Transcript – The Digital Access Show

[music playing] [Narelle] Hi, and welcome to a new season

of The Digital Access Show. We've started off with Kim

Amor talking about mindset, and we thought in this episode, we want to take you

through a couple of tools that many people use

to access information. It's used in conjunction

with computers and mobile phones, still use keyboards. However, they're

slightly different. Now, some of these tools are

used by people with dyslexia, vision impairment, areas like that, while one tool is only used by

people with vision impairment. To talk about this subject, I've asked Mark Musket, CEO of Digital Access

Solutions, to come. And also another reason, Mark Musket has never had sight. I think, Mark, you

have light and shade? [Mark] That's correct, Narelle. [Narelle] Yeah. So, Mark's dependent on screen

readers and braille devices. Mark, thanks for coming

and explaining this. [Mark] No worries. [Narelle] Mark, if we start off, can you explain what a

screen reader is, please? [Mark] So, a screen

reader is a piece of software or some code that allows

the operating system to… take information that

is displayed on screen and have it announced

via synthetic speech. It provides the user the ability

to have that same information… displayed on a braille display,

which is similar to a monitor. So, braille displays can be… of different sizes,

as with monitors. [Narelle] Yep. [Mark] And what the differences

between the braille displays is… the number of cells that they

actually produce of braille. So, braille is a

tactile form of literacy for those with low

vision or who are blind. And braille consists

of six to eight dots. The mix of those dots make up

characters and punctuation marks. So with braille, we have… a system that is a

definite literacy system. That is, it is the same as

if somebody was to read… printed letters on a monitor. A braille display provides those

with low vision or who are blind… the same literacy attributes. So, the argument that's been

around for quite some time is, If somebody just listens to a

screen reader, that's literacy. No, it's not. It's actually

somebody listening to an audio… spoken version of

what's been written. You miss out a lot of attributes

such as punctuation marks, etc. You can get them read out. So a screen reader allows

for functionality to change… how much punctuation

marks are read, etc. what parts of the

screen are read out, and with various

keyboard shortcuts. The user is able to… find pieces of information. And it's the same

for braille displays. They have a braille

keyboard that allows us to actually use

the braille display as if it was a keyboard

as well as a monitor, to not only read the braille,

but to also input via braille. [Narelle] So Mark, when you're talking Braille, is Braille a completely

different language, or does it use an English basis

with some different shortcuts? What's the best way

to describe Braille? [Mark] No, Braille is actually

the written form of any language. So, English is obviously

one that we talk. Braille can be representing

many other languages such as… Chinese, Japanese, European languages that

have their own Braille codes. And they all range from that six

to eight dots in their cells. So, that's the one universal

attribute that Braille has. What is different is the

grammar of the actual Braille, so it's syntax that

we actually use for different types of languages

within the Braille code. English Braille code is slightly

different to the Japanese code. The English Braille code is very

different to the Japanese code, in that its structure is set up. For us, it's the 26

letters in the alphabet, where the Japanese have

phonetic symbols as well. So, the braille code for

that is completely different. So we're coming back to English,

which is what we all know. We have what they call… grade one and grade two. So, the differences

between the grades are… the ability to have contracted

letters for different words. So, for instance, the word can is represented

by the letter C on its own in the Braille

code for grade two. [Narelle] Yeah. So, in essence, what you're

saying, really, there could be, you know, there'll be a Braille

language for every country. [Mark] Yes. [Narelle] They have a

very specific language. [Mark] Yes. Most languages

are represented in Braille in one way or another. [Narelle] So, screen readers. How do they actually read it? Do they read what

we see on the screen? [Mark] Not exactly. So technically, the screen reader gets the

information like a video card. In fact, there's some
very high correlations with… the way the
information is conveyed. So, a video card will
actually get information and then displays it
onto a person's monitor. So with a screen reader, the information is actually
picked up by the screen reader through the various applications that run in the background
on our operating systems. And that information is then… given to the user
so that they can… choose what area of the screen
they want to have a look at. They can get the
information read out. Screen readers, if you look at
it in a historical point of view, a screen reader back in the 70s
and 80s was very, very basic. It would read everything
from the screen It didn't allow the user to
actually review the screen, or go to various
parts of the screen. You had to read everything. Back in the days when I started
computers and back in the 80s, you would get
everything read out to you, and you just
have to listen to it. And it was a laborious task to
use a computer as a blind person, where towards the
mid 80s and late 80s, we started to see software
that was developed that were true screen readers
in the way that we know, where we can actually
review the screen. We can go line by
line or word by word, character by
character, et cetera. So, that was, you know, a big step forward. and that happened
on both Apple and, well, back in those

days, it was the Apple II, and the IBM Peak

personal computer. So that was, you know, very historical. So now we've

actually gone further. We've got graphical

user interfaces. So we've got menu bars, toolbars

and all that sort of stuff. And then we have the ability

to use keyboard shortcuts to go and navigate

those respective controls to have our screen

reader read parts. And… thus, it continues to

the web environment where we have access to parts

of the websites that we use… with our screen readers, and we use the various… attributes and elements

within markup languages to actually help with… conveying information

to the screen reader for the user to actually access. [Narelle] What

about braille devices? Do they work in a similar way? [Mark] Because screen readers

provide access to Braille, all that's pretty much done

through the same process. A screen reader can actually get

the information in the same way, and depending on what

the user is wanting to do, they can use Braille commands

through their Braille display to actually navigate… the same way as if somebody

was to use the keyboard to actually access

information via a screen reader. And some people will actually

use both at the same time, and some people turn their

speech off and just use Braille. So there's many

variations that you can do, but most people

who have low vision and cannot read braille

would just use a screen reader, so that they would rely on

their screen reading commands, not braille commands. [Narelle] So, what you're saying is it's reading, not reading what a person with sight would read. [Mark] No. [Narelle] With braille and with screen readers, who would use them? Is it just people with vision impairment? [Mark] Predominantly, yes. There will be some disabled people that use a screen reader. Those with dyslexia or intellectual disabilities that… require the ability to actually listen to what's being said, rather than, sorry, listen to the information rather than read it. So, it could be any number of other disabilities, not just low vision or blind people. Screen readers actually provide that kind of functionality. They tend to use… a screen reader in a different way to what you or I would use, So limited vision would use it in a way that I wouldn't use it, where I would probably be using it with its full functionality where I use completely keyboard. Some people highlight blocks of texts… with the mouse, and then they'd get it read out by the screen reader. So the screen reader has that kind of flexibility to do… any number or ranging from any amount of accommodations to suit the person's needs. [Narelle] Okay. So, any website you're saying then can be read by a screen reader, by a braille device? Any document? [Mark] Yeah. Most documents these days will be accessible. However, there are occasional… sites or documents where it is based purely with an image. There's no text. And that makes it a bit difficult for a screen reader, because the screen reader… naturally will not be able to read any text. It won't be able to pick up any text from the images. And for that to actually

be counteracted, the need for… a form of intelligence

is required. And that could be, well, we used to call it

optical character recognition. It's now known as

artificial intelligence, and that would be applied, so that the person can

get the text from the… result of that intelligence… processing. and that text is then read out as per the norm

with a screen reader. So, there's a two-phase process

when it comes to actual images. With websites, it's

a bit more difficult. There are processes now where

you can get the screen reader to tell you what the… page is looking like. But again, that's more in line

with some form of intelligence or artificial intelligence being

activated to accommodate that. [Narelle] So,

how accurate is it? Because I know, you know, historically, OCR

is not very accurate. [Mark] It's only as accurate as… there's factors that

could be coming to play when you're dealing with images

on anything that you scan. It could be the way that's been… captured, the way that

the image is actually… being developed. If it's too cluttered, artificial intelligence is going

to break down at some point. There are some

issues with colour. So, as soon as you

start making it colourful, which is quite common, that can also affect

the intelligence. And the other one that really, a big one is the kind of fonts, and the various shapes

that the letters are. So, handwriting is

particularly interesting. There are some claims that… various artificial intelligence

models can actually detect and interpret

handwritten material. And to a degree that

sort of does happen. But even then it's

questionable because… you're dealing with… a lot of unknown variables when you're putting that

kind of information into… an artificial

intelligence process. So that's… They're factors to be considered

when you're looking at it. The other thing to also take note

is the legal responsibility of… what process

you're using as well. So are you secure with

the information only being… artificially intelligently

processed, or is the data going to be

kept on somebody's server? So, that's the other big

legal ramification there. [Narelle] That's a good point.

I hadn't thought of that. I keep hearing that there's

only 4 percent of websites that are digitally accessible. What's your take on that when you think about screen

readers and braille devices? [Mark] That figure is

really based on websites that meet the WCAG

and the WAI guidelines. So, when we look at it,

that sounds about right. When you, you know, when you look at the various

websites that you and I use, it's not likely that we're

going to ever find a… perfect website. And if we do, it's very rare. I can't think of any website,

I don't know about you, Narelle, but I can't think of any website

that I absolutely love using. [Narelle] No. There's none. [Mark] Most websites have

some sort of quirky behaviour that one needs to be aware of, and it comes down

to problem solving. So, that's what we do

when we train people. We train people

not to use the tools. Well, we do that, but… the most important part of our

training is the problem solving. So that, you know, teaching

somebody how to use the tools, that's the easy part. The hard part is

actual problem solving. So, you know, strategising

and getting around websites. So that's the, you know, so think of a screen reader

like using a white cane, really. In the mobility context,

the screen reader does… have the tools, but we need to

actually strategize to use those. The five percent statistic that

we often see is probably fair. It's not a good

statistic, by the way. I'm not trying to drum that up,

but it's a statistic that's real. And when we look at the websites

that we go to on a daily basis, it's often, there's a lot of

question marks on about… not just the usability but

how accessible a website is. So, yeah, that's, you know, even our website

has got problems, Narelle. You know,

we're not perfect either. So, you know, and that's… [Narelle] We've limited them. We've tried to limit

them as much as we can. And with WCAG. [Mark] So, when we use a platform

like we do with Wordpress, where the hands are tied. Unless you're going to write your

own and develop your own system… from scratch, and literally spend

hours doing so, it's not likely that you're

going to get a perfect system. These days, most people want a

web-based system fairly quickly with very little costs. And you know,

as long as it does the job, yeah, it's a pity

because platforms, you know, that we all use, whether that's WordPress, Wix any other form of platform

that you might want to consider, you have to remember that

they too have their own problems when it comes to accessibility.. So accessing it

with a screen reader, where you can only test it, which is what you and

I have done, obviously, and we can only work around… what we have to make it more

accessible to a screen reader. And that's pretty much

what we can expect to do, and work with people to do that. [Narelle] So to sum it up, a screen reader takes a

markup language on a website and converts it into

a usable information, which is what Braille

devices do as well. [Narelle] It's a lot… -[Mark] Yeah.

-[Narelle] Sorry. [Mark] The Braille

devices themselves… will get information in the same

way that the screen reader does. The information gathering side

is pretty much the same for both. [Mark] What the Braille device

does to produce the output, that's different to a

normal screen reader. Yeah. [Narelle] The person using

these tools has to have… quite a lot of good

problem-solving ability as well. Because to try and do

what they need to do, it's not a

straightforward process. Negotiating anything

is not that easy… when you're looking

at environments, and some people get

very stressed about that. So, that's the importance of

strategising and problem solving. [Narelle] Yeah. And it's used by many

people across the world. What are two or three main screen

reader tools commonly used? [Mark] Well, the main ones

are obviously with Apple. We have VoiceOver,

which is the main one, which is built into

the operating system, for macOS. And iOS, which is the phone. Also has… the VoiceOver

screen reader as well. And so too with the… iPad and the Apple TV. [Narelle] Yep. [Mark] Their respective OSes use

the VoiceOver screen reader. VoiceOver also, regardless

of which platform you're using, VoiceOver also produces

Braille for a Braille display. And on the Windows

side of things, we have... Sorry, I'll do Windows last. But on the Linux side

of things, we have Orca, which is the screen

reader for all the… X Windows environments. [Narelle] Yep. [Mark] And I won't worry

about doing too much of that, because that's

probably least used. And on the Windows side, we have a couple. We've got Narrator,

which is built into Microsoft. [Narelle] Yep. [Mark] And we have NVDA, which is the Nonvisual Desktop

application screen reader, which is the… it's an open source environment. So, it's free. And then we have some

commercial products, which is Dolphin,

which is a UK company. And Freedom Scientific's… Job Access With Speech or commonly known as JAWS, which is also another

commercial thing. With that, we have… some integration with

magnification software, such as ZoomText, which is… through Fusion. That's another product

that Freedom Scientific has. -[Mark] Yep.

-[Narelle] Okay. [Narelle] Mark, what are the challenges other than people problem

solving all the way through? What are two or three challenges that people using these

tools have on most websites? [Mark] It comes back down to how

websites are developed as well. So, when we talk about the guidelines

of the web content guidelines, it's important to really… mention the guidelines are

written for best case scenarios. It covers pretty much everyone

and all types of disabilities. So, it's a lot of research

that's been undertaken to actually get to that point, so that people know. The recommendations within those

guidelines are very important. in a development phase. So, when it comes to

actual specifications, and actual design phases of the

software life development cycle. It's really important to make

sure that those accessibility… guidelines are actually

integrated into the system. You know what I'm

about to say, don't you? [Narelle] Yep. [Mark] It costs far

less for a company to actually have all this done in

the early stages of development, rather than bolt this stuff

on at the end of your project. So, we'll come

back to that later. When you do the implementation

side of the life cycle, and you probably would run

into some testing at that time, you might do some… black box or white box testing, whichever one you want to do. You might wanna accessibility

testing as well in that. So that incorporates

the keyboard shortcuts, making sure there's no keyboard

traps, et cetera, et cetera. So that screen readers, and even

testing it with a screen reader, you've probably done this in your

projects and I have certainly, making sure screen readers, I

have to cause I've got no choice, make sure your screen reader's

reading out the information that is coming up in

the alerts, et cetera. And yes, so this comes back to

the point that I was making, that if you wanted to bolt

this stuff on at the end of it, you'll be up for a lot of money,

cause you might have to go back, fix up mistakes that were made

in the early phases of a project. [Narelle] Yeah. [Mark] And that, as any project

manager would know, is a big problem to make it accessible. But anyway, for screen readers, it's important to use them when

in timing, you are implementing, testing, and putting alpha

and beta versions out. Test with a great

amount of samples, because different people use

screen readers in different ways. So I might use it… completely different to

what you use, Narelle, but it would be good to capture

that kind of information… in your public field, your alpha testing

or your beta testing. So that's important. [Narelle] Yeah. Mark, you've made

good points here today, and I really do thank

you for coming on. Mark, you're going to be involved

in a webinar later this year, talking, demonstrating, and explaining more about screen

readers and braille devices. Is that right? [Mark] Apparently. Yes. We'll go through some… go through some

various screen reading, not demonstrations, but

demonstrations are easier. One dozen, you know,

there's a dime a dozen. You can go and look

them up on YouTube. But we'll talk about the

nuts and bolts of why things… are done with screen readers, and a bit more of

the technical side of it. And braille displays,

probably all braille output, there's probably

not as much done, or out there. But we'll definitely

have a talk about that. i don't know how i'm going to get

the the braille display to be… video friendly. I could probably use a braille

viewer, that might do the trick. But yeah, we'll

work something out. And yeah, should be good

but that would be… Yeah, that would be

worth us doing, yes. [Narelle] Yeah. Mark, thanks very

much for coming on. It's, again, been interesting, and like every time,

I learn something new. If you want to talk

more with Mark, you can actually email Mark

at markmusket@dasat.com.au. Or find the DASAT

Facebook page, LinkedIn page, or the website, dasat.com.au. That's the show for this week,

and we'll see you next week. Have a good one. If you like what we do, please share,

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website, dasat.com.au. We really do love to receive any

feedback that you can give us. So we'll see you next time

on The Digital Access Show. Bye-bye. [music playing[