




Significant Bits

Journal of Brisbug PC User Group Inc.



Vol 40 No 1

19 January 2025

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5-8	Johns Jots	John Tacey	Q&A	
9-15	APCUG Articles	None this issue	Various	APCUG
			Secretary	

Meeting Timetable Mitchelton Library Helios Parade Mitchelton

9:30am	Q&A	John Tacey
11pm	Load up Authenticator and pass key on club laptop	Keith and Fred
	Lunch -- GM - Report to the Club	Keith
1:00pm	Linux Ubuntu Mate Workshop	Keith All

If you have a question that may need a bit of a look up, let me know before the meeting

Presentation can be done using Power Point and shared screens.



Significant Bits

Journal of Brisbug PC User Group Inc.

SIGNIFICANT BITS

the Journal of
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PC-type computers*
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CLUB NOTICES

CLUB INFORMATION LINES

Info Line (07) 3353 3121

The Members' Web Page

Meeting Days

19 January 2025

16 February 2025

16 March 2025

20 April 2025

18 May 2025

15 June 2025

20 July 2025

17 August 2025

21 September 2025

19 October 2025

16 November 2025

21 December 2025

Magazine

Editor
Chris Haydock

Proof-reader
John Tacey

Submission Deadline

Friday 3 January 2025

Please use e-mail if possible

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Hi All,

Happy New Year, my "hope" is that this will be a much better year than 2024.

So, be happy and stay healthy and safe.

We will continue with Linux workshop and add in to presentation using Libra Office as an alternate to MS Office that is getting even more pricey.

We looked at some others previously but Libra offers more features so it may be the best option. It will take a bit of learning, similar to any major change in MS Office especially if you want to replicate something you do say in Word. It just may be worth it though, Libra is free.

With the major ISPs dropping a mail service the obvious alternatives are Gmail and Outlook.com, but they come with the baggage of the suppliers and privacy.

Maybe, just maybe it is time to consider ProtonMail and its security and privacy (no data capture or sale). It means we now consider paying for the privilege. You can get a free account but you will be stuck with using web mail to access it.

As we are now over loaded with AI we need to either get on board or ignore it!

Are you using it? Is so time to let your co members know and what you use? Why you use it? How are you dealing with Privacy?

All for now

See you at the meeting

Keith

**PLEASE · PAY · YOUR ·
MEMBERSHIP · RENEWAL · VIA ·
DIRECT · FUNDS · TRANSFER**

**Brisbug · PC · User · Group ·
Inc**

BSB · No: · · 034 - 083
Account · No: · 185711

**Remember · to · enter · your · name ·
and · membership · number · in · the ·
comment · field**

Reports

Presentation and Education

Presentation:

Morning 11am. Passkey / Authenticator App.
Email what's happening.

After Afternoon 1pm: Linux Ubuntu Mate
workshop

Membership Report - Gary Woodforth

We had 10 members at the September
meeting.

Treasurer's Report

December 2024

Opening Balance at 01/12/24	2125.28
Income	
Bank Interest	0.02
Renewal of Membership X 10	100.00
Total Income	100.02
Expenses	
Xmas party supplies	30.00
Total Expenses	30.00
Month's gain	70.02
Balance at 31/12/24	2195.30

Ross Skyring
Treasurer

John's Jots

By John Tacey



Q&A - December meeting

Thunderbird Profile Lost

Profiles - Where Thunderbird stores your messages and other user data

Thunderbird saves personal information such as messages, passwords and user preferences in a set of files called a "profile".

https://support.mozilla.org/en-US/kb/profiles-where-thunderbird-stores-user-data#w_how-do-i-find-my-profile/

If you are unable to open or use Thunderbird, follow the instructions in finding your profile without opening Thunderbird.

Linux example:-

blue_leader/.thunderbird/nnsk5owy.default

Windows example:-

\John\AppData\Roaming\Thunderbird\Profiles\fdpl20vy.default.release

Australia Post Everyday Mastercard

A preloaded debit card, useful for purchasing on the web.

<https://auspost.com.au/money-insurance/prepaid-cards/everyday-mastercard>

Security 'Passwords' etc.

This area is undergoing change, the new kid on the block is Authenticator.

What are authenticators and how do I use them?

<https://www.geeks2u.com.au/geeksspeak/what-are-authenticators-and-how-do-i-use-them/>

The Best Authenticator Apps for 2025

<https://au.pcmag.com/security/106845/the-best-authenticator-apps-for-2024>

12 Best Methods Used for Cybersecurity

<https://infotechys.com/12-best-cybersecurity-methods/>

ATM Fees

Australian Bank ATM Fees and Charges

<https://www.finder.com.au/credit-cards/australian-bank-atm-fees-charges#how-to-avoid-paying-atm-fees>

Knoppix

For rescuing files from a drive where Windows will not boot.

This website is about Knoppix, a Free and Open Source Live Linux CD. Knoppix is a GNU/Linux distribution that boots and runs completely from CD or DVD and can be used to read and write Windows and other partitions (among other clever tricks).

<http://knoppix.net/>

Lithium Battery Fires

These can be very hard to extinguish.

Lithium-ion battery fires - what you need to do to stay safe

<https://rac.com.au/home-life/info/lithium-battery-fires>

Lithium-ion batteries caused more than 1,000 fires during the past year in Australia

<https://www.abc.net.au/news/2024-03-13/lithium-ion-fires-recycling-plants-trucks-vapes-exploding/103582110>

Password Strength Checkers

Cyber.gov.au

<https://www.cyber.gov.au> > protect-yourself > securing-your-accounts > passphrases

NSW Government

<https://www.nsw.gov.au> > media-releases > new-password-strength-tester

Service Victoria

<https://service.vic.gov.au> > find-services > personal > password-strength-tester softwarehouse.au

<https://softwarehouse.au> > tools > password-strength-checker

What Is a DLL File? (Dynamic Link Library)

Lifewire

A DLL file, short for Dynamic Link Library, is a type of file that contains instructions that other programs can call upon to do certain things. This way, several programs can share the abilities programmed into a single file, and even do so simultaneously.

Lifewire

<https://www.lifewire.com> > what-is-a-dll-file-2625852

Note: This record of the Q&A session topics relies on my biological volatile memory (a.k.a. the 'forgettory').

Gleanings from e-newsletters and other sources.

Reviews

The Best Personal Finance and Budgeting Apps for 2025

By Kathy Yakal Nov 26, 2024

Need a replacement for Mint? Make sense of your budget, get a grasp on your household spending, or check your credit score with the best apps we've tested for managing your personal finances.

<https://au.pcmag.com/personal-finance/42885/the-best-personal-finance-services-for-2020>

Tech You Can Count On: The Best PC, Phone, and Tablet Brands for Reliability

By Eric Griffith, Drew Prindle Dec 24, 2024

Survey data from thousands of PCMag readers reveals which tech companies make the most dependable devices you can buy.

<https://au.pcmag.com/news/109029/tech-you-can-count-on-the-best-pc-phone-and-tablet-brands-for-reliability>

New Releases

Adobe Air

License: Freeware

File name: 51.1.2.2

File Size: 5.94 MB O/S: Windows

Publisher: Adobe Systems Inc

URL: <http://www.adobe.com>

calibre (32bit)

License: Free

File name: calibre_(64bit)_v7.23 .msi [19 Apr, 2024]

File Size: 203 MB O/S: Windows

Publisher: Kovid Goyal

URL: <http://calibre-ebook.com/>

Essential PIM 12.1.2

License: Free

File name: Essential PIM.exe

File Size: 68.98 MB O/S: Windows

Publisher:

URL: <https://www.essentialpim.com/pc-version>

Glary Utilities 6

License: Freeware

Release Date:

File Name: Glary_Utilities_v 6.20.0.24.exe

File Size: 26.78 MB Platform: Windows 8, 7, 32/64bit version.

Publisher: Glarysoft Ltd

Languages: 44 Languages [Help Translate]

URL: <http://www.glaryutilities.com/>

Release Notes:

Optimized Disk Cleaner: added support for 'Corel VideoStudio Pro x9' and 'SketchUp Make 2014'

Optimized Tracks Eraser: added support for 'Corel VideoStudio Pro x9' and 'SketchUp Make 2014'

Optimized Software Update: optimized the version comparison algorithm, and increase the comparison speed by 30%

Optimized Empty Folders Finder: add folder delete validation to prevent accidentally deletion of non-empty folder

Minor GUI improvements

Minor bug fixes

Glary Utilities is a freeware with registry and disk cleaning, privacy protection, performance accelerator

and amazing multifunctional tools. It can fix dogged registry errors, wipe off clutters, optimise Internet speed, safeguard confidential files and maintain maximum performance.

It is designed for both novice and professionals. User-friendly interface shows clear & detailed directions. For novice, all work can be done with just 1 or 2 clicks, while for professionals, abundant options are available.

Key features:

Optimise, clean and boost the speed of your Windows.

Protect your privacy and security.

Block spyware, trojans, adware, etc.

Fix certain application errors.

Simple, fast and user friendly interface.

For private use only.

URL: <http://www.glaryutilities.com/>

GnuCash 5.10

License: Free

File name: gnuCash-5.10.setup (Windows)

File Size: 168 MB O/S: Linux, Apple OSx, Windows.

Publisher: GnuCash Project

URL: <https://www.gnuCash.org/>

Google Chrome (32bit) 131.0.6778.205

License: Freeware

File name: ChromeSetup.exe

File Size: 108.96 MB O/S: Windows

Publisher: Google

URL: <https://www.google.com/chrome/>

LibreOffice

License: Freeware

File name: LibreOffice_24.8.4_Win_x86.msi

File Size: 330 MB O/S: Windows

Publisher: The Document Foundation

Comments: Contains the functions:-

Writer

PDF

Presentation

Spreadsheet

URL:

https://mirror.freedif.org/TDF/libreoffice/stable/6.2.0/win/x86/LibreOffice_6.2.0_Win_x86.msi

Mozilla Firefox

License: Freeware

File name: Mozilla_Firefox_(32bit)_v133.0.3.exe Update

File Size: 62.07 MB O/S: Windows 7 to 10

Publisher: Mozilla Corporation

Comments:-

To force a manual update:-

Menu Button > ? Button > 'About Firefox'

URL: <https://www.mozilla.org/en-US/firefox/new/>

Mozilla Thunderbird

License: Freeware

File name: Thunderbird Setup 128.5.2(GB).exe

File Size: 60.84 MB O/S: Windows XP SP2 to 10

Publisher: Mozilla Corporation

URL: <http://www.mozilla.org/en-GB/thunderbird/>

NotePad++ (32bit)

License: Freeware

File name: NotePad_v8.7.5.exe

File Size: 6.19 MB O/S: Windows

Publisher: Notepad++

URL: <https://notepad-plus-plus.org/>

Recuva

License: Freeware

File name: 1.54.120

File Size: 25.25 MB O/S: Windows

Publisher: Gen Digital Inc

URL: <https://www.ccleaner.com/recuva>

Want more? See the New Releases list:

<http://ct.com.com/>

Tips etc.

5 Simple Steps to Purge Digital Clutter

By Jill Duffy Updated December 9, 2024

Cleaning up emails, documents, photos, and other digital junk can reduce stress and simplify your life. Here's how to streamline and declutter your devices.

https://www.pcmag.com/explainers/get-organized-how-to-start-purging-your-digital-life?utm_source=email&utm_campaign=whatsnewnow&zdee=gAAAAABjNL8ST42l80nl07cPB3qfRUi6ntgUgOTESELeSDIZFhs8z4qnmoLs_AknqwLVhZpQWW_IdjicVknAoSBZ5elt2gM0-Tu64aKwciwXzXGx5QU6ZfE%3D&lctg=24359534815

4 Note-Taking Tips That Can Change Your Life

By Jill Duffy Oct 02, 2024

Making the right kind of notes has helped me learn from the past, be a better adult, and occasionally make some money.

<https://au.pcmag.com/productivity/101224/4-note-taking-tips-that-can-change-your-life>

Yikes: Breaking Down the 10 Biggest Tech Fails of 2024

By Michael Kan, Emily Dreibelbis Forlini, Kate Irwin Dec 21, 2024

Sam Altman makes this list for the second year in a row, as does Elon Musk. Find out why and who else joins them as we revisit 2024's major glitches, goofs, and gaffes.

<https://au.pcmag.com/news/108917/breaking-down-2024s-biggest-tech-fails>

How to Organize Your Files in 4 Simple, Foolproof Steps

By Jill Duffy Dec 31, 2024

Our veteran productivity expert details her method for managing digital files: It's simple to implement, and since it's foundational, it will help you organize practically everything in your life.

<https://au.pcmag.com/productivity/109057/how-to-organize-your-files-in-4-simple-foolproof-steps>

8 Cool Things You Can Only Do With a Copilot+ PC

By Michael Muchmore Dec 27, 2024

Microsoft is betting big on a new breed of laptops with built-in AI processing capabilities. It's still early days, but here's what sets these systems apart right now.

<https://au.pcmag.com/software-services/109030/8-cool-things-you-can-do-only-with-a-copilot-pc>

All Devices Sold in the EU Will Now Be USB-C Compatible

By Will Mccurdy Dec 29, 2024

The EU's mandatory push for USB-C comes ahead of India and California enforcing similar rules in 2025 and 2026, respectively.

<https://au.pcmag.com/batteries-power/109050/all-devices-sold-in-the-eu-will-now-be-usb-c-compatible>

Hackers May Have Compromised Multiple Popular Google Chrome Extensions

By Will Mccurdy Dec 30, 2024

A hacker phished a Cyberhaven employee to upload a malicious version of the company's Chrome extension, but it may not be the only victim.

<https://au.pcmag.com/security/109055/report-hackers-may-have-compromised-multiple-popular-google-chrome-extensions>

Are You Bad at Bullet Journaling? Try These Digital Alternatives

By Jill Duffy Aug 09, 2022

Use an app to create an attractive and orderly journal, no artistic talent required.

<https://au.pcmag.com/old-to-do-list-apps/95525/are-you-bad-at-bullet-journaling-try-these-digital-alternatives>

The Best Cybersecurity Advice I Received in 2024

By Kim Key Dec 20, 2024

As PCMag's cybersecurity expert, I interview industry professionals all year long. One thing I ask them all: "What's the security and privacy advice you give to your

family and friends?" Here's that wisdom, along with some of my top tips.

<https://au.pcmag.com/security/108990/the-best-cybersecurity-advice-i-received-in-2024>

The Biggest AI Failures of 2024

By Chandra Steele Dec 28, 2024

Generative AI progressed in leaps and bounds this year, but not without making some major missteps along the way. Take a look back at 10 memorable mess-ups.

<https://au.pcmag.com/ai/109041/the-biggest-ai-failures-of-2024>

How to Remove Bloatware From Your New PC

By Eric Griffith Dec 05, 2023

A new Windows PC typically comes with software you don't want. Here's how to deal with it.

<https://au.pcmag.com/tune-up-utilities/29070/how-to-remove-bloatware-from-your-new-pc>

Here Endeth John's Jots

APCUG ARTICLES

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Private Browsing: Is it all it's cracked up to be?

By Chris Taylor, President

Ottawa PC Users' Group, Ontario, Canada

<https://opcug.ca>

Published in Ottawa PC News (November 2023)

Editor: brigittelord@opcug.ca

For well over 10 years, web browsers have offered *private browsing*, designed to keep your browsing—well—private.



Google Chrome calls it an *Incognito window*, Firefox, Opera & Brave call it a *Private window*, and Microsoft Edge calls it an *InPrivate window*. The easiest way to get there is to right-click the browser's icon on the taskbar and choose the appropriate *New...* item from the pop-up context menu.

When in a private browsing window, browsing history, cookies & site data (such as images and contents of webpages), and information entered in forms are not saved to your computer. Other users on your computer will not be able to see your web browsing activities. When browsing, web servers won't automatically recognize you as a returning user, and you won't be automatically signed into websites.

When you close a private browsing window, the browser discards site data and cookies created during that session. Note that you need to close the private browsing window to remove traces. Until you do, a simple click on the back button will return you to the previous page visited in that window.

Private browsing deactivates extensions. You can enable extensions in private browsing windows if you need them. For example, in Google Chrome, click the kebab menu (⋮) at the top-right of the

window. Choose *Settings*. Find the extension you want to allow in Incognito windows and click *Details* under that extension. Toggle on *Allow in Incognito*.

Private browsing is not a panacea

It does not prevent all tracking. While websites do not have the luxury of using cookies to track you, there are many other means of tracking. For example, a web server can know your operating system, browser version, extensions you have loaded, screen resolution, IP address, and more. These data items can be used to fingerprint and track you.

Private browsing does not prevent ads. It does not prevent malware. It does not hide where you are browsing from your ISP or employer.

As Gizmodo reported in October 2022, *Even Google's Own Staff Thinks 'Incognito Mode' Isn't All It's Cracked Up to Be* - <https://gizmodo.com/google-incognito-mode-google-chrome-1849648071>

Where is private browsing useful?

If you are using a computer at a public kiosk, it will prevent the next person using the computer from easily seeing where and what you browsed.

If you use multiple accounts on a single website, a private browsing window can help you keep things separate.

If you are using another person's computer, it can be helpful in making it less likely you leave traces behind.

Strangely, I have encountered shopping sites that required private browsing for the checkout process to work properly. I guess they didn't want to sell things to me all that badly.

For more information about private browsing, see https://en.wikipedia.org/wiki/Private_browsing.

Really, really, deleting files

by Chris Taylor, President
Ottawa PC Users' Group, Ontario, Canada

Published in Ottawa PC News (September 2023)

<https://opcug.ca>

Editor: briggittelord@opcug.ca

When you delete a file in Windows, the actual on-disk data is not removed. The file is usually moved to the Recycle Bin, where it can be easily recovered. Even if you empty the Recycle Bin or bypass the Recycle Bin by holding down the Shift key while deleting files, the data remains on disk. All that happens is the pointers to the file are removed, making the space available for new files.

Recovering deleted files

Utilities to recover deleted files date back to *Unerase* in the first version of the Norton Utilities in 1982. They continue to this day with dozens of free and commercial programs available for Windows, macOS, Linux, Android, and iOS.

If you are in a high-security situation, please ignore this article. It is intended for the average home or business user whose adversaries are not about to use [magnetic force microscope](#) techniques to recover data. If you are likely to have [CSIS](#) looking for your deleted data, you need to go well beyond what I recommend here.

Making data unrecoverable

When you want to dispose of a storage device, you should ensure all sensitive data is deleted and *unrecoverable*. This can be achieved by physical destruction of the storage device: hard disk drive (HDD), solid-state drive (SSD), flash drive, etc., or—if you want the storage device to be reusable—by over-writing the data areas of the disk with random data, obliterating the original data.



Some secure deletion programs boast of capabilities such as the [Gutmann algorithm](#), which overwrites all data with 35 passes. For the average computer user, I wouldn't worry beyond a single pass.

There are many programs available, both free and commercial, for secure data removal. The programs I list are not necessarily the best—they are simply programs that have been around quite a while (have stood the test of time), are free, and have been used successfully either by me or other members of OPCUG.

Be careful using secure deletion programs. By their very nature, there is no "undo" button! There are several levels of overwriting data: individual files, free space on the drive, and the entire disk.

Individual files

If you just want to make a few files unrecoverable, there are programs that can target individual files or folders of files. One example is the free and open-source program File Shredder (<https://www.fileshreder.org/>). It is very simple and straightforward to use.

Free space

Storage devices eventually end up with data in all locations on the device. The free space has data that was used for files that have since been deleted. You have no way of knowing what recoverable data might be there. Some programs can target free space and securely overwrite data there. File Shredder is one program that can wipe free space.

Entire disks

If you want to securely delete all data on an entire storage device, HDSHredder (<https://www.miray-software.com/products/applications/hdshredder.html>) is available in free and commercial versions. The free version should be sufficient for the vast majority of users. The website details the additional capabilities in the commercial versions.

Another popular program for securely erasing all data on storage devices is the free and open-source DBAN (<https://sourceforge.net/projects/dban/>). DBAN was acquired by [Blanco](#) in 2012 and is no longer in development but remains popular. I

recently had occasion to use DBAN to help a friend dispose of an old laptop, and it was quite easy to use DBAN to ensure the entire hard drive was securely wiped.

DBAN comes as a disk image (.ISO file), so you will need a program to create a bootable flash drive, CD, or DVD using the DBAN ISO file. Free options are available, such as Rufus (<https://rufus.ie/en/>), NCH Software's Express Burn (<https://www.nch.com.au/burn/index.html>), and Ashampoo Burning Studio Free (<https://www.ashampoo.com/en-us/burning-studio-free>).

Solid state drives

Due to the architecture of the technology, SSDs cannot be securely wiped in the same manner as HDDs. If you want to securely delete data from SSDs, check that the software you are using specifies that it works on SSDs. EaseUS has a free version of Partition Manager (<https://www.easeus.com/partition-manager-software/securely-erase-ssd-hdd.html>) that can securely erase SSDs.

Some SSD manufacturers provide special utilities to securely wipe their devices, such as Samsung's Magician (<https://semiconductor.samsung.com/consumer-storage/magician/>) or Crucial's Storage Executive (<https://www.crucial.com/support/storage-executive>). Personally, if the manufacturer of your SSD has a special utility for securely erasing their branded SSDs, I would choose that option.

Final words

Rather than destroying or securely wiping old storage devices, you might want to repurpose them for your own use. Inexpensive drive enclosures are available: you can install your old storage device in one and then plug it into a USB port to use it as an external drive.

While this article details effective means of securely removing data, if you can't be sure you have completely removed all sensitive files from your device, you might be better off destroying the device rather than disposing of it.

Starlink – It may be in your future

By Phil Sorrentino, Secretary & Newsletter Contributor

Sun City Center Computer Club

<https://sccccomputerclub.org/>

philsorr@yahoo.com

Starlink is a satellite constellation built and operated by SpaceX, currently providing satellite internet access coverage to over 53 countries. Starlink is the world's first and largest satellite constellation using a Low Earth Orbit to deliver broadband internet capable of supporting streaming, online gaming, and video calls. Starlink will become a critical element in the client-server technology used by the internet in many areas worldwide.

Client-server technology is the network architecture that connects our devices to powerful Servers at the far ends of the country and, in some cases, the world. The internet provides this connection, so the devices and servers appear close in adjoining rooms. To make this a reality, the internet connection must be high-speed. This type of internet connection is called a low-latency connection. A connection that is so fast that a message might go from New York to Los Angeles and back in less than .1 seconds (100 ms). Starlink can deliver high-speed, low-latency internet to users worldwide, though it may be a little expensive now.

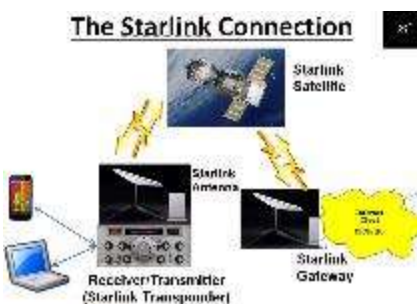
To take advantage of the Servers on the internet, our devices (computers, smartphones, tablets) must be able to connect. Either of the two mechanisms traditionally does this. If you are stationary, typically in a building, you can connect to the internet through your Internet Service Provider and more than likely connect via a wireless wi-fi network. If you are moving in a vehicle, you can connect through your Wireless Internet Provider via the Cell Towers in all major populated areas and along most major highways in the US. Access to the internet is excellent in the US. Ninety percent of the people in the US have an internet connection available to them. New Jersey and Connecticut have the best broadband coverage at about 99%. As expected, the major cities,

Washington DC, Philadelphia, San Francisco, and New York, have the highest internet participation. But the rest of the world is not covered very well. Europe has a participation rate of about 90%, but the numbers are much lower for underdeveloped countries like India at about 48% and China at about 70%. With all things considered, worldwide internet participation is reported to be about 60%, which leaves a large population without access to the internet.

The Starlink satellite constellation currently has around 4,500 satellites and will eventually have around 12,000. They will cover most of the earth, providing an internet connection to any site with a direct view of the satellites as they pass overhead. Think of the satellites as Cell Towers in the Sky.



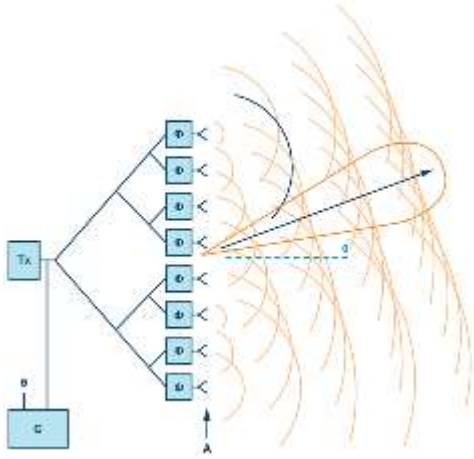
The Starlink satellites are in Low Earth Orbit (LEO), about 340 miles above the earth, and have a speed that creates a 90-minute orbit around the planet, about 17,000 mph. When the constellation is entirely built out, a satellite will be accessible by almost every place on the earth. A device will send/receive data to/from the internet via the Starlink Transponder, overhead satellite, other satellites, and finally, the Starlink Gateway (Ground Station). The connection of the Starlink transponder to the overhead satellite will continue until the satellite moves out of view and another satellite comes into view. At this time, the connection from the transponder will switch to the new satellite, and the data flow will continue.



The Starlink Transponder controls tracking the satellites when they are in view and switching the data stream to a new satellite. The heart of the transponder is a sophisticated computer-controlled phased array antenna system.

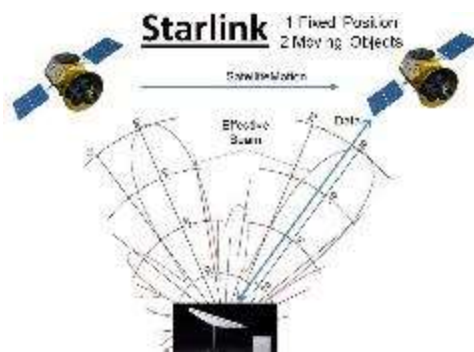
Phased array antennas are a key component of the Cell Tower Communications systems we use as we travel on the Interstate highway. The phased array antenna was invented by Karl Ferdinand Braun in 1905. The initial experimental antenna was a three-element array that transmitted a beam whose direction could be aimed electronically in 3 specific directions, 120 degrees apart. The military experimented with phased arrays in the 1970s, the first industrial phased array systems were introduced in the 1980s, and Cell Tower antennas appeared in the 1990s. Today's phased array antennas have large numbers of elements and can form several very narrow beams and steer them independently in very small angle increments. The technology behind phased array systems is steeped in the propagation of electrical energy from Gauss's laws for static electric and magnetic fields to Maxwell's equations that relate electric and magnetic fields to each other. It is a collection of technology concepts that would make Nikola Tesla proud.

Just a little technical talk. A phased array antenna is a collection of antenna elements assembled such that the radiation pattern of each element constructively combines with neighboring antennas to form an effective radiation pattern called the main lobe. The main lobe transmits radiated energy in the desired direction, while the antenna is designed to destructively interfere with signals in undesired directions, forming nulls and side lobes. The antenna array is designed to maximize the energy radiated in the main lobe while reducing the energy radiated in the side lobes to an acceptable level. The radiation direction can be manipulated by changing the amplitude and phase of the signal fed into each antenna element.



Phased Array pattern showing antenna elements creating a central lobe.

As we travel down the highway, the closest cell tower tracks us with a phased array antenna that allows us to connect to the internet. The tracking allows the Cell Tower System to transition a vehicle to the next Cell Tower in the direction the vehicle is moving, thus allowing the communications to continue uninterrupted as the vehicle is handed off from cell tower to cell tower. This is all coordinated using the phased array antennas on the Cell Towers.



This cell tower hand-off is similar to the hand-off used to transition from one satellite to another as the satellites move in the sky. The phased array antenna in the Starlink Transponder tracks the satellites and coordinates the hand-off when needed so that the communications continue without interruption.

Starlink is an enormous project that combines many technologies to hopefully provide global access to the internet so that we all can take advantage of the Servers at the other end of the

internet, just as if they were in the adjoining room. It may just be in your future.

The Artificial Intelligence Explosion, an ever-changing topic

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Artificial intelligence (AI) is a term we've all encountered, and its impact is already evident in various sectors such as business, education, entertainment, art, manufacturing, research, and health care. However, this is just the beginning. The potential of AI to revolutionize our lives is immense, possibly surpassing the transformative effects of computers and electronics. Are you prepared for this future?

Many people see the AI revolution as bringing huge benefits. If you have been using a search engine on the internet to get information you want or need, AI can do more by providing intelligent results to your searches. Try using the following free AI internet sites and seeing the results of your inquiries:

- ChatGPT (<https://chat.openai.com/>) - Chatbot from OpenAI that can have natural conversations and generate human-like text on various topics.
- DALL-E 2 (<https://labs.openai.com/>) - AI image generator from OpenAI that creates images from text descriptions.
- Hugging Face Spaces (<https://huggingface.co/spaces>) - Platform to build, train, and deploy machine learning models, mainly focused on natural language processing.
- Perplexity (<https://www.perplexity.ai/>) - The answer to any question.
- Anthropic Claude (<https://claude.ai/chat/>) - Conversational AI assistant trained to be helpful, harmless, and honest.

- Gemini (<https://gemini.google.com/>) is a conversational AI chatbot from Google. It is meant to function similarly to ChatGPT, with the biggest difference being that Google's service pulls its information from the web.
- Co-Pilot from Microsoft. An AI-powered digital assistant that aims to provide personalized assistance to users for a range of tasks and activities. Copilot is integrated with Microsoft Edge. <https://www.microsoft.com/en-us/edge/>
- Leonardo (<https://leonardo.ai>) is a generative AI platform that empowers users to effortlessly generate captivating images and artwork.
- NightCafe (<https://creator.nightcafe.studio/>). Create unique artworks in seconds using the power of Artificial Intelligence.

Since AI is going to affect almost every area of life on this planet, how is AI going to affect you, and how are you going to handle it? The STUG organization has some experienced AI users who will help guide STUG in helping our members understand and use AI. No matter what your life interest is, AI will affect it. You can start by asking Google or an AI website something like "How will AI affect art?" or "How will AI help with my investments?" or "How do I use AI to create a photo?" Yes, AI already affects all areas of your life, even if you do not realize it. You can watch many videos to learn more about all aspects of AI.

Creative AI can write stories, create works of art, and amaze us. Humans may review what AI has created, "touch it up," or add pieces later. As an example, AI is already affecting those who make their living writing by doing most of the work.

AI technology impacts many industries, transforming how they operate and interact with customers and employees. Here are some sectors that are being heavily affected by AI:

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Marketing: AI can predict what customers might want to buy. It helps companies show customers suitable ads.

- Retail: AI helps keep track of inventory and can recommend products that each customer might like. Some stores even have robot helpers that can answer customer questions.
- Insurance: AI can quickly process claims and detect fraud to help the company run smoothly.
- Banking/Finance: Banks use AI chatbots and virtual assistants to make banking more accessible for customers. AI also watches for fake charges on your account.
- Education: AI tutors can adapt to each student and help them learn at their own pace. It can grade papers and free up time for teachers.
- Healthcare: AI is making significant advancements in healthcare, from diagnosing diseases and analyzing medical images to drug discovery and personalized medicine. It has the potential to improve patient outcomes and streamline healthcare processes.
- Manufacturing: AI is integrated into manufacturing processes to optimize production, improve quality control, and enable predictive maintenance. It is revolutionizing the way products are designed, produced, and delivered.

These are just a few examples of industries that AI is heavily impacting. However, it's important to note that AI is a rapidly evolving field, and its impact is not limited to these industries alone. AI can potentially disrupt and transform other sectors, such as transportation, agriculture, energy, etc.

There are also downsides to AI. Many jobs will be affected, and people must adapt to different situations. For example, when steam trains went to

diesel, firemen were no longer needed—and now there are no train cabooses either!

Perhaps a good AI concept summary example could be in the area of law. An AI "lawyer" would have all the knowledge of previous similar court cases and create a perfect prosecution or defensive argument. The judge and jury would have to make the decision. But what if AI makes the decision itself? Would that not be better than any human judge?

Can you imagine more of what AI will do? It staggers my human intelligence!

