>PC Update

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From The Editor November/December 2022

Hugh Macdonald

So like they say all good things must come to an end, and with my recent decision to become President of Melbourne PC User Group, I no longer feel that I can give PC Update the attention that it deserves as editor.

The good news is that as of the next issue of PC Update in February 2023, David Stonier-Gibson is returning as editor after his own stint as president has come to an end.

I have to say I have really enjoyed editing PC Update and (hopefully) providing you with interesting content about computers and technology on a regular basis.

I want to thank all of the members who have contributed during my time as editor. I won't remember everybody if I try and name everyone but as they say, you know who you are. You've either been a technical editor, a regular contributor of a column, a SIG report writer, or just someone who occasionally contributes an article or a review. So thankyou all of you. Between us I think we've managed to produce a fairly good magazine each month.

There have also been the proof readers who have helped me each month to ensure all the mistakes are picked up, so a big thankyou to all of you as well.

I've offered to David to fill in as editor for him if he goes on holidays, so I'm sure he'll probably take me up on that and I'll return at some point. And in any case I like writing about technology issues, so I plan to become one of the club contributors for David. And of course, I'll be writing a President's column each month, so you'll be hearing from me there.

However, for now as editor, it is goodbye. Thankyou for reading and the support you've given me over the past three years. In particular, thankyou for the concern shown when I was sick earlier this year, that meant a lot.

Have a wonderful holidays and I'll catch you with a different hat on in 2023!

From The President November/December 2022

Hugh Macdonald

Welcome to my very first president's report in PC Update.

To recap I became president at the November Annual General Meeting and I said I would focus on a number of things for the coming year; to increase the overall membership of the club, to try and encourage a more diverse range of people to become members of the club, and to increase the number of events and activities happening at our Moorabbin headquarters.

With the help of a good number of other members, efforts to tackle some of those goals have been made in the past seven weeks since I assumed the position and so I want to discuss a number of things in this report.

Melbourne Creators Collective

For a number of years we had an alternative brand name for the club, which was Melbourne Computer Club. Last year the committee made the decision that the name Melbourne Computer Club was still too limiting for what we wanted to achieve (basically attracting new members) and the decision was made to discontinue that, and instead use Melbourne Creators Collective as an alternative brand name. It was felt that some people were turned off by the use of computer (because everyone under 40 knows how to use computers) and so Melbourne Creators Collective was more all-encompassing for attracting people who might be interested in science, technology, engineering, arts or mathematics (STEAM) based activities around computers.

Because at the end of the day we are all creators on our computers, whether we're creating a spreadsheet, a family tree, a video, or a program to upload to a microcontroller. So the name can be applied to a wide range of activities, and this will hopefully enable us to attract more members and a more diverse range of members.

It's definitely not a separate club. If you're a member of Melbourne PC User Group then you're a member of Melbourne Creators Collective, and if you're a member of Melbourne Creators Collective then you're a member of Melbourne PC User Group.

There are no plans to discontinue using Melbourne PC User Group either. It's a great brand with a rich history that should be cherished and preserved and I am definitely in favour of it continuing to be used.

You might however like to check out the new Melbourne Creators Collective website at https://melcc.org.au to see how we're presenting the club to try and attract new members.

Monash Makers Faire

Our first big outing for the Melbourne Creators Collective brand was the Monash Maker Faire where Aavon Fernando, Aidan Kelly, Bern Wachs, Mick Adams, Stephen Zuluaga and myself were in attendance to show off some of the interesting things that the club has made and that the club is doing to the wider public at Monash University.

It felt like quite a successful day. We had hundreds of people stop off at our stand to have a look at what we had on display. We gave away all the printed membership forms that we had brought along and we signed up quite a few people who are interested in coming along to our Coder Dojo kids coding classes in 2023. Additionally we had some interest in the Sunday Sessions maker based sessions that we run at the club every second Sunday, and in a sewing and crafts group that is starting in 2023.

That's about all for now. I'll be back (in this column) in the next issue of PC Update in February 2023 with a further report on how the club is progressing. Until then, I once again wish you all a very safe and happy holidays and if you'd like to get in touch with me to ask any questions please do so at president@melbpc.org.au.

Easily Accessible Dictation Software

Hugh Macdonald

I've never really given much consideration to dictation software before. I'm the kind of person who likes to think as I type and I feel like if I'm dictating something then I'm breaking the concentration I like to have when I'm writing. However recently, I had some clients who I was helping to setup their new computers and they were very keen to explore dictation software because they were very slow typists and they wanted to be able to get their memoirs down.

So I helped them to find a solution that worked for them. This ended up being the built-in dictation software in Mac OS that is powered by Siri. But I realised that there are quite a number of options for dictation software now that are either part of software you might own anyway or are free to use. So I decided to put a few of these through their paces for yout benefit.

To compare these different software packages, I dictated the first passage of The Man From Snowy River, which for those unfamiliar, is as follows:

There was movement at the station, for the word had passed around

That the colt from old Regret had got away,

And had joined the wild bush horses – he was worth a thousand pound,

So all the cracks had gathered to the fray.

All the tried and noted riders from the stations near and far

Had mustered at the homestead overnight,

For the bushmen love hard riding where the wild bush horses are,

And the stockhorse snuffs the battle with delight.

Microsoft 365

First cab off the rank was the dictation software built into the Microsoft 365 versions of Microsoft Office (in other words this feature is not found in the versions with a perpetual licence such as Office 2021, only the subscription versions which cost $99 or $129 per year:

There was movement at the station are word passed around that the coach from old address had got away Hannah join the wild Bush horses he was worth 1000 pounds so all the cracks had gathered to the fray all the Triton noted writers from the stations near and far add mustard at the homestead overnight for the

bushmen love hard riding where the wild Bush horses are and the stock horse last a battle with delight

MacOS/iPadOS

MacOS and iPadOS, being closely related Apple operating systems, both feature the same dictation software. In Mac OS it can be turned on by going to the Apple Menu, System Settings, Keyboard and turning on Dictation. Then no matter what application you go to type in, you'll see a microphone icon appear. You can click this to begin dictating.

On an iPad, you can go to Settings, Keyboard and turn on Dictation. You'll then see a microphone icon on your on screen keyboard that you can tap to begin dictating.

Here's how Siri does with Banjo Patterson's iconic poem:

There was movement station for the word past around. That's the code for mould of Ratan got away and enjoying the wild bush horses. He was worth £1000 so all the cracks it gonna do the fray will try to noted Rasmus stations near and far add mustard at the Homestead overnight for the bushman love heart rate in where the wild bush by SZA and the stock or snuff the battle with the lies.

Google Docs

As long as you have a Google account (and remember as a Melbourne PC User Group member you automatically have one) you can use the dictation software built into Google Docs for free. You have to use Google Chrome for this feature to work, but that's the only catch that I could see. To enable it, once you have a Google Doc open, just go to Tools, Voice Typing or press Ctrl + Shift + S.

Here's how Google did:

There was movement at the station for the word is passed around that the colt no Greta got away and a join the Wildwood horses he was worth 1000 pound so all the cracks add gutter to the frame all the tried and noted riders from the stations near and far add mustard at home that overnight all the Bushman love hard riding where the wild bush horses are and the stock horse snuffs the battle with the life.

Ultimately, none of them were terrific at dictating the poem, but for one thing, what you'll dictate is unlikely to be as complex in sentence structure as The Man from Snowy River and with time you'll learn the nuances of whichever system you pick and you'll get quite a good result I think. So if you're like my clients and are thinking of getting down your memoirs or undertaking some other kind of major writing project, then maybe you should give one of these a go?

Revisiting Chromebook

Hugh Macdonald

I've used a Chromebook in the past and the premise of its operating system, Chrome OS is a great one. It's a very lightweight operating system that doesn't require premium CPUs, extensive amounts of memory, or large amounts of storage (because it largely uses the Google cloud for that. For any user who simply requires a computer for getting online, checking emails, and doing the occasional very light other tasks, it's perfect in theory.

Of course, I'm not that user and so upon using it last time, I missed the full range of features I'd have at my disposal with one of the full-featured OSs of Linux, Mac OS, or Windows.

In recent years there has been more and more buzz about Chromebooks. Particularly during the last few years of the pandemic with homeschooling requirements, Chromebooks have surged in popularity. There have also been some big additions to Chrome OS in recent years with the addition of Android app support and the Google Play store, and the addition of Linux compatibility. So I thought it was time to take another look at a Chromebook.

Setup is as easy as ever. I joined my WiFi network and signed in with my Google account and I was up and running. Everything was still there from the last time I had used a Chromebook, as though I had never left. All my apps were already installed, and all my settings were remembered. I don't know any other operating system that is able to achieve that so simply.

I have a certain way I like to use a computer and certain applications I like to install that I find indispensable. Generally no matter the operating system, I am able to find versions of them to use, giving me a very consistent experience no matter what sort of computer I'm using. Last time around with Chromebook I had to either use progressive web app (PWA) versions of them or look for substitutes through the Chrome store.

This time around I had the Google Play Store at my disposal. This meant I could actually find Android versions of all the apps I usually use, put them in tablet mode, and then they really worked as well as they would have on any other platform. And I like to have all my email addresses set up in a client I can look at in a unified view. This time around I could install the Android version of Gmail for that. Despite being the Gmail app it supports any other sort of email account as well, whether it's a Microsoft Exchange account or an IMAP account

The other thing that has improved this time around is the ability to install Linux applications and run them from Chrome OS (which is itself based around the Linux kernel). This has really been introduced to allow developers to write their code and test it while using a Chromebook for their day-to-day computing needs. But for me, it means that I can fill the gaps that aren't filled by Android apps with Linux applications, such

as Visual Studio Code. I also installed LibreOffice as a test. In theory, any Linux application can be installed using the Debian virtual machine which you can easily install.

So I think Chromebooks are now worth considering, particularly if you have very basic computing needs and mainly check email and browse the web. But even if you want to do more on your computer as I do, then they are worthy of consideration.

The dawn of AI has come, and its implications for education couldn't be more significant

Vitomir Kovanovic, *University of South Australia*

The release of OpenAI's ChatGPT chatbot has given us a glimpse into the future of teaching and learning alongside artificial intelligence.

Educators immediately pointed out the chatbot's ability to generate meaningful responses to questions from assessments and exams. And it's often not possible to attribute these responses to a particular source – making it difficult to detect plagiarism.

Concerns didn't go unnoticed. Shortly after ChatGPT's release, OpenAI announced it was developing a "digital watermark" to embed into the chatbot's responses. This kind of watermark is embedded as a digital signal that can identify the content as being AI-generated, and which (in theory) should be difficult to remove.

But as experts have pointed it, people will likely find workarounds. And it won't be long before other AI models just as capable as ChatGPT pop up. What will this mean for our educational spaces?

It's safe to say we can expect some challenging years ahead.

But first, what is ChatGPT?

ChatGPT is powered by GPT3, a large language model (LLM) trained on an enormous amount of text data — about 500 billion words to be precise. Large language models work by predicting the next most-likely word when given a list of input words (usually phrased as a question).

The model is trained using many billions of parameters that can represent the complexity of the world. By inputting real-world data, the algorithm readjusts its parameters until it can produce human-like responses to a range of questions. For example:

> **How many eggs can fit into a grain of rice?**
>
> It is not possible for eggs to fit into a grain of rice, as a grain of rice is much smaller in size than an egg. A grain of rice is a small, round seed that is typically less than a millimetre in diameter, whereas an egg is a much larger object that typically measures several centimetres in length and width [...]

Although it's not foolproof, ChatGPT's capabilities both shock and inspire. It can write songs, programming code, and simulate entire job interview sessions. It even passed the Amazon Web Services Certified Cloud Practitioner exam, which typically takes 2-6 months to prepare for.

Perhaps what's most alarming is the technology is still in its early stages. The millions of users exploring ChatGPT's uses are simultaneously providing more data for OpenAI to improve the chatbot.

The next version of the model, GPT4, will have about 100 trillion parameters – about 500 times more than GPT3. This is approaching the number of neural connections in the human brain.

How will AI affect education?

The power of AI systems is placing a huge question mark over our education and assessment practices.

Assessment in schools and universities is mostly based on students providing some product of their learning to be marked, often an essay or written assignment. With AI models, these "products" can be produced to a higher standard, in less time and with very little effort from a student.

In other words, the product a student provides may no longer provide genuine evidence of their achievement of the course outcomes.

And it's not just a problem for written assessments. A study published in February showed OpenAI's GPT3 language model significantly outperformed most students in introductory programming courses. According to the authors, this raises "an emergent existential threat to the teaching and learning of introductory programming".

The model can also generate screenplays and theatre scripts, while AI image generators such as DALL-E can produce high-quality art.

How should we respond?

Moving forward, we'll need to think of ways AI can be used to support teaching and learning, rather than disrupt it. Here are three ways to do this.

1. Integrate AI into classrooms and lecture halls

History has shown time and again that educational institutions can adapt to new technologies. In the 1970s the rise of portable calculators had maths educators concerned about the future of their subject – but it's safe to say maths survived.

Just as Wikipedia and Google didn't spell the end of assessments, neither will AI.
In fact, new technologes lead to novel and innovative ways of doing work. The same will apply to learning and teaching with AI.

Rather than being a tool to prohibit, AI models should be meaningfully integrated into teaching and learning.

2. Judge students on critical thought

One thing an AI model can't emulate is the *process* of learning, and the mental aerobics this involves.

The design of assessments could shift from assessing just the final product, to assessing the entire process that led a student to it. The focus is then placed squarely on a student's critical thinking, creativity and problem-solving skills.

Students could freely use AI to complete the task and still be marked on their own merit.

3. Assess things that matter

Instead of switching to in-class examination to prohibit the use of AI (which some may be tempted to do), educators can design assessments that focus on what students *need* to know to be successful in the future. AI, it seems, will be one of these things.

AI models will increasingly have uses across sectors as the technology is scaled up. If students will use AI in their future workplaces, why not test them on it now?

The dawn of AI

Vladimir Lenin, leader of Russia's 1917 Bolshevik Revolution, supposedly said:

> There are decades where nothing happens, and there are weeks where decades happen.

This statement has come to roost in the field of artificial intelligence. AI is forcing us to rethink education. But if we embrace it, it could empower students and teachers. .

Vitomir Kovanovic, Senior Lecturer in Learning Analytics, *University of South Australia*

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Not everything we call AI is actually 'artificial intelligence'. Here's what you need to know

George Siemens, *University of South Australia*

In August 1955, a group of scientists made a funding request for US$13,500 to host a summer workshop at Dartmouth College, New Hampshire. The field they proposed to explore was artificial intelligence (AI).

While the funding request was humble, the conjecture of the researchers was not: "every aspect of learning or any other feature of intelligence can in principle be so precisely described that a machine can be made to simulate it".

Since these humble beginnings, movies and media have romanticised AI or cast it as a villain. Yet for most people, AI has remained as a point of discussion and not part of a conscious lived experience.

AI has arrived in our lives

Late last month, AI, in the form of ChatGPT, broke free from the sci-fi speculations and research labs and onto the desktops and phones of the general public. It's what's known as a "generative AI" – suddenly, a cleverly worded prompt can produce an essay or put together a recipe and shopping list, or create a poem in the style of Elvis Presley.

While ChatGPT has been the most dramatic entrant in a year of generative AI success, similar systems have shown even wider potential to create new content, with text-to-image prompts used to create vibrant images that have even won art competitions.

AI may not yet have a living consciousness or a theory of mind popular in sci-fi movies and novels, but it is getting closer to at least disrupting what we think artificial intelligence systems can do.

Researchers working closely with these systems have swooned under the prospect of sentience, as in the case with Google's large language model (LLM) LaMDA. An LLM is a model that has been trained to process and generate natural language.

Generative AI has also produced worries about plagiarism, exploitation of original content used to create models, ethics of information manipulation and abuse of trust, and even "the end of programming".

At the centre of all this is the question that has been growing in urgency since the Dartmouth summer workshop: does AI differ from human intelligence?

What does 'AI' actually mean?

To qualify as AI, a system must exhibit some level of learning and adapting. For this reason, decision-making systems, automation, and statistics are not AI.

AI is broadly defined in two categories: artificial narrow intelligence (ANI) and artificial general intelligence (AGI). To date, AGI does not exist.

The key challenge for creating a general AI is to adequately model the world with all the entirety of knowledge, in a consistent and useful manner. That's a massive undertaking, to say the least.

Most of what we know as AI today has narrow intelligence – where a particular system addresses a particular problem. Unlike human intelligence, such narrow AI intelligence is effective *only* in the area in

which it has been trained: fraud detection, facial recognition or social recommendations, for example.

AGI, however, would function as humans do. For now, the most notable example of trying to achieve this is the use of neural networks and "deep learning" trained on vast amounts of data.

Neural networks are inspired by the way human brains work. Unlike most machine learning models that run calculations on the training data, neural networks work by feeding each data point one by one through an interconnected network, each time adjusting the parameters.

As more and more data are fed through the network, the parameters stabilise; the final outcome is the "trained" neural network, which can then produce the desired output on new data – for example, recognising whether an image contains a cat or a dog.

The significant leap forward in AI today is driven by technological improvements in the way we can train large neural networks, readjusting vast numbers of parameters in each run thanks to the capabilities of large cloud-computing infrastructures. For example, GPT-3 (the AI system that powers ChatGPT) is a large neural network with 175 billion parameters.

What does AI need to work?

AI needs three things to be successful.

First, it needs **high-quality, unbiased data**, and lots of it. Researchers building neural networks use the large data sets that have come about as society has digitised.

Co-Pilot, for augmenting human programmers, draws its data from billions of lines of code shared on GitHub. ChatGPT and other large language models use the billions of websites and text documents stored online.

Text-to-image tools, such as Stable Diffusion, DALLE-2, and Midjourney, use image-text pairs from data sets such as LAION-5B. AI models will continue to evolve in sophistication and impact as we digitise more of our lives, and provide them with alternative data sources, such as simulated data or data from game settings like Minecraft.

AI also needs **computational infrastructure** for effective training. As computers become more powerful, models that now require intensive efforts and large-scale computing may in the near future be handled locally. Stable Diffusion, for example, can already be run on local computers rather than cloud environments.

The third need for AI is **improved models and algorithms**. Data-driven systems continue to make rapid progress in domain after domain once thought to be the territory of human cognition.

However, as the world around us constantly changes, AI systems need to be constantly retrained using new data. Without this crucial step, AI systems will produce answers that are factually incorrect, or do not take into account new information that's emerged since they were trained.

Neural networks aren't the only approach to AI. Another prominent camp in artificial intelligence research is symbolic AI – instead of digesting huge data sets, it relies on rules and knowledge similar to the human process of forming internal symbolic representations of particular phenomena.

But the balance of power has heavily tilted toward data-driven approaches over the last decade, with the "founding fathers" of modern deep learning recently being awarded the Turing Prize, the equivalent of the Nobel Prize in computer science.

Data, computation and algorithms form the foundation of the future of AI. All indicators are that rapid

progress will be made in all three categories in the foreseeable future.

George Siemens, Co-Director, Professor, Centre for Change and Complexity in Learning, *University of South Australia*

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Interesting Internet Finds

Steve Costello

While going through more than 300 RSS feeds, I often encounter things I think might interest other user group members. The following are some items I found interesting.

What To Do If You Forget Your Android Phone's PIN, Pattern, Or Password

https://www.howtogeek.com/226942/what-to-do-if-you-forget-your-android-phone%e2%80%99s-pin-pattern-or-password/

It used to be easy to reset things if you forgot this information. Recently it has been becoming much harder. If you have an Android phone, you need to read this post.

Gmail: Send A Group Email

https://cynmackley.com/2022/09/12/gmail-send-a-group-email/

I know a lot of user group members use Gmail. But, I also know not everyone knows how to send a group email with Gmail. If you don't know how to do this, read this post to learn how.

Streaming DVR Face-Off: YouTube TV, Hulu + Live TV, & The Rest

https://www.techhive.com/article/1072359/streaming-dvr-face-off-youtube-tv-hulu-live-tv-the-rest.html

If you are thinking of cord-cutting and are worried about having a DVR, this is a must-read post for you. There are even options given for antenna-only situations.

How To Create A USB Image To Back Up Your Data

https://www.maketecheasier.com/create-usb-image-data-backup/

This is a little bit more advanced than what I usually post. I use this process frequently enough that it has become a habit.

How To Make Android Faster: 11 Things That Work (And 3 That Don't)

https://www.makeuseof.com/tag/android-faster-works/

I have Android phones and tablets, so this post got my attention. I am always looking for ways to make these devices work faster. I have used most of the tips at one time or another, and I no longer use the 3 that don't work even before reading this.

What Is Smishing?

https://askleo.com/what-is-smishing/

I am sure you have heard of phishing, but do you know what smishing is? Check out this post to learn about it, what to watch for, and what to do about it.

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East SIG Report – October 2022

After welcoming members to the October meeting of the East SIG, host Frank Maher then outlined the nights agenda below:

Presentation 1: **Q&A** with Georg Skarbek
Presentation 2: **Current Scams and Preventions** by Dave Botherway
Main presentation: **Multimedia home setup and upgrade issues** by Rod Jones

The first presentation of the night was Q&A by George Skarbek. As there were no questions for George, we moved onto the second presentation by Dave Botherway on **Current Scams and Preventions**. The catalyst for this presentation was the recent hack of Optus customers personal information.

As an Optus customer, Dave displayed a letter he'd received from Optus. The letter includes the following paragraph on what data was exposed. "*No financial information or passwords have been accessed. The information which has been exposed is a combination of your name, date of birth, email, phone number and/or address associated with your account. No ID document numbers or details have been affected.*" In Dave's case, his Driving Licence was not part of his personal stored data, but other customers in the audience have had their Driving Licence and Passport exposed.
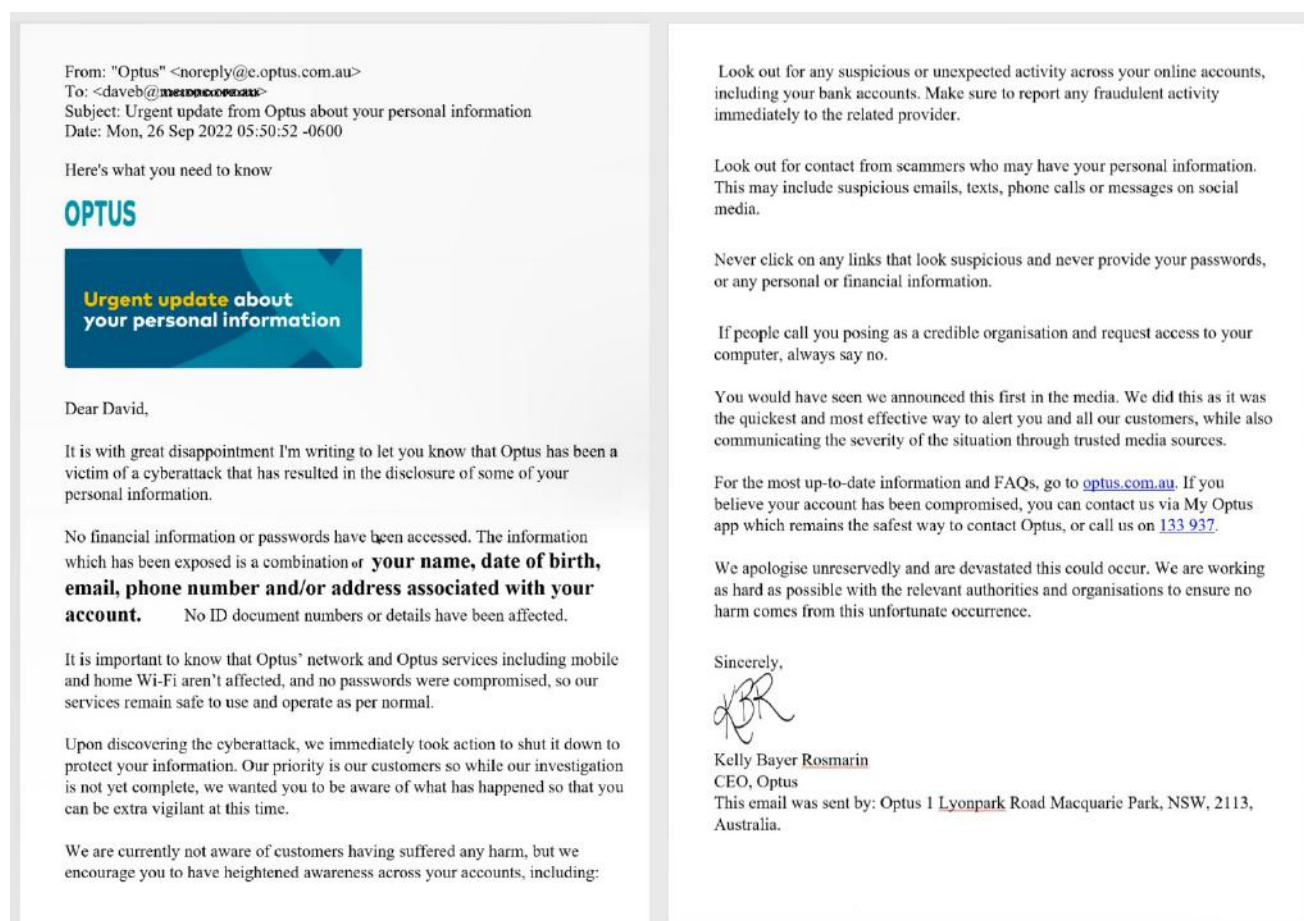

Figure 1 – Optus letter to its customers

George Skarbek commented that there was no need for Optus to retain customers Driving Licence or Passport. After confirming new customers identity, Optus's data could have simply ticked a box that these details were established, as there was no need for Optus to retain Driving Licence or Passport details.

Other audience members had received similar letters and commented on their experience. One member noted that there is a necessity for businesses to keep customers personal detail to verify they are who they claim to be. However, this should not be to the extent of keeping Passports and Driving licence numbers. A way around this problem is for the company to provide the customer with a reference number, which the customer then quotes when dealing with the company. If hackers get this number, it is useless to them.

Dave followed by displaying over 20 examples of current scams. Most of the scams shown were sent by text messages, but emails and fake items for sale that seem to be too good to be true, are currently common as well. The text message always includes a link that the scammers want you to click on. The type of scams included here are for parcel pickup or non-delivery, penalties for non-payment of a service, refunds offered and family members needing money.

A trick suggested by an audience member that when receiving emails is to hover over the URL link in these messages to see the real URL. Often when expecting a parcel, it's very easy to click on the link in these messages. Another member suggested to protect yourself you should run your PC as a standard user rather than Administrator.

A selection of the scam text messages Dave presented are shown below.

DHL, Shipment status changed, check @; here:
http://www.baiwheels.com/dhl/?xuq6&8yo86

UPS hello, failure of delivery, for more information go
here: http://test.carolinecalvertcreative.com/5/?u.a64r028

FEDEX: We were unable @ to ship your package: /
http://techvcrypto.xyz/9/?sv8.v26osp /

I'm at the checkout at coles and brought the wrong card
with me. Can you please send me 150.1 will pay
you back when i get home. bsb 633 123 acc 196 902 985

EastLink.: The overdue fee in August is about to be fined,
To avoid any severe penalty, Please check and complete
on time Http:// full URL not shown here

I am an Woolworths project manager, we are hiring a
team, You can work from home, daily salary:
200+whatsapp understand wa.me/12185022651

Your mobile service contains incorrect or out of date
Info, to avoid termination please correct it now.
D-ROUTE0824 www.optus.com.au.nc-mn.co/authorise

The main presentation was by Rod Jones on his journey planning his future TV viewing options. Rod has recently sold his house and detailed his plans to setup a proposed 85-inch 8K QLED TV at his new residence.

Issues Rod encountered and had to solve included:
- What is the latest technology available?
- What do all the acronyms mean?
  Rod needed to investigate and understand the technology behind the acronyms and whether they are useful for his TV setup. e.g.
    - ARC (Audio Return Channel) is a later generation of HDMI that allows 2 directional signals, especially for the audio channels. The benefit of ARC is that it reduces the number of cables needed.
    - eARC (enhanced Audio Return Channel) – This technology proved unsuitable in Rod's situation, as each appliance needed to have this feature to work.
    - Dolby Atmos. Rod was unaware there were 2 types of Dolby Atmos, one a lossy audio format, the other was superior lossless audio.
    - CEC (Consumer Electronics Control) allows for HDMI devices to be controlled with one remote control.
- What was the best layout and technology for placing speakers?
  Rod previously had 7.1 audio with rear speakers, but now plans to have Dolby Atmos at his new residence. Dolby Atmos gives height to the sound by bouncing audio off the ceiling. Refer Figure 2.
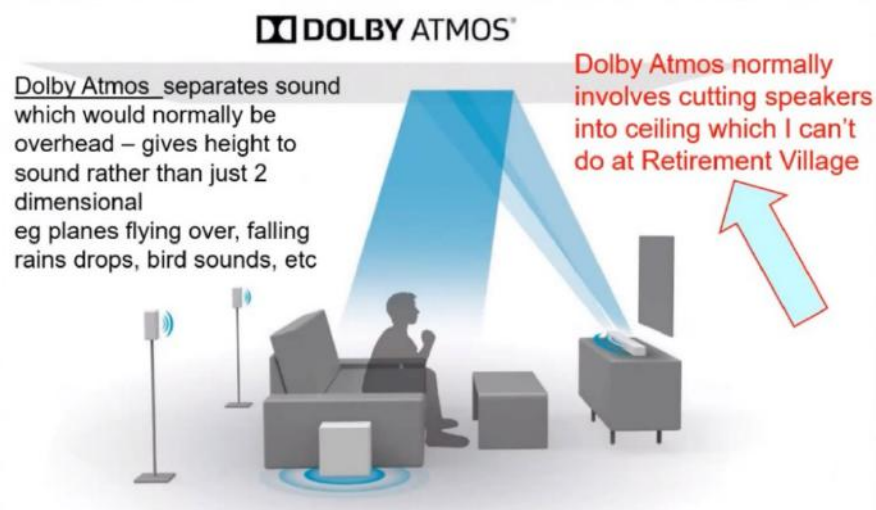

Figure 2 – Dolby Atmos

- What picture format is best for a room that is well lit?
  QLED TV is considered better in a lighted room, but OLED is considered to have a better picture. Rod plans to adopt a QLED screen as his room is well lit.
  According to CNET.com:
    - QLED TV picture quality varies more than OLED. QLED is brighter, can produce bigger and smaller sizes (and cheaper) & is less affected by light in the room
    - OLED has better contrast and black level, has better uniformity and viewing angles, resolution, colour, video processing but picture burn-in can occur.
    - All OLED screens can burn-in, and they're more susceptible than QLED, however, burn-in shouldn't be a problem for most people.

- What size screen should I adopt for a viewing distance of 3.8 metres?
  Rod referred to the chart below (Figure 3) when selecting screen size. The chart recommends the minimum distance to view the screen, so you don't have to turn your head more than 30^0 from one side of the screen to the other. For a distance of 3.8 metres, the optimum screen size is 85-inches.
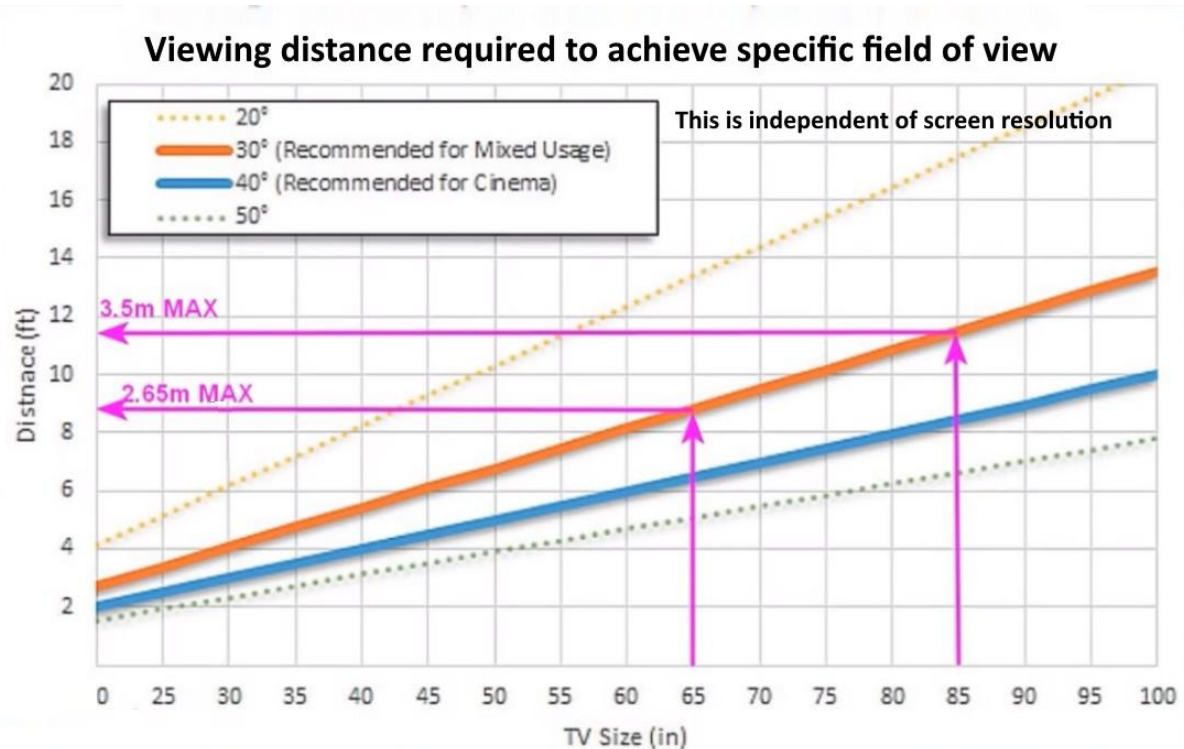

Figure 3 – Screen size & distance for various fields of view

- What HDMI cable is best for a 4K or 8K screen?
  Cheap HDMI cables are unlikely to work with 4K. Rod recommended and purchased a certified cable rated for an 8K TV as shown in Figure 4.

Figure 4 – HDMI identification

- What devices will I need to buy and what existing equipment do I keep?
The graphic in Figure 5 is taken from Rod's presentation and shows the final devices he selected to buy or keep.

Figure 5 – Rod's Current & proposed Equipment

- What are the best wiring options for connecting a Denon A4700 amplifier to the TV, along with a PVR (Personal Video Recorders) & a Blu-ray player? Refer Figure 6 for Rod's proposed wiring connections.
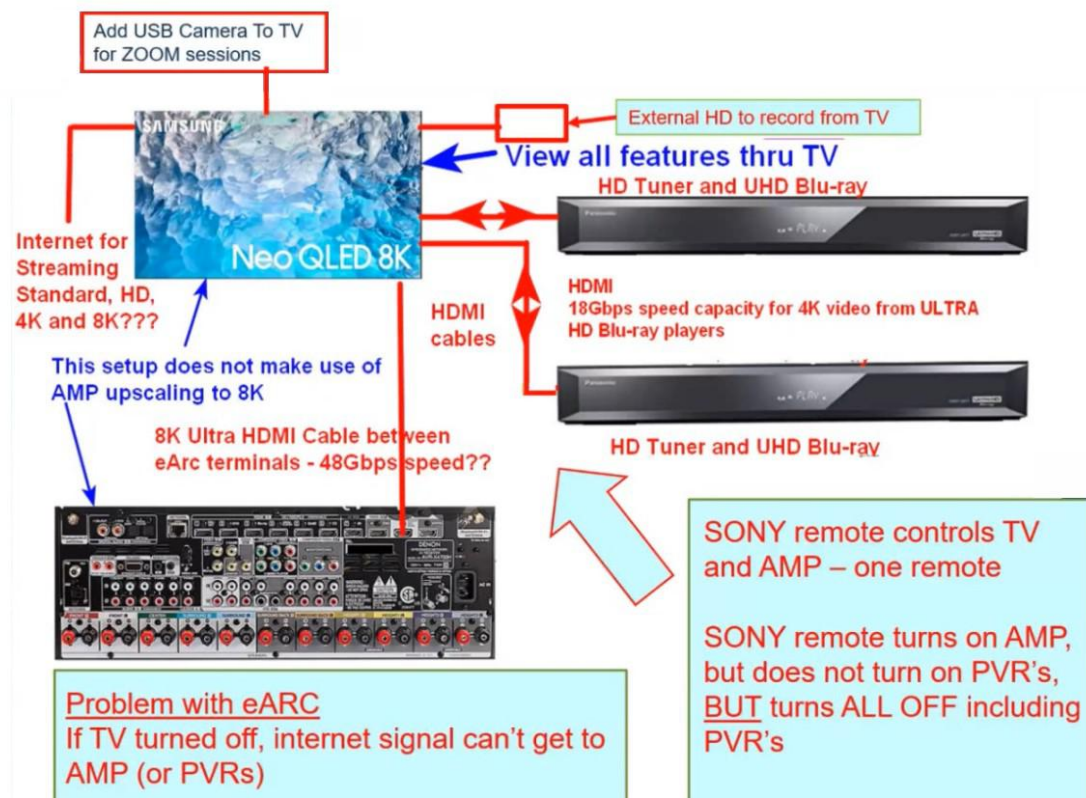

Figure 6 – Proposed final equipment connections

In conclusion, Rod summarized how his new TV setup will compare with his original setup.

1) The TV will now be viewed directly through the TV rather than the signal coming through the PVR. Previously Rod viewed the TV through his PVR, with the signal sent from the PVR to the TV. This setup did not allow him to use the "TV Smarts".
2) In future Rod plans to connect a Hard Drive to the TV to record directly from the TV, rather than the PVR.
3) With all the APPS available on the TV, Rod plans to watch more streaming TV.
4) The new setup with CEC will require fewer remotes
5) Rod plans to pair his hearing aids with TV, but first needs to solve an audio delay problem.
6) If installation becomes too difficult, Rod will employ an expert.

Neil Muller