take the time to consider what questions the audience might have and research the answers. Don't be caught off-guard by a question you should know the answer to.

## The day of the presentation

Before anything else, make sure to eat. Skipping a meal may interfere with your focus.

 **Learn more** about this topic at the **tcworld conference**:

Date: Thursday, November 14

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Room: C6.2





## Five quick conference proposal tips

I'm often asked for tips on submitting successful conference proposals. I have been on both sides of this process, as a speaker and an organizer. Most conferences receive far more submissions than they can accept, and have other constraints (number of tracks, available rooms), so don't be discouraged if your proposal is not accepted.

### 1. Pick a topic that suits your strengths

Analyze your current projects for potential topics. The best talks are those where you share your first-hand professional experience with the audience – and conference organizers are looking for experts with practical knowledge.

### 2. Select a suitable conference

Choose a conference that is a good fit for your topic, and for you. Research the topics covered the past few years and review the conference theme. If there are expectations other than the talk – uploading slides, a proceedings paper, for example – confirm that you can meet those obligations.

### 3. Follow the instructions

Every conference has a slightly different submission process. Read through the requirements and follow all the steps. Read past programs and craft your talk title and description thoughtfully, with the audience in mind. (That same title and description will be used in the conference program and attendees will use it to decide whether or not to attend your session.) Cover the concepts you will address and the problems your session can help solve. Your biography should summarize your career and expertise in a compelling manner.

Bonus tip: Write and store your submission answers in a separate document (I cut/paste the requirements in the document first). It makes it easier to iterate on your content, and if the submission form fails, or the battery of your laptop dies, you will have everything you need to quickly submit again. This also makes it easier to start your proposal well before the deadline, and work on it incrementally over a few weeks.

### 4. Meet the deadline

Technical communicators understand deadlines. Don't expect a deadline extension from the conference organizers, and do your best to avoid requesting extra time. Conference organizers often work on tight schedules and can't grant extensions.

### 5. Show up

When you submit to a conference, the organizers will expect you to attend and give your talk if it is accepted. (This is often noted in the submission guidelines: look for it.) Make sure when you submit that your schedule is clear and block your calendar for that week. If your talk isn't accepted, try to attend anyway. You've already determined that the conference is a good fit for you and your professional interests. And submit again next year!

## 14. Keep it neutral

Wear comfortable clothes and shoes that are appropriate for the event. Avoid wearing anything that will be distracting and take the focus away from your message. If you are at a conference, remove your badge – it can shift around and twist – and the noise may get picked up by the microphone.

## 15. Get there early

Arrive early so you have time to set up and get a feel for the room. If the preceding speaker gets caught up chatting with a group after their time is up and their laptop is still on the podium, politely interrupt and ask them to move it. You want to make sure you have adequate time to set up without rushing. Bonus tip: Bring all your adapters (VGA, HDMI, Ethernet), power supply, presentation remote, and mouse.

## 16. Prepare your laptop

Open all the resources you will need, including videos, websites, and applications. If you are showing a video, confirm that your laptop volume is on. Log off messaging applications and email so that notifications don't interrupt your presentation. Put your phone on silent.

## 17. Timing is everything

Commit the end time of your presentation to memory, or write it down. Never ask the audience. Always be aware of the time – place your watch or phone on the podium. Or use the "presenter view" (or mode) of your slide presentation software to check the time. If you have traveled to the venue, make sure to set your laptop to the proper time zone.

## 18. If there is a microphone, use it

If a microphone is available, use it, even if you believe you have a loud speaking voice. Don't take the risk that some audience members can't hear you.

## 19. Take a deep breath

Before you get started, go in a corner (or turn your back to the audience) and take a deep breath to prepare yourself. The blog post "A TED speaker coach shares 11 tips for right before you go on stage" [3] has excellent advice for getting focused before you begin your talk. The tips apply to any size or type of presentation.

## 20. Start strong

Start with something that can catch the audience's attention (facts or statistics, narratives, rhetorical questions, quotes) that you can tie to your topic. [4] Make eye contact with the audience – it builds trustworthiness.

## 21. Don't be negative

Avoid self-deprecating comments; never say you are nervous, sick, or tired – you will place that thought in the audience's minds and distract them from the topic. Never joke that you just finished your slides – you will decrease your credibility by implying that you did not prepare.

## 22. Never stop talking

Remember: No matter what happens (blue screens, projector problems, etc.), keep talking as you work to solve the issues. The audience will appreciate your perseverance and you won't waste their time. This is where practice, slide notes, and a cloud or flash drive backup can save the day.

## 23. Close strong

Don't just trail off at the end of your presentation. Summarize your main points, thank the audience, then smoothly transition to Q&A. If speaking at a conference, encourage the audience to complete the evaluation form.

## 24. Manage the Q&A

During the Q&A, don't spend too much time on one question. If a question is too detailed or specific (or a questioner is dominating the Q&A), offer to answer it after the session or by email. And it is fine to say that you don't know the

answer to a question; offer to research it and get back to them. Keep the Q&A moving, and end your presentation on time.

## After the presentation

### 25. Follow-up

If it is a work presentation, post the slides (and recording, if you made

one) immediately and distribute the link. If it is a conference presentation, post your slides and any other required materials by the date promised. Review your evaluations and document the name of your presentation, the conference, the city, and the date for your records.

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**Nicky Bleiel** is a Watson Information Developer at IBM. She is a Fellow and Past President of the Society for Technical Communication and has more than 20 years of experience writing and designing content for software products in a variety of industries. She has given over 100 conference presentations, webinars, and workshops.



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# Move the world with words

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Text by Elke Schulz



Every day millions of people click, swish and swipe on websites and apps without ever wasting a thought on the language they are using. But who are the people behind the scenes that breathe life into content and power the digital experiences that we consume every day? To shine a light on the translators who make all this possible, Smartling, a localization software and services company, published the book *Move the World with Words* in September 2019. The book is a joint effort between freelance author and photographer Elizabeth Brentano and editor Adrian Cohn, director of Brand Strategy and Communication, at Smartling.

*Move the World with Words* is a lovely book that takes you on a journey to explore the lives of a dozen Smartling translators who live in rural areas in Spain and France just as in bustling cities such as New York, Istanbul and Sao Paulo. Each of the twelve chapters is devoted to one translator, featuring photos and stories of this respective language artist. The translators share their views on translation and communication, technology, the Smartling platform and their freelance work. The photos bring to life the stories of the people, their homes and hometowns. The well-composed close-ups, portraits, and full-page landscapes and cityscapes provide a glimpse of the lives of the translators and reveal the humans behind the keyboards. The quiet, almost lyrical images capture hikes in the mountains, strolls through parks and cities, moments of family life and favorite pastimes such as cooking, dancing and making music. With skill, talent and dedication, these language workers create words with meaning, give content its heart and move the world forward. Their interviews reveal that translation is not just exchanging one word for another. Apart from a thorough knowledge of the languages, you also need to be deeply ingrained in the respective cultures to capture nuances and choose words wisely. Many see it as an art form, but one where the artist remains invisible. Flavio, from Brazil, sums it up nicely when he states: "When done right, translations should be undetectable." As an art form, translation is often compared to music. According to Taner from Turkey, "Language has many musical qualities; it has... harmony with words." And he continues: "Having a bit of a musical background helps produce translations that are not only accurate, but also sound good." In fact, four of the featured translators have a strong musical

background. Silvan from France even worked as an opera singer before focusing on translation, and Flavio, the "rock star translator" from Sao Paulo, uses the income from his translation jobs to support his career as a musician.

As different as their homes, lives and experiences might be, they are united by their passion for language and the way it connects people. Oana from France states it so well: "One of the best things about languages and translation is seeing, perceiving, and understanding the world through the eyes of those of other nationalities." Translating "brings people together while praising diversity."

All of the featured translators work as freelancers out of their homes. Due to the availability of the internet and the Smartling platform, they can maintain a flexible lifestyle. They are able to work remotely and can adjust their work hours to communicate with customers in different time zones or to accommodate family needs (in Silvan's case even newborn twins). If they are traveling, they can schedule their work accordingly and work from any place that offers a viable internet connection.

As dedicated and talented language experts, they have nothing but praise for the visual context feature of the Smartling platform. This feature shows them the text that needs to be translated within its original context, which is extremely helpful for choosing the right words. They also appreciate the availability of glossaries as well as the real-time communication with customers. Both of these features allow them to work quickly and efficiently.

Most of the featured translators are not afraid that automated translations will replace humans any time soon. Flavio declares: "I believe there will always be a need for a human touch and a linguistic and cultural understanding of both sides of the translation." And he adds: "While technology enables us to push the boundaries with sound and art, it will never replace songwriting and storytelling."

Overall, this book is delightfully different. First of all, it exists as a physical book, published by a company that focuses on digital media rather than on real, tangible books. In addition, it highlights the human element at a time when AI and automated translation are the catchwords of the day. Although the demise of the freelance translator, who can't compete with bigger LSPs, is a recurring nightmare within the language industry, this book celebrates the

diverse community of freelance translators. Finally, at a time when we are flooded with sensationalist images on a daily basis, this book convinces with quiet, poetic pictures. By showing the people behind the scenes and their dedication, skill and passion for their work, this book creates a personal connection to the translators and inspires trust in their capabilities. Artfully combining stories with pictures, the book provides the "whole picture". I enjoyed this book very much and would highly recommend it to anyone who loves getting to know the people behind the words and wants to gain a better understanding of the language translation process.

Order your copy of *Move the World with Words* at [smartling.com/book](http://smartling.com/book) or [www.amazon.com](http://www.amazon.com)

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# events

tcworld 2019/2020



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## tcworld conference 2019

📅 November 12-14, 2019  
 📍 Stuttgart, Germany  
 🌐 <http://conferences.tekom.de>

## Expolingua

📅 November 22-23, 2019  
 📍 Berlin, Germany  
 🌐 [www.expolingua.com](http://www.expolingua.com)

## IAOP Outsourcing World Summit

📅 February 17-19, 2020  
 📍 Orlando, FL, USA  
 🌐 [www.iaop.org/summit](http://www.iaop.org/summit)

## GALA 2020

📅 March 15-18, 2020  
 📍 San Diego, CA, USA  
 🌐 [www.gala-global.org/conference](http://www.gala-global.org/conference)

## COM Tecnica

📅 April 1-2, 2020  
 📍 Rimini, Italy  
 🌐 <https://comtecnica.it>

## ContentTECH Summit

📅 April 20-22, 2020  
 📍 San Diego, CA, USA  
 🌐 [www.contenttechsummit.com](http://www.contenttechsummit.com)

## Information Development World 2020

📅 February 25-27, 2020  
 📍 Palm Springs, CA, USA  
 🌐 [www.informationdevelopmentworld.com](http://www.informationdevelopmentworld.com)

Forward-looking companies around the globe are looking to develop innovative ways to expand their content offerings, yet the ways that content gets produced is often mired in the past, with legacy systems and outdated processes that involve word processing, hand-coding, email, and zip files. In order to compete in the Fourth Industrial Revolution, savvy content organizations are moving toward a better way of working: content operations (or ContentOps for short) – an emerging content production approach that helps organizations to both produce and accurately deliver quality, targeted content across multiple channels, on demand.

## tekom Spring Conference (in German only)

📅 April 22-23, 2020  
 📍 Würzburg, Austria  
 🌐 [tagungen.tekom.de](http://tagungen.tekom.de)

## UA Reloaded 2020

📅 May 12-13, 2020  
 📍 St. Leon-Rot (near Heidelberg), Germany  
 🌐 [ua-reloaded.de](http://ua-reloaded.de)

## tcworld China

📅 May 21-22, 2020  
 📍 Shanghai, China  
 🌐 [www.tcworld-china.cn/en](http://www.tcworld-china.cn/en)

## Evolution of TC

📅 May 27-28, 2020  
 📍 Sofia, Bulgaria  
 🌐 <https://evolution-of-tc.com>

## Languages & the Media 2020

📅 June 8-10, 2020  
 📍 Berlin, Germany  
 🌐 [www.languages-media.com](http://www.languages-media.com)

## MadWorld 2020

📅 September 20-23, 2020  
 📍 Austin, TX, USA  
 🌐 [www.madcapsoftware.com/conference](http://www.madcapsoftware.com/conference)

## NORDIC TechKomm

📅 September 23-24, 2020  
 📍 Copenhagen, Denmark  
 🌐 <https://nordic-techkomm.com>

## Content Marketing World

📅 October 13-16, 2020  
 📍 Cleveland, OH, USA  
 🌐 [www.contentmarketingworld.com](http://www.contentmarketingworld.com)

## tcworld conference 2020

📅 November 3-5, 2020  
 📍 Stuttgart, Germany  
 🌐 [conferences.tekom.de](http://conferences.tekom.de)

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