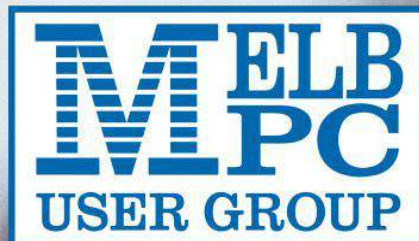


# > PC Update

April 2022



**Feature: Improve your online skills with your phone, tablet or computer ... free Be Connected training**

# Publishing information

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*Melbourne PC User Group Inc. is a member of the Association of Personal Computer User Groups*

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**Responsibility for content in this newsletter lies with individually named authors**

**Please remember to always bring your membership card to meetings**

# Editorial March 2022

David Stonier-Gibson, Editor pr tem

**Hugh Macdonald is temporarily indisposed, so I am holding the editor's quill for him until he's back onboard. More precisely: I'm curating the content, and Stephen Zuluaga is doing the online posting part.**

Here is a blog post I did in 2007 and just stumbled across on Wayback Machine. As relevant today as it was 15 years ago.

## A tale of three brushes

My early childhood was in post-war (WWII, that is!) Britain. We were a far from wealthy household. I remember clearly how in our family we had things that were a permanent part of the household – things like potato peelers and dish brushes, crockery and linen. These things simply were. A potato peeler or dish brush would last for year after year, and it was quite an event if one had to be replaced. Take the dish brush. It was made with a wooden handle and real bristles. The red paint would gradually peel off, reducing it to bare wood, but that brush would just keep on going. It was so familiar and comfortable it was practically a member of the family.

Fast forward 50 years or so.

My wife needed a new dish brush the other week. The old one was at least 6 months old and disintegrating (despite most of the dish washing being done by machine). So off she goes to X-Mart (make X=K, X=W, whatever) and comes back with a card containing 3 (three!) dish brushes. Three dish brushes with plastic handles and Nylon bristles.

Now, I bet that making each of those modern hi-tech brushes consumed many times as much of the Earth's resources than just one wood and bristle brush 50 years ago. Petroleum derived plastics, huge amounts of energy produced by burning filthy coal, fancy packaging (card, printing, wire and plastic ties) etc., etc. And each of those 3 brushes will last a fraction of the time of the old fashioned model.

Does this make sense? Am I any happier, any more fulfilled, because I am now the proud co-owner of not one battered old wooden dish brush but 3 shiny multi-coloured brushes? Will plastic and nylon make my dishes any cleaner than wood and bristle?

Is this just the rambling of a silly old fart? Or am I right to be worried about a world where we make and discard junkier and junkier goods at an ever accelerating rate, frenetically transferring the world's resources from mines and oil wells to garbage tips and atmosphere with no real net benefit gained along the way?

Posted on January 1, 2007 (And yes, even 15 years ago it would seem I was a silly old fart!)



# Monthly Meeting April 2022

David Stonier-Gibson



**With a federal election on the horizon, there is much speculation about the large number of independents putting their hands up in predominantly government held seats. At the last election in 2019 Tony Abbott was famously ousted from his “safe” northern beaches seat Warringah by former Olympic athlete, Zali Steggall. In Indi in northern Victoria, Cathy McGowan took on the sitting LNP member Sophie Mirrabella in 2013, and won. A new movement has emerged, Voices of. [electorate] in many LNP held seats, while climate activist Simon Holmes a Court has started an organisation called Climate 200 to fund pro climate action independents.**

The April monthly meeting will be special in many ways:

- We have a very special guest, Zoe Daniel, who is the Voices of Goldstein independent candidate in the upcoming federal election. You may remember her as an ABC foreign correspondent in Washington and other trouble spots around the world. I am also, at time of writing, trying to secure another high profile guest. I will be discussing what the Voices movement means, what influence it would have in Parliament, what their party leanings are, etc. All members will of course be welcome to ask questions.
- We are going back to in-person attendance. The meeting will be in the Moorabbin club rooms on Wednesday 6th April at 7pm. You can also Zoom in, if you wish, but that means missing out on the socialising.
- The format will be different. After the break, instead of more talking heads we will switch to socialising mode with BYO drinks and nibbles. We will do a raffle, so bring a fist-full of cash. The club coffers need a boost!

I feel that after all this time we probably all need a bit of human social interaction, so please do yourself a kindness and attend in person if you can. We will require proof of full vaccination. Masks will be optional.

We will wind up at about 9pm, and those who are interested can move on to WAFL (Wine And Fine Food SIG) at Fong’s in Bentleigh.

*Note: If by some horrible chance there’s a last minute surge in Covid we will have to fall back to Zoom only. So watch your email and/or Yammer:All Company for any last minute announcement.*

# An open letter to Scott Morrison

On March 15 the full federal court ruled that the federal environment minister, Sussan Ley does not have a duty of care to protect young people from the climate crisis when assessing fossil fuel developments. The case was brought by teenage activist Anj Sharma, seven other teenagers and an 86 year old nun, Sister Brigid Arthur. This overturned a previous ruling by a single judge that Ley did have a duty of care. This is an open letter written to the Prime Minister by Anj Sharma.



Have you heard of the five-by-five rule? Whenever something gets you down, you're told to ask yourself a series of questions: Will it matter in five hours? Will it matter in five days? Five months? How about five years?

If the answer is no, you don't spend more than five minutes being upset – and then you move on.

Scott Morrison, I'm sure you won't have forgotten the stresses of high school. The five-by-five rule is a mantra of sorts for high schoolers such as me. We're told to remember that friendship drama won't matter in five years. A bad mark won't matter in five years. In five years you won't remember how ugly you looked in this picture or how your crush saw you trip over your heels at that party.

Last Tuesday the full bench of the Federal Court delivered its crushing judgement that our case, which succeeded in establishing that the Environment minister owes children a duty of care to avoid causing us harm from climate change, was overturned on appeal. That day, about an hour after the judgement had been handed down, I was standing with friends on the steps of the Federal Court. We'd just done a heartbreaking press conference, vowing to be back but not even fully convinced ourselves. We had fronted the media and shed many tears.

I had seen one of my lawyers standing alone, a bit to the side, expression blank, and so had wandered over to talk to her, maybe crack a joke. But as I made eye contact and smiled, going in for a hug, she stopped me and said, “I’m sorry.”

I wonder if you can put yourself in her shoes, Mr Morrison. An environmental lawyer, she’s passionate and dedicated. She’s a beautiful soul. She’d given all she had to this novel common law case. And yet she felt the need to apologise.

Mr Morrison, I wonder at that moment if she had run herself through the five-by-five rule. A duty of care, which she had worked tirelessly to establish, was extinguished in a matter of seconds, as if it never existed in the first place. Will it matter in five hours? Five days? Five months? Five years?

We don’t know, of course. No one knows the future. But Mr Morrison, we don’t have the time to find out.

I don’t know if I’ve ever felt more shattered than I did at this apology. It felt as if this was everything wrong with the world. Someone with so much love, someone giving her all to fighting for something much bigger than herself, much bigger than you or me, apologising for not winning. While Environment Minister Sussan Ley was promoting her tourism strategy at the Great Barrier Reef, and you were where, exactly? And, more importantly, where was your apology? It shatters me because I wonder why lawyers are blaming themselves for losing a fight you created?

My family’s house in India is opposite a settlement of sorts in which many different homeless families live in makeshift tents, constructed from old rags and bedsheets. In some horrible, horrible way, it’s an absolutely marvellous innovation.

When I visited India at the age of 11, I made a few friends about the same age who lived in that very settlement. They were always happy and smiling, of course, and delighted in a game of badminton. Whenever the shuttlecock went over a neighbour’s fence, they had no hesitation in cheekily jumping the fence. We didn’t say it, but I think we all almost enjoyed it more when they were chased out of some neighbour’s garden, and we wouldn’t be able to stop laughing.

But their breath was so, so wheezy. Every few minutes one of them would burst into a coughing fit. Complaints of chest pain, reports of asthma attacks – these were just part and parcel of life.

Prime Minister, I now realise these were symptoms of living in and among pollution, with no personal protection. I also know that symptoms such as these only get worse, possibly leading to heart attacks, respiratory disease and death.

The children in that settlement have been on the front lines of the climate crisis for their entire lives, and this isn’t likely to change. I wonder how different your world view would be if your entire life was within a makeshift tent and a badminton game was peak entertainment.

Can you put your family in their place? Facing a life of cardiovascular disease, respiratory diseases, asthma? Where, at any point, floods or fires or even major winds could destroy everything this life is composed of?

If this were your life, would you still have brought a lump of coal into parliament? After all, don’t be afraid, right? Don’t be scared?

Would you have requested – allegedly – that climate targets be removed from the Australia–Britain trade deal? After all, our precious economy must be protected at all costs, right? Would you have

been proud to lead one of the only countries at the Glasgow talks that failed to sign up to a pledge to phase out coal-fired power? Knowing that these are the people at the mercy of the climate crisis, would you still feel pride at the way you've handled it as our leader?

The emotional climate activist trope has been used to death, but I'm so, so panicked when I think about my future. I want to look at you and feel a sense of safety, a sense of hope. I want more than just empty words, more than just "politician answers". I want you to govern as though you are a teenager who has to live with the results of your own governing for decades to come. Because this will matter in five days. It will matter in five years. It will matter in five decades. And as usual, the very people affected will be the last thought on your mind.

Most Australians have never had to sit on their roofs waiting for the SES to rescue them. We've never had to take a hose to our own property or heed warnings to pack our belongings and leave our houses behind, lest we get caught up in a climate-related disaster. Increasingly, though, we will.

After the devastating class action result, there were many tears. I'm terrified of the precedent this sets, about how your government might see this as a green light to give even more funding for fossil fuel projects and more approvals for coalmines and gas pipelines. I'm terrified to see the next news headline. I'm terrified because I know what this means for my family in India, and by extension, for us. I'm terrified by what it means for your constituents.

What I've learnt in my time advocating for social justice is that life always goes on. I don't know what you think this whole climate action thing is, but if you were wondering, it's not a passion project. It's not an extracurricular activity or community service hours for the résumé. It's not something to add to the university application. It's hardly a choice. Rather, it is a responsibility. A responsibility to our families, to our friends, to those who have lost so much at the hands of the climate crisis. It's a duty.

Climate action is about people's lives. It's about being safe. It's about those who are vulnerable. It's something you don't give up easily.

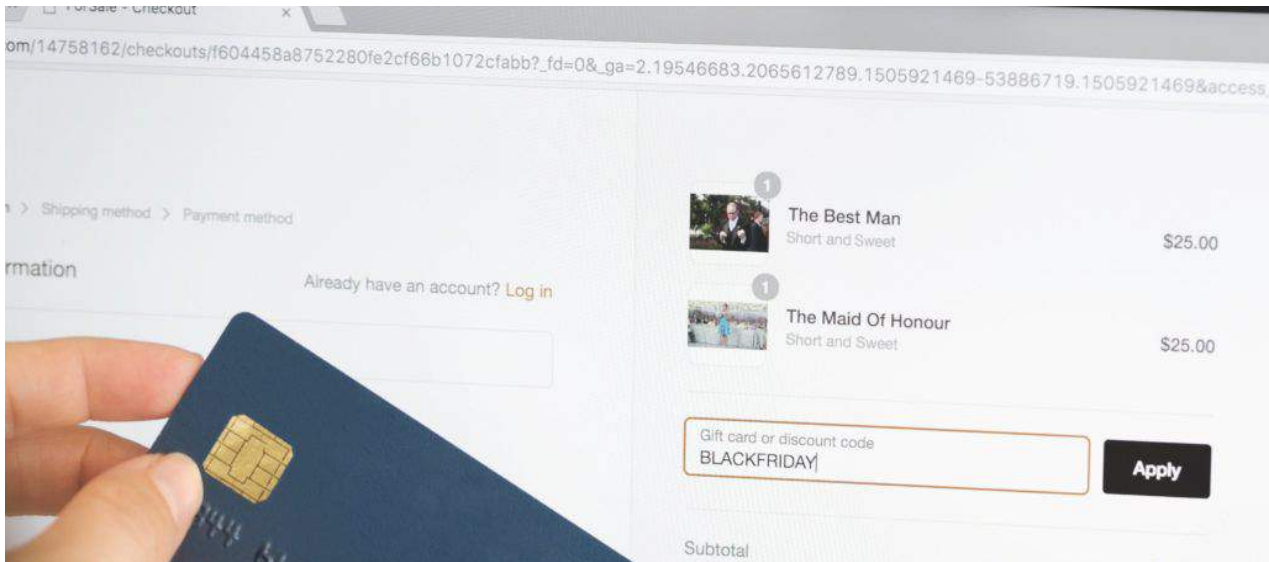
As long as you keep giving us a battle to fight, we will show up every day. Regardless of how much we are knocked back, we will strengthen our resolve and keep going until our vision of safety is more than just a vision – until it is a reality.

This is a promise. One that may be angry, drained and fatigued, but a promise, nonetheless. Don't forget our names, Mr Morrison. I hope it's been a good time for you, because when we're in your seats, I doubt they'll be as comfy.

*Anjali Sharma is an Australian climate activist, who at the age of 16, was the lead litigant in a class action in the Australian Federal Court, against the Federal government, and in particular, the Minister for the Environment, Sussan Ley, for failing to consider the impacts of climate change.*  
*Wikipedia*

# Potential Problems Ahead For Users of Three Popular Web Browsers

By Kurt Jefferson, Editor, Central Kentucky Computer Society



Three of the most popular Web browsers in use today are about to hit version 100. That is a major milestone for Mozilla Firefox, Google Chrome, and Microsoft Edge. While the makers of these browsers might normally be celebrating, they aren't putting candles on the cake just yet. That's because there's a potential problem here.

It turns out that some websites are not designed to display their pages correctly when viewed by versions of web browsers containing three digits – such as 100. You might say outdated code is the culprit. (No one knows for sure how many websites are using this outdated code, which could cause visitors headaches.)

It sort of reminds us of the year 2000, when many tech folks feared computers would revert to the year 1900. (Many computers read 1999 as 99, and it was feared the year 2000 – with four digits – would create computers to flip over to 1900. Headaches persisted for everyone from water treatment plant managers to toll booth operators as they waited for January 1, 2000. It turned out many operating systems either issued a patch or handled the date change successfully.)

Back to the year 2022, and we have the so-called version 100 issue. When you visit a website, most check your browser version number for security reasons. If you use an outdated, unsupported browser, you won't be able to visit the website for fear hackers might have compromised it. Outdated code on some websites will read version 100 of Google Chrome, such as version "10," and block the website from displaying on your screen.

News reports indicate that Firefox, Chrome, and Edge makers are scrambling to deal with this. If many websites fail to display correctly, Mozilla will freeze its Firefox browser at version 99 and urge websites to fix their code. Google says it plans to freeze Chrome at version 99. Microsoft has not commented on how it will handle the issue.



If you visit websites using Firefox 100, Chrome 100, or Edge 100 and they refuse to display correctly, try using another browser. (Everyone should have at least two different browsers loaded on their computers and mobile devices – just in case the default browser stops working correctly.) If you use Macs, an iPad, or an iPhone, switch temporarily to Apple’s default browser, Safari. (As I write this, Safari is at version 15.3, so you shouldn’t have a problem.) You can easily export your bookmarks from your current browser into Safari. If you don’t like Safari, try Brave. Tech experts say it’s a very secure and private web browser that doesn’t share your searches or other information.

Another option is the Epic Privacy Browser. Epic Privacy Browser was founded by a company based in Washington D.C. and Bangalore, India. It’s based on the Chromium source code, which means it works and feels just like Google Chrome if you’re a big Chrome fan. (I avoid Chrome, but I’m testing Epic on a Mac, and I like what I see so far.) It’s a solid browser.

Wikipedia says this about Epic: “Epic’s default configuration takes a proactive approach to ensuring that session data (such as cookies, history, and cache) are removed upon exit. The browser includes a proxy service that the user can enable and automatically enables when using a search engine. Other features, such as preferring SSL connections and always sending a Do Not Track header, further advance privacy.” It adds, “Ad and user activity trackers are blocked by default by the Epic browser, which prevents users being tracked.” If you use a Windows 10 PC, try downloading the Brave browser (which uses the same engine as Chrome and Edge). Another choice is the Epic Privacy Browser. Both are excellent options for Windows 10.

And there are other choices. Begin using the DuckDuckGo browser for Mac and Windows when it is released.

Experts say, hands down, Brave is much more secure and private than Chrome. So is Epic Privacy Browser. wikipedia.org notes, “ Epic developers removed all Google tracking code and binaries from the chromium source code to compile a clean executable and blocks other companies from tracking users.” Unlike Chrome, Epic’s number one goal is security and privacy.

News reports indicate Google intends to release version 100 of Chrome in early April. Mozilla plans to issue Firefox 100 in May. As of late February, here are some websites that do not display correctly using one of the beta issues of Chrome, Edge, and Firefox version 100. Problematic websites include Yahoo!, T-Mobile, Bethesda.net, The Mirror newspaper in Britain, Vivacom.bg, and others.

As the saying goes – this, too, shall pass. Once websites fix their ancient code, this problem will disappear. Until then, it might be wise to begin using Safari, Epic Private Browser, or Brave to get used to the new software.

# Free Tutorials – How to use Smartphones, Tablets and Computers

Committee member Stewart Gruncklee has taken the initiative to start a training program for people struggling with our modern “device centric” life style. With the increasing trend of everything moving to the internet, it is important that all adults have the necessary skills and knowledge to carry out transactions on-line safely and with confidence.



Each Wednesday from 6 April 2022 the Moorabbin premises will be open to members and non-members alike to attend in person. Bring along your portable device; smartphone, tablet or laptop computer to receive help with operating their device. Spare computers and tablets are also available if you don't already own a device or if your computer is not easily portable.

The Moorabbin club rooms will be open from 10:00 am to 3:00pm each Wednesday. Light refreshments will be provided. There is no set program – just come along and tell a mentor what's challenging you. Other days and times may be available on special request at the discretion of mentors.

This initiative is made possible by a grant received from the Federal Government via The Good Things Foundation's Be Connected Network.

# East SIG Report – February 2022

**Neil Muller**

Host Paul Woolard opened the February meeting, (our first for 2022), again from home via Zoom. The first presentation of the night was **George Skarbek** presenting his usual Q&A segment.

Q. For some time, I've had a problem with Windows 10 not remapping my network drives each time I boot the computer. I'm using a Synology NAS (Network Attached Storage) box. I had a clue that it may be caused by the SMB settings so looked and found I was using SMB version 1. When I changed SMB to version 3 the drive mapping has been rock solid. I have been updating the Synology software so I'm not sure why the old version of SMB wasn't picked up?

A. SMB version 1 is very old and it's surprising Synology hasn't been updating it. Thank you for the feedback. (Refer to Q&A from the August 2021 meeting report for a more detailed explanation)

Q. I have a YouTube problem. I keep a list of URLs of YouTube videos I wish to rewatch later in a Word document. In the past I simply have to click on the URL and the video plays. In the last few days, this technique no longer works and I'm redirected to the YouTube website. The video won't play and I don't appear to be able to go anywhere within YouTube. However, if I copy and paste the link into my web browser, the video plays correctly.

When I look at the URL that I clicked on in Word, it differs from that displayed in the browsers address bar. Youtube.com plus extra characters have been added to the original address I have recorded in the Word document. I've spent a lot of time trying to correct this without success, so have you got any suggestions that may help me?

A. I bookmark any videos I wish to revisit and that approach works. However, your approach should work using Word.

[Peter Carpenter] If you sign into YouTube there is an option to "Play Later". This option is stored under your account. As an alternative you could also use the share option and paste the link into Word.

[Reply] I've built up a large library of links, so that suggestion would involve a lot of extra work. I've also tried links from Word on another computer and that gave the same results. I suspect YouTube has done something as it's in their interest for users to visit their website to view the ads.

[Richard Bradford] I've found when using the Chrome browser, when I put in a URL it seems to direct the URL through a Google search. It could be the browser that is causing the additional characters being added to the address. Possibly use a different browser.

[Peter Carpenter] As a check copy the URL into a blank document (Notepad) and copy the "shared" URL and compare the 2 for any differences.

Q. What advantages are there for signing into YouTube, rather than just using it anonymously? I would prefer to protect my privacy.

A. [Frank Maher] Signing in brings up topics you are interested in and not random topics.

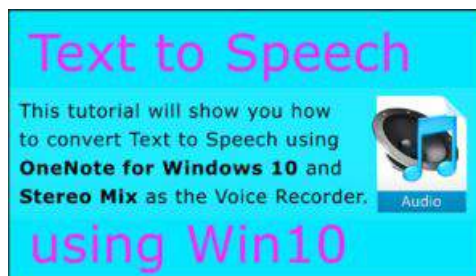
[John Hall] Signing in gives you a list of items you've been watching so you can go back and watch unfinished videos later.

Q. I understand that SSD drives have a finite read & write limit.

A. It's only when you write to a cell in an SSD that shortens its life. The read is infinite.

Following Q&A, **Trevor Hudson** played a video he'd prepared detailing how to convert "Text to Speech using Win10". Trevor's video has been uploaded to YouTube and shows how at no cost you can convert Text to Speech using free tools available in Windows 10. The motivation for the video was to convert written information for his father who is legally blind and unable to read.

The procedure presented uses 2 programs available in Windows 10, "OneNote for Windows 10" and Windows "Voice Recorder". The advantage over other similar techniques is it's completely free, doesn't have any watermarks, has unlimited use, no time limits and has a choice of voices, accents and the ability to adjust the reading speed. (Refer <https://tinyurl.com/ycktb9u>).



**Figure 1 – YouTube video opening screen “Text to Speech using Win10”**

I have divided the video into 3 parts, as not all users will have the same requirements.

- The first part shows the technique to convert written text into speech using "OneNote for Windows 10". With OneNote open, select from the View menu "Immersive Reader". To select an Australian voice, click on Reading Preferences (book icon on the top right) where you select the voice, English Australian. From the Sound icon at the bottom centre of screen, the "Voice Speed" and either a male or female voice can be selected. Paste text into OneNote then select the play icon at the bottom centre of the screen to hear the text read. This may be all some users would need.
- If you wish to record speech, the second portion of the video shows how to record the spoken text using Windows "Voice Recorder". To record what is played in OneNote, the sound input is first set to "Stereo Mix" from the Windows Setting menu. This will enable you to record Windows system sounds. Trevor's video shows how you change this setting. The first step is to start "Voice Recorder" by clicking on its microphone icon. Next you go back into OneNote, select "Immersive Reader" and click the Play icon, to commence reading of the text. As the text is read, "Voice Recorder" records the speech and can later be saved as a .m4a audio file. Trevor then shows how to trim quiet sections of the audio recording from within "Voice Recorder".
- The video concludes by showing how Trevor converted the .m4a audio file from "Voice Recorder" to the more common .mp3 format. This was shown using Sony "Vegas Pro" and then the free "Audacity" audio editor.

The second part of Trevor’s presentation was a video he played titled “Top 15 Gmail Tips & Tricks” by Kevin Stratvert. <https://tinyurl.com/yc6r8cw7>



**Figure 2 – YouTube video “Gmail Tips & Tricks”**

For those members using Gmail in their browser on the web, this video takes the mystery out of 15 of the multitudes of settings available within Gmail. Rather than detail each of the 15 tips shown in the video, I have only shown the topic headings as it would be too detailed for this report. Members should view the video if topics are of interest to them.

- Undo a send message
- Schedule send messages
- Setting up Templates for sending & replying to emails
- Customise your email address with a . (period) to make them easier for others to remember.
- Customise your email address with a + to make them easier to track
- Turn on a theme in Gmail, including Dark theme
- Add a Reading pane
- Read Gmail messages in offline mode
- Keyboard Shortcuts
- Mute noisy conversations
- Creating & switching between multiple email signatures
- Use Stars to organise messages
- Vacation responder
- Reduce space usage in Gmail
- Insert a file from Google Drive using links to reduce space usage
- Access Gmail in Outlook or other email apps
- Additional inbox types

The final presentation was by **Dave Botherway** explaining the differences between 5G, 5GHz and how these might affect the NBN. The reason for the topic was that people often get confused as to what 5G refers to, and the implications of 5G for the NBN. This is a subject that Dave is currently investigating, because at his current residence it’s recommended that residents use a 5G “dongle” rather than the NBN. The reason for this is because the cable used for the NBN is also used for the emergency phone system. Currently Dave is trialling both 5G and the NBN, but needs to make a decision about what technology he will use in the future.

## What is 5G?

For mobile phones, 5G refers to the 5th generation of mobile technology, with 5G being the latest version following on from 2G, 3G & 4G. 5G connects to a mobile phone from towers, and is an alternative to the NBN for connecting to the internet. Alternatively, a USB modem that plugs into a laptop or computer, a Hot Spot modem router, or Wi-Fi tethering to a mobile phone, can all use the 5G signal for receiving an internet connection. Therefore, a 5G signal coming from a mobile phone tower allows a user to connect to the internet anywhere within the range of the signal. Thus, it is a viable alternative to the NBN for internet traffic.



**Figure 3 – USB WiFi Dongle & WiFi Hot Spot**

For Wi-Fi, 5G is the localised connection, usually from your modem-router, up to a distance of 50 metres. However, Wi-Fi might also be available from a Hot Spot, such as a library, hotel or restaurants etcetera. Here 5G stands for 5 Gigahertz, which is the frequency of the base link. This being the next improvement up from the previous standard of 2.4 Ghz frequency. Now many modem-routers have both the 2.4 and 5 Ghz frequencies and are referred to as having dual link.

## 4G & 5G Mobile Performance

The internet speed that can be achieved from both the 4G and 5G mobile signal varies depending on distance to the mobile phone tower used, any signal path obstructions and data traffic volumes.

4G will have speeds varying between 20 to 80+ Mbps, with a Ping time of 10 to 15 milliseconds. It is limited to data usage with a cost comparable to that of the NBN.

5G will have speeds varying between 100 to 400+ Mbps, with a Ping time of 1 to 2 milliseconds. Speed like those from 5G are needed for Real-Time Apps such as driverless cars. Currently 5G has a limited but expanding coverage and requires a 5G compatible device. Dave displayed maps of the 5G coverage around Melbourne in November 2019 and again in February 2022, for both Telstra and Optus. This confirmed the rapid increase in coverage during that 2-year period. 5G compatible devices are currently fairly expensive compared to 4G devices.



**Figure 4 – Telstra & Optus 5G modems**

The current cost for a 5G Home Broadband plan from Optus claims, pricing comparable with the NBN, unlimited data, guaranteed 50Mb/sec. speed and includes a modem. However, SMS and mobile calls come at an extra cost of \$10 per month.

## 5G Advantages over NBN

- 5G offers performance greater than NBN-100
- 5G does not need physical cabling
- The 5G Wi-Fi modem-router can be moved within a residence or between residences. Once devices are paired, setting up at different locations is easy.
- 5G gives a far better return for providers
- Competition between Telstra, Optus & Vodafone creates competitive pricing compared to the NBN, which is a government monopoly with fixed prices.
- 5G coverage is increasing as seen in coverage maps Dave presented
- The data cost barrier is diminishing.
- 5G is now a viable alternative to NBN for both providers and customers.

## Summary

- 2.4 or 5 Mhz Wi-Fi from a modem router requires less need for internal wiring
  - 4th & 5th generation (4G & 5G) mobile, requires no additional wiring as the wireless signal originates from mobile towers.
  - 4G and 5G offers from the Retail Service Providers (RSPs) are not yet attuned to home phones.
  - 5G speeds are better than NBN-100
  - NBN is a government owned monopoly, hence margins for providers are low. This is the reason Telstra, Optus & Vodafone are pushing customers to 5G over the NBN.
  - Overall 4G and 5G are viable alternative to NBN
- 

# Make a Wi-Fi QR Code Using Android

**John Krout, Potomac Area Technology and Computer Society**

Instead of forcing family, friends, and user group members to type a long, convoluted password to access Wi-Fi, use your Android phone to make a QR code including the password, enabling all to connect by scanning the QR code.

## Introduction

The primary purpose of QR codes is to convey useful information in a form that a smartphone, tablet, or computer can read. Any situation where info has to be hand-keyed can be improved by offering a QR code containing the same information. Recent Android and Apple phones and tablets models can read and apply the info contained in QR codes.

The second advantage of QR codes is to avoid the hassle of typos. Of course, that hassle factor increases as the length of the hand-keyed info increases, making a QR code even more attractive.

QR codes contain various types of data. Some of the data types are URL (web page address), vCard (street address and phone numbers), and email (including recipient email address, subject line, and even the message text).

A Wi-Fi QR code typically contains three data elements: the Wi-Fi network name, also known as SSID, the password, and the type of encryption used by the Wi-Fi network. Devices that scan a Wi-Fi QR Code can connect to the Wi-Fi network if it is in range.

In this article, you will learn how to use your smartphone or tablet running the Android 10, 11, or Android 12 operating system to create a Wi-Fi QR code and store it as an image, just like a photo.

You will learn how to test the QR code to make sure it works. Then you can display it, enabling anybody nearby to scan it and connect to the Wi-Fi network, and you can print it, so it can be posted for others to scan even if you are not present at the time.

## Log in to the wifi network manually

Initially, you use your Android device to log into the Wi-Fi network using the usual method, including typing the password manually. However, if you use the Wi-Fi network frequently, your Android device may automatically connect to the network.

At that point, your Android device has all the info required to create a QR code. It has the network name, the password, and the network encryption type.

This article was prepared, and screens were captured using Android 12.

## Generate a wifi qr code

The Settings app that enables you to connect to the Wi-Fi network and type the password can create a Wi-Fi QR code for logging in to the network.



Open the Android 10/11/12 Settings app, and tap Connections. You should see a screen like that depicted in illustration 1 , with the Wi-Fi network SSID at the top. Tap the SSID, which is circled in the illustration.





You should see a screen like the one depicted in illustration 2. The SSID appears under the heading Current network. Tap the gear icon to the right of the SSID, which is circled in the illustration.



You should see a screen like the one depicted in illustration 3 . Then, tap the button labeled QR code at the bottom left, which is circled in the illustration.



You should see a generated QR code as in illustration 4 . I blocked out part of the code for security purposes; anyone could log into the network with the entire QR code.

Tap the button in the lower-left corner, labeled Save As Image, to save the QR code image on your device. That button is circled in the illustration.

On my device, within the DCIM folder, the QR code was saved in the internal storage folder named Pictures.

## Test The Wifi Qr Code

Before you make the Wi-Fi QR code available to anyone else, it is a good idea to test the QR code.

The test consists of these steps:

1. Get in range of the Wi-Fi network.
2. Force the Android device to Forget the Wi-Fi network
3. Scan the Wi-Fi QR Code image stored on the device.

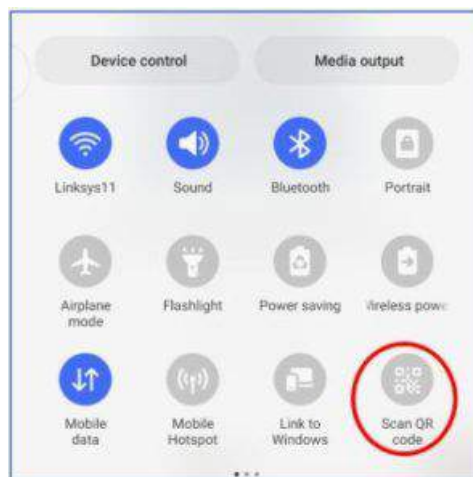
## How to forget the wifi network

For an Android 11/12 device, the sequence of taps to Forget the current Wi-Fi network is: Settings → Connections → Wi-Fi → SSID Gear icon → Forget (trash button in the lower right corner in illustration 3). There is no request from the phone to confirm that you really want the device to Forget. Instead, it immediately deletes its record for the current Wi-Fi network.

## How to test the wifi qr code image file

Then tell your Android device to scan the same QR code saved in the device.

Pull down the Shade menu from the top of the Android screen.



On my Android phone, the Shade menu pulls down halfway. A second downward swipe pulls it down, revealing the Scan QR code button circled in illustration 5. Tap that button.



A camera window opens, displaying the legend Find A QR Code, as shown in illustration 6. That screen includes a button to scan a photo file instead of a displayed or printed QR code. That button is circled in the illustration. Tap that button.

A screen appears showing photos. At the bottom left of the screen, there is a Pictures button. Tap the Pictures button. When photos in the Pictures folder appear, find and select the stored Wi-Fi QR code image.

In my case, after scanning the selected Wi-Fi QR code image in Screenshots, the Settings app connected to the Wi-Fi Network immediately. I confirmed that by switching to the Settings app and checking for a secured Wi-Fi network.

## Older versions of the Android OS

I tested it using my Samsung Galaxy S10 smartphone running Android 12.

The Settings app on my Galaxy Tab S5 lite running Android 11 displays the same user interfaces in a column instead of displaying an entire screen, but the steps for creating a Wi-Fi QR code and testing it are identical.

Google informs me that the Wi-Fi QR code creation capability was introduced in Android 10, and the ability to scan a QR code was introduced in Android 8.



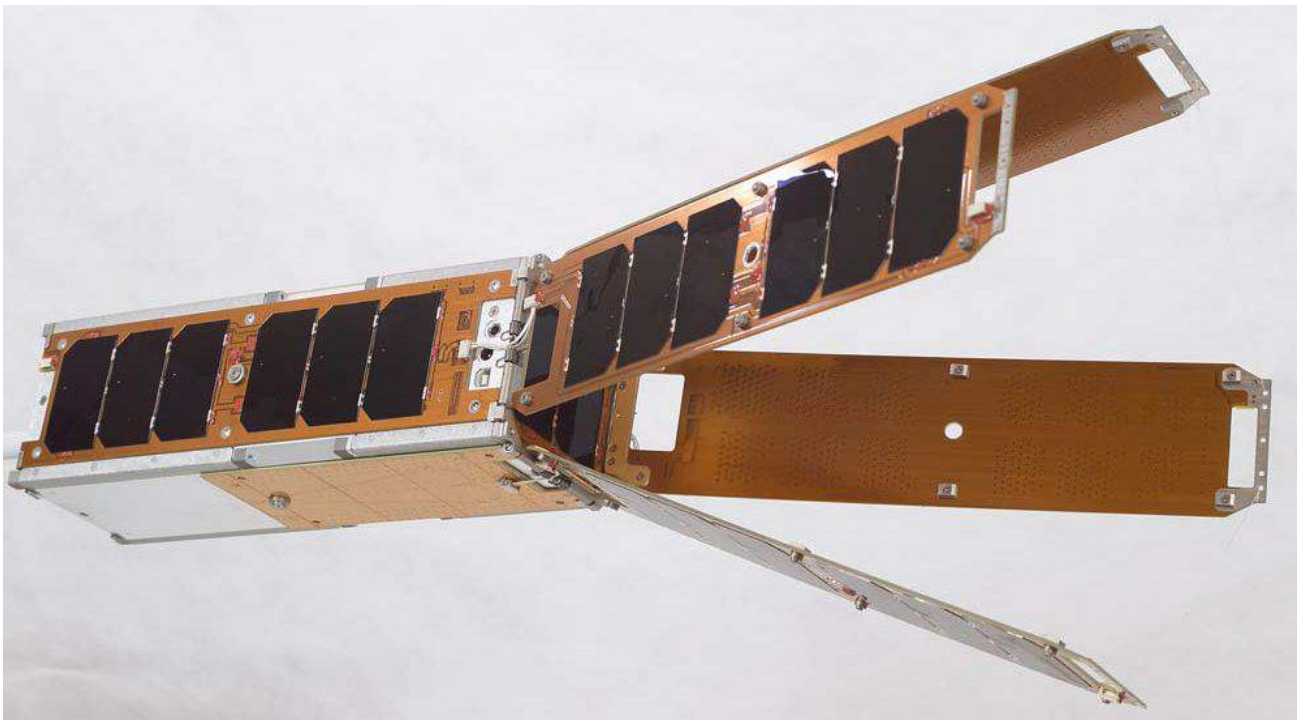
Older versions of the Android OS can install a free app such as QRbot that will scan QR codes and make appropriate use of the info provided by the QR code, such as logging into a Wi-Fi network. Illustration 7 shows the icon of the QRbot app.

Although the QRbot app can make Wi-Fi QR codes, those codes lack a mandatory data element included by the Android 12 Settings app. As a result, Wi-Fi QR codes produced by QRbot will not work on most consumer-grade Wi-Fi routers.

*ABOUT THE AUTHOR: John Krout is a retired software engineer living in Arlington, Virginia. He helped design, code, test, and document software for many federal agencies during his career, mainly in C and C++. He has been writing about creative uses of computers since the early 1980s. Now he also writes about smartphones, tablets, and digital cameras.*

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## **Tiny satellites are changing the way we explore our planet and beyond**



**Shane Keating, Senior Lecturer in Mathematics and Oceanography, UNSW Sydney**  
**Clare Kenyon, Astrophysicist and Science Communicator, The University of Melbourne**

Want to go to space? It could cost you.

This month, the SpaceX Crew Dragon spacecraft will make the first fully-private, crewed flight to the International Space Station. The going price for a seat is US\$55 million. The ticket comes with an eight-day stay on the space station, including room and board – and unrivalled views.

Virgin Galactic and Blue Origin offer cheaper alternatives, which will fly you to the edge of space for a mere US\$250,000-500,000. But the flights only last between ten and 15 minutes, barely enough time to enjoy an in-flight snack.

But if you're happy to keep your feet on the ground, things start to look more affordable. Over the past 20 years, advances in tiny satellite technology have brought Earth orbit within reach for small countries, private companies, university researchers, and even do-it-yourself hobbyists.

## **Science in space**

We are scientists who study our planet and the universe beyond. Our research stretches to space in search of answers to fundamental questions about how our ocean is changing in a warming world, or to study the supermassive black holes beating in the hearts of distant galaxies.

The cost of all that research can be, well, astronomical. The James Webb Space Telescope, which launched in December 2021 and will search for the earliest stars and galaxies in the universe, had a final price tag of US\$10 billion after many delays and cost overruns.

The price tag for the International Space Station, which has hosted almost 3,000 scientific experiments over 20 years, ran to US\$150 billion, with another US\$4 billion each year to keep the lights on.

Even weather satellites, which form the backbone of our space-based observing infrastructure and provide essential measurements for weather forecasting and natural disaster monitoring, cost up to US\$400 million each to build and launch.

Budgets like these are only available to governments and national space agencies – or a very select club of space-loving billionaires.

## **Space for everyone**

More affordable options are now democratising access to space. So-called nanosatellites, with a payload of less than 10kg including fuel, can be launched individually or in “swarms”.

Since 1998, more than 3,400 nanosatellite missions have been launched and are beaming back data used for disaster response, maritime traffic, crop monitoring, educational applications and more.

A key innovation in the small satellite revolution is the standardisation of their shape and size, so they can be launched in large numbers on a single rocket.

CubeSats are a widely used format, 10cm along each side, which can be built with commercial off-the-shelf electronic components. They were developed in 1999 by two professors in California, Jordi Puig-Suari and Bob Twiggs, who wanted graduate students to get experience designing, building and operating their own spacecraft.

Twiggs says the shape and size were inspired by Beanie Babies, a kind of collectable stuffed toy that came in a 10cm cubic display case.

Commercial launch providers like SpaceX in California and Rocket Lab in New Zealand offer “rideshare” missions to split the cost of launch across dozens of small satellites. You can now build, test, launch and receive data from your own CubeSat for less than US\$200,000.

## **The universe in the palm of your hand**

Small satellites have opened exciting new ways to explore our planet and beyond.

One project we are involved in uses CubeSats and machine learning techniques to monitor Antarctic sea ice from space. Sea ice is a crucial component of the climate system and improved measurements will help us better understand the impact of climate change in Antarctica.

Sponsored by the UK-Australia Space Bridge program, the project is a collaboration between universities and Antarctic research institutes in both countries and a UK-based satellite company called Spire Global. Naturally, we called the project IceCube.

Small satellites are starting to explore beyond our planet, too. In 2018, two nanosatellites accompanied the NASA Insight mission to Mars to provide real-time communication with the lander during its decent. In May 2022, Rocket Lab will launch the first CubeSat to the Moon as a precursor to NASA's Artemis program, which aims to land the first woman and first person of colour on the Moon by 2024.

Tiny spacecraft have even been proposed for a voyage to another star. The Breakthrough Starshot project wants to launch a fleet of 1,000 spacecraft each centimetres in size to the Alpha Centauri star system, 4.37 light-years away. Propelled by ground-based lasers, the spacecraft would "sail" across interstellar space for 20 or 30 years and beam back images of the Earth-like exoplanet Proxima Centauri b.

## **Small but mighty**

With advances in miniaturisation, satellites are getting ever smaller.

For a few hundred dollars you can build and launch a tiny working satellite. Ambasad

"Picosatellites", the size of a can of soft drink, and "femtosatellites", no bigger than a computer chip, are putting space within reach of keen amateurs. Some can be assembled and launched for as little as a few hundred dollars.

A Finnish company is experimenting with a more sustainably built CubeSat made of wood. And new, smart satellites, carrying computer chips capable of artificial intelligence, can decide what information to beam back to Earth instead of sending everything, which dramatically reduces the cost of phoning home.

Getting to space doesn't have to cost the Earth after all.

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