

Paul McGuinness

Technical English

Povzetek

Tehnična angleščina

V članku sem navedel nekaj smernic za pisanje tehničnih besedil, s katerimi bralcu omogočimo lažje razumevanje. Med obravnavanimi temami so: vezaji in pomišljaji, terminologija interneta, raba aktivnega in pasivnega glagolskega načina, kratice in številke ter še druge tehnike izražanja kot na primer raba konektorjev in paralelizmov. Ob primerih, vzetih iz resničnih besedil, sem pokazal, kako lahko s pravilno rabo besed in ločil izboljšamo jasnost in razumljivost našega pisanja.

Abstract

Technical English

In this article I have provided some guidelines for producing technical writing that addresses the needs of the reader. The areas covered include the following: hyphens and dashes; Internet-related terms; the use of the active and passive voices; abbreviations and numbers; and techniques like the use of transitions and parallelism. By using real examples I have shown how the right choice of words and punctuation can result in writing that is both clear and easy to understand.

Introduction

When we are writing a technical text the most important point we should keep in mind is that it is our responsibility as the writers to provide the information in a form that is easily understood by the intended readers; it is not the job of the people reading our texts to try and fathom what we meant. This requires simple and direct writing that avoids ambiguity and allows the information in the text to be absorbed as quickly and as accurately as possible. In this short article I have included sections on punctuation, style, numbers and the Internet in order to demonstrate how we can make the job easier for the reader.

Hyphens

The appropriate use of hyphens and dashes is one of the ways we can give our writing more

clarity and help remove any ambiguities. We need to insert a hyphen when two or more words are used as a single epithet. In technical writing this occurs very often in such phrases as:

'... manufactured using state-of-the-art technology ...'

'... the use of a solid-oxide fuel cell ...'

Although an absence of hyphens in the first of these examples would be unlikely to cause the reader any serious problems—the expression 'state of the art' is familiar to most people—in the second example, without the hyphen between 'solid' and 'oxide', the reader with no experience of fuel cells would be unsure as to whether it was the 'oxide' or the 'fuel cell' that was solid.

Other examples where leaving out the hyphen can leave the reader unsure as to the facts include:

'... a low frequency response ...'

Is it the frequency or the frequency response that is low?

'... *mobile phone operators* ...'.

Without the hyphen they are phone operators on the move.

'... *the high power cable connection* ...'.

Is this a cable connection designed to transmit a lot of power or the elevated connection of a power cable?

If the reader is in luck then the context will provide all the information required, and little or no hesitation or confusion will have been caused. However, it is very possible that a person reading such a technical text will not be very well acquainted with the subject and will be depending on every word and phrase to provide the information required.

Hyphens can also help us avoid ambiguities with words like 'recover':

'... *he decided to recover the chair*.'

Is the chair lost or does it just need its cover replacing? So as to leave the reader in no doubt we should write 'recover' if we mean the former and 're-cover' if we mean the latter. A couple more examples where the absence of a hyphen can sow a few seeds of doubt include:

represent re-present

resort re-sort

And what about electronic mail, is it: E-Mail, e-Mail, Email, email or e-mail? We could argue that the word is sufficiently well established now and so it no longer requires hyphenating, after all, it has been a long time since 'database' was 'data-base' or 'download' was 'down-load'. There are, however, reasons for keeping the hyphen: most importantly, it helps emphasise the stress on the first syllable. And although it is occasionally written as E-mail, which is analogous with A-bomb and G-string, the consensus seems to be with e-mail.

Internet-related terms

The growth of the Internet over the last 10-15 years has led to a lot of new words and terms. New dictionaries will usually provide

guidance with the older words like 'surfing' and 'Internet' but are unlikely to help with the torrent of new words that have appeared in the last couple of years. In such cases it is best to refer to a newspaper like *The Economist* or *The Guardian*, which take a consistent approach to such new words.

One difficulty we often encounter is to decide on questions relating to capitalisation. Of the four commonly used network words:

Ethernet, intranet, extranet, and Internet

only the first and the last of these always requires a capital letter. Another general point worth remembering is that the Internet is not the World Wide Web (always capitals but without a hyphen), the Internet is a world-wide network (with a hyphen) of computers. The WWW, sometimes referred to as the Web, is just the part associated with web pages, which are stored as files and are accessible with a web browser such as Netscape Navigator.

Web-based companies are called 'dotcoms' (not 'dot.coms' or 'Dot.Coms'), and they operate from web sites (not Web sites).

Dashes

Dashes come in two types: the en dash and the em dash. The en dash, which is usually Ctrl+Num- with Microsoft Word, connects continuing or inclusive numbers, for example, dates, times, or reference numbers.

May-June 1967

13 May 1965-9 June 1966

John 4: 3-6: 2

1963-2002

The en dash is also used in place of a hyphen in a compound adjective when one element of the adjective is an open compound.

New York-London flight

Post-Balkan War period

We should avoid writing 'from 1947-56' or 'between 1947-56', and instead write 'in 1947-56' or 'from 1947 to 1956'.

The em dash is a longer dash, which is usually Ctrl+Alt+Num- with Microsoft Word. The

principal use of the em dash is to insert a useful piece of information and make it stand out. Below are a couple of examples where this information is in the form of an illustrative list.

When NATO first offered to open its doors to new recruits from Eastern Europe—Poland, Hungary and the Czech Republic—Russia loudly threatened dire consequences, only to discover it had no veto over NATO decisions and had to back down.

By the end of the year, a further 18 countries, from both the developed and the developing world—ranging from Britain and Canada to Chile and South Africa—had followed suit.

Both of the above examples, and those that follow, are taken from the *The Economist* 1–7 September 2001.

The inserted information does not need to be in list form, but it must always add something to the sentence and help focus the readers' attention on the facts.

Macedonia also had an uneasy ethnic balance, and its own minority—a large one, 30% or so—happened to be ethnic-Albanian.

Altogether, some 47m people—one in six Americans—live in 18m homes in 230,000 communities and pay around \$35 billion in fees every year.

A third way we can use the em dash is to end the sentence with a flourish and give added emphasis to what has just preceded the dash.

This year's tax cut was originally a Democratic idea—and not a bad one at that.

Politicians, in turn, promise to turn a blind eye to people who squat or build illegally on state land or who dodge taxes – in exchange for their votes.

In the last of these examples the em dash is in the form used in most British publications. The meaning is the same on both sides of the Atlantic, however, the long dash (—) [em dash] popular in the US is replaced by the shorter en dash with a character space either side (–) [en dash].

Active versus Passive Voice

If we use the active voice we will almost always make our writing clearer and easier to understand. Technical writing contains far too much 'it is believed' and not enough 'we believe'. Quite why so much passive writing exists is not clear; technical-writing professionals in the US have been campaigning against it for at least 20 years, and judging by the number of active-language articles in journals such as *Nature*, *New Scientist* and *Scientific American* their success, at least at this level, is almost complete. Less prestigious publications and technical writing in general, however, still contain a lot of texts written in the passive voice. Having said this, there are some occasions when the passive voice is the better choice, but the active voice tends to provide more information with fewer words. Here is an example of how we can change a long and vague passive sentence into a shorter, clearer and more vigorous active sentence.

The heat treatment of the samples was carried out at 850 °C.

We heat treated the samples at 850 °C.

Not only does the second sentence save us four words, it also gives us more information—we now know who did the job.

An occasion when the active voice might not be appropriate is when we wish to stress the action rather than the subject.

The mistake was overlooked.
rather than

We overlooked the mistake.

This may be for reasons of modesty or perhaps we would prefer not to incriminate ourselves, but, in general, if it is possible to use the active voice, we should.

Transitions

A transition is mostly a single word or phrase that connects sentences or elements of sen-

tences to help the reader with the flow of the text and to aid understanding of the text on first reading. Remember, it is the writers' responsibility to make the text as clear and understandable as possible. The example below lacks some transition words.

The offer, submitted by Novak d.o.o. of Kranj, Slovenia, will probably be accepted by our company. Most of our institutional shareholders favour it, according to a survey. Many of the smaller investors favour the German bid. This bid is at a slightly higher price.

The problem is not that there is anything wrong with these four individual sentences, rather, it is difficult to absorb the information on first reading because the reader is not being led from one piece of information to the next. Now look at the same text below, with the added transitions (**boldface** type) and see how much easier the information is to absorb.

*The offer, submitted by Novak d.o.o. of Kranj, Slovenia, will probably be accepted by our company **because**, according to a survey, most of our institutional shareholders favour it. **Not surprisingly**, many of the smaller investors favour the German bid, which is at a slightly higher price.*

The increase in the number of words—from 44 to 46—is a price worth paying for the improved clarity.

Abbreviations

Abbreviations are an important form of shorthand that is vital in technical writing, but they only work if the reader understands them. Every abbreviation needs to be explained the first time it is used. The best way to do this is to write out the words followed by the abbreviation in parentheses.

The integrated computer-aided system (CAS) is not a novelty. One major manufacturer of electronic systems has used a CAS approach on all its products since 1968.

Abbreviations from the first letters of each major word are called acronyms and are always written in upper case letters.

VHF (very high frequency)

RS (Republic of Slovenia)

OEM (original equipment manufacturer)

Units of measure are written in lower case.

ppm (parts per million)

bps (bits per second)

Abbreviations that can be pronounced and are composed of bits of words rather than initials should be spelled out in upper and lower case.

Unprofor (United Nations Protection Force)

There is no need to use an abbreviation if something is referred to only once, and there is no need to continue to write out the words once the abbreviation has been used—or you defeat the purpose of using the abbreviation. When it comes to modifying an abbreviation for the plural or genitive case then you should treat it just like a word.

Euro-MPs' salaries

I have two IOUs for £5

Abbreviations sometimes need the definite article. Deciding on this is straightforward. All we have to ask ourselves is do we spell out the abbreviation or do we treat it like a word, if we spell it out then we need 'the'.

the BBC NATO

the EU FIFA

the DZTPS AIDS

We should be careful not to write: HIV virus, LCD display, AC current, RAM or ROM memory, PIN number, etc., because in all these cases the last letter of the abbreviation is the same as the word that follows it.

Numbers

The numbers zero through nine are usually written out in full.

nine tractors, one trial run, zero quality defects, five command centres

Numbers greater than nine can be written in numerical form.

26 graduate students, 17 washing machines, 99 supermarkets, 11 days

There are, however, some exceptions. If the sentence contains a mixture of numbers greater than and less than nine then it is best to use the numerical form for all the numbers in the sentence.

The system contains 15 pumps, 5 fans, 5 ducts, and 3 heat exchangers.

We should also always use the numerical form for the examples in the table below.

<i>Units of measure</i>	<i>9-second delay, 1 lb</i>
<i>Age</i>	<i>6 years old</i>
<i>Time</i>	<i>2 pm</i>
<i>Dates</i>	<i>7 October, 1992</i>
<i>Page number</i>	<i>page 3</i>
<i>Percentages</i>	<i>4 percent, 4 %</i>
<i>Money</i>	<i>\$3, ¥7, €9</i>
<i>Proportions</i>	<i>7:1, 7 to 1</i>

At the start of a sentence we should always spell out the number.

Thirteen samples were produced yesterday.

Twenty-five people attended the meeting.

Two thousand test subjects participated in the experiment.

This, however, could prove to be very awkward with a sentence like.

154,612 soldiers will go through the training program in the next 10 years.

In such cases it is better to re-write the sentence so that the number does not come at the beginning.

In the next 10 years, 154,612 soldiers will go through the training program.

An example of where we should break one of the above rules is in the case of two consecutive numbers. If we write:

'... 2 3-inch wrenches ...'

or

'... 11 60-ohm resistors ...'

then we run the risk of the reader misreading the information or at least having to go

back and double check. By spelling out the first of these numbers, as below:

'... two 3-inch wrenches ...'

or

'... eleven 60-ohm resistors ...'

the information becomes much easier to absorb and the risk of a costly error is much reduced.

Parallelism

Employing parallelism within our documents is one of the key ways of making our writing easier to read and to understand. Parallelism can take many forms, but in terms of technical writing it means that those parts of the text that function alike should be constructed alike. A good example of parallelism is the list.

Lists are simple arrays of items either embedded in the text or broken out of the text. Since the items in each array function alike, they should be constructed alike. In the following example we have a set of instructions for using a printer.

a) Not parallel – the sentences giving instructions are constructed differently:

The instructions are as follows.

(1) First, turn the power on.

(2) The next thing is that a sheet of paper is inserted.

(3) The margins and tabs should then be set, and the line spacing checked.

(4) Finally, you can begin printing.

b) Parallel – the sentences giving instructions are constructed alike:

The instructions are as follows.

(1) First, turn the power on.

(2) Next, insert a sheet of paper.

(3) Then, set the margins and tabs and check the line spacing.

(4) Finally, begin printing.

Since we have used the same pattern for each stage of the printing process, we have made it

much easier for the reader to follow the procedure. Applying the same technique to an entire user manual can save words, time and money.

Closely related to the problem of non-parallel construction is the all-too-common practice of using a variety of words to refer to one thing without letting the reader know. For example, if we take a simple sentence like:

First, the alloy was cast in a water-cooled mould and then the material was milled.

The writer may know that the alloy and the material are one and the same, but the reader cannot be sure from reading this sentence. In the next example we have instructions for using a machine.

Prior to attempting to operate the machine you should make sure that the device is turned on. Having satisfied yourself that equipment is functioning properly, you may commence processing the material or start to load new powder into the hopper of the injection moulder. The finished samples that are ejected from the dies can either be placed on the aluminium tray, wire netting or metal box.

After reading this it is hard to believe that a potential operator would be in any position to begin working on the machine—or the device? In just three sentences we have jumped from machine, to equipment, to device, to injection moulder and then to dies. At the same time we have been working with material, powder and samples. One solution to this problem is to use just one word to describe something; however,

this is rather inelegant, restricting and the constant repetition can be boring for the potential operator. A better solution is to link the words in such a way that the reader is always aware of exactly what it is that we are referring to. In the example below the text has been re-written in this way.

Make sure the injection-moulding machine is switched on before you try and operate it. Check that the machine is working correctly before you start to process the powder already in the machine or to load new powder into its hopper. The processed powder samples, which are ejected from the moulder's dies, can be placed on the aluminium tray, the wire netting or the metal box.

The use of 'the' before the three options for the placing of the ejected samples also helps to clarify this point.

Bibliography

- Day, R. A., *Scientific English*, Oryx Press, Phoenix, 1995
- Perry, C. R., *The Fine Art of Technical Writing*, Blue Heron Publishing, Portland, 1991
- The Economist Style Guide, Profile Books Ltd, London, 1998
- Blake, G. & Bly, R. W., *The Elements of Technical Writing*, Macmillan, New York, 1993
- Carey, G. V., *Mind the Stop*, Penguin Books, London, 1976