Willow Valley Computer Club

Member of apcug

An International Association of Technology & Computer User Groups

Project Upskill II

Basic Cybersecurity for Personal Computers and Mobile Devices

Al Williams

September 24, 2025

What Will This Session Do For Me?

I’m going to show you how to make it much harder for hackers to get into your laptop, desktop, or smartphone.

The idea is to frustrate hackers so that they will move on to other devices.

Why Project Upskill?

The Cybersecurity & Infrastructure Security Agency (CISA) collaborated with other US and International partners to create Project Upskill, cybersecurity guidance for high-risk communities.

Project Upskill provides users with simple steps to improve their cybersecurity.

Why Project Upskill?

While none of these steps will offer complete protection against cyber intrusions, this combination of best practices will make it harder to target high-risk individuals and organizations.

They will also limit opportunities for attackers that leverage common techniques such as ransomware or malware.

Why Project Upskill II?

Anyone over 55 who uses a computing device (iPhone, laptop, etc.) is at higher-risk due to data breaches revealing our ages.

The Willow Valley Computer Club's Project Upskill II extends CISA's Project Upskill to include illustrations, examples, additional material, suggestions, and recommendations.

After completing Project Upskill II, you should feel more confident that you can implement basic cybersecurity practices.

Threat Models

We all have personal threat models – lists of events we want to prevent or defend against, and a list of decisions of what to do if an event occurs.

None of us can physically see the threats to our computing devices and our personal information. We need advice.

CISA’s Project Upskill provides guidance but does not recommend any software or hardware.

Our Recommendations

We understand that choosing new software or hardware can be overwhelming if you're unfamiliar with the topic and do not have the time to research the details.

Think of our recommendations as we helping you based on our knowledge of what works well with effective cybersecurity.

You are not required to use our recommendations.

Clarifying Cybersecurity Recommendations

An understanding of computer concepts will clarify our recommendations.

Exploring our source notes (on most slides) will help you build this foundation.

For hands-on experience, try our workshops (e.g., Bitwarden).

Small learning steps will go a long way in protecting your digital life with confidence.

The Project Upskill II Series – Where we've been and where we're going.

Goal for Presentation 1

We often focus on the visible risks to our data, like device security. However, hidden risks, such as overlooked privacy policies, can be just as damaging. Our first presentation shed light on this crucial area with suggested solutions.

Goals for Presentations 2, 3, and 4

To ensure the security of your personal data on your computing devices, we provide a layered security approach including:

implementing basic cybersecurity,
preventing account breaches, and
ensuring the protection of your stored data.

Goals for Presentations 5, 6, 7, and 8

To ensure the security of your personal data that isn't on your computing devices, we provide ways to

protect your data in transit,
secure your home Wi-Fi,
manage your privacy and security online, and
use Virtual Private Networks (VPNs) appropriately.

In the first presentation

We want to protect our personal information through cybersecurity but we give away our personal information by agreeing to Privacy Policies.

Review the Privacy Policies of the apps and web pages you're using to determine what personal information you're giving away.

Be aware that you're also giving away your location. You can control app access to location services, but you need an RFID device to block cell tower tracking.

Can we remove our personal information?

We can’t remove our personal information exposed in data breaches because it is in the hands of criminals

We can remove our personal information from data brokers (information resellers)

A good choice is Malwarebytes’ *Personal Data Remover*, which remove personal information from 175+ data brokers

Can we remove our personal information?

But to remove our personal information from web sites and apps, we need to go to each app or web site and ask that our information be removed.

We can choose not to use an app that collects personal information.

We can also choose to delete it so that it can’t collect additional personal information.

This Basic Cybersecurity presentation provides an overview of best practices.

For how-to information, see the Source notes at the bottom of each slide.

Cybersecurity fatigue is real.
Please implement just one or two things at a time.
Pause.
Implement one or two more things…

Computer Club volunteers are available to help.

Phone: 717-464-6330, option 1

Email: GetHelp@wvcomputerclub.org

Website: wvcomputerclub.org, click on *Get Help* for lists of volunteers

Massive Amounts of Malware

In the first three quarters of 2023, there were an estimated 5.6 billion attempted malware attacks globally.

560,000 new pieces of malware are detected daily and over 1 billion malware programs exist currently.

5.33 vulnerabilities emerge every minute, which provide new opportunities for attacks.

Global Malware Attacks Source: *100 Chilling Malware Statistics and Trends (2023-2025)*, Osman Husain, https://controld.com/blog/malware-statistics-trends/, 4 February 21, 2025

New Malware Source: *30+ Malware Statistics You Need To Know in 2025,* Rishabh Goyal, https://www.getastra.com/blog/security-audit/malware-statistics, June 23, 2025

Massive Amounts of Malware

Some threat actors add malware to legitimate software apps and offer the re-packaged software on community forums such as CNET.

Basic Cybersecurity Concerns

- Vet technologies before using them
- Keep your device's operating system and apps up to date
- Ensure OS Antivirus and Malware Protections are active
- Avoid hardware with known vulnerabilities
- Protect the physical security of your digital devices
- Implement User Account Control to protect your computer
- Manage application permissions for privacy and security

Vet Technologies Before Using Them

Research the manufacturer, developer, or vendor's track record on privacy and security for products you are considering using.

Check where the company making the product is located and operates.

Check the product's security profile to confirm your data is encrypted and not shared with third parties.

Source: *Vet Technologies Before Adding Them to Your Network*, https://www.cisa.gov/resources-tools/training/vet-technologies-adding-them-your-network, Retrieved January 21, 2025

Vet Technologies Before Using Them

Confirm that the vendor has an acceptable privacy policy.

Confirm that you can change the product's settings to meet your cybersecurity needs.

Confirm that the developer issues regular security updates for your product(s).

Source: *Vet Technologies Before Adding Them to Your Network*, https://www.cisa.gov/resources-tools/training/vet-technologies-adding-them-your-network, Retrieved January 21, 2025

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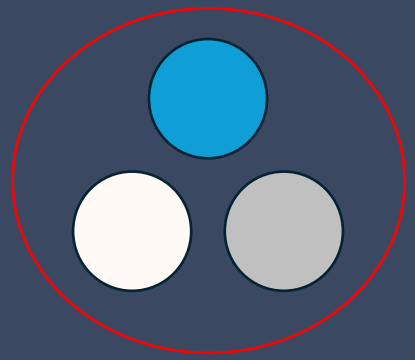
Don’t let criminals access your personal information
by using software
with known vulnerabilities

An Illustration

Assume:

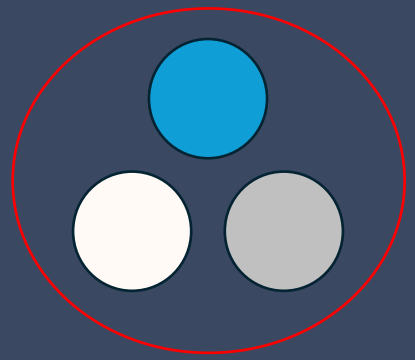
- Some of your information is very important – GOLD
- Some of your information is somewhat important - SILVER
- Some isn’t important - WHITE

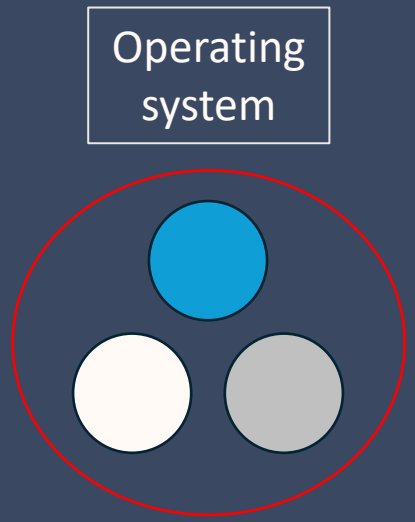


All of your information is inside the red circle.

Software apps

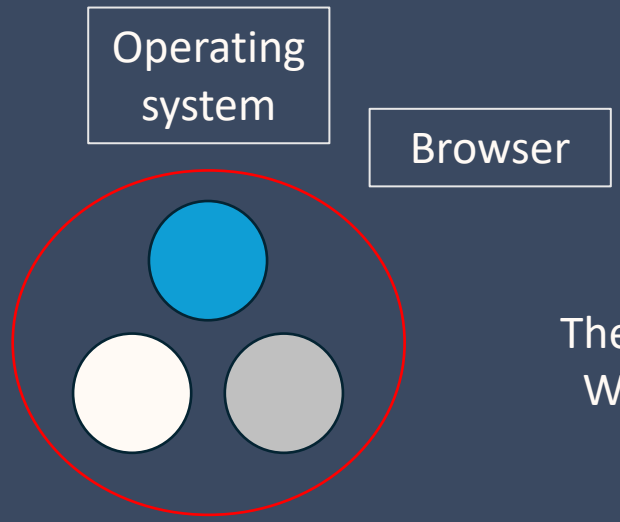
What software has access to your information?





The operating system is the Executive software for the computing device. The operating systems are listed in the recommended order:

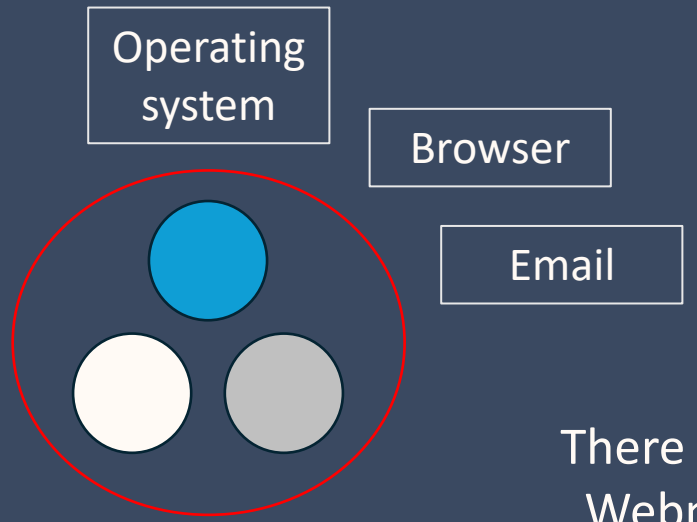
- Cell Phone:
  - GrapheneOS
  - iOS
  - Android
- Desktop or Laptop:
  - A Linux distribution
  - macOS
  - Windows



The browser could be:
- Windows, macOS
  - Firefox (Recommended)
  - Brave (Recommended)
- iOS (iPhone, iPad)
  - Safari

Chrome (Not recommended)
and many others

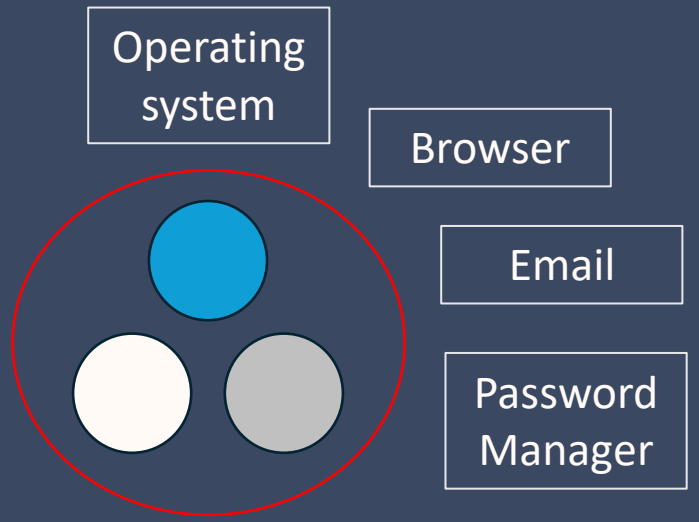
We'll cover Browsers later



There are many email clients
- Webmail (using browser)
- Mail on iOS
- Mail on Android
- Thunderbird (Windows, macOS, Linux)

and many others

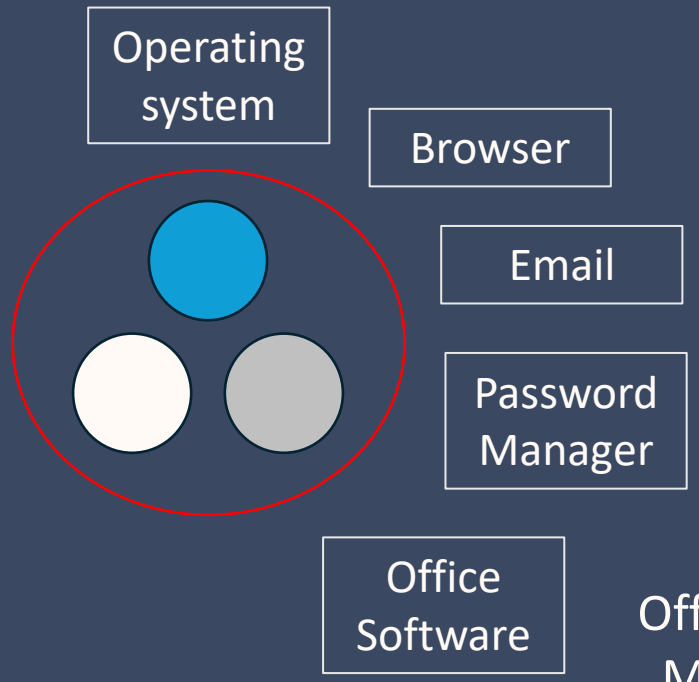
We'll cover Email later



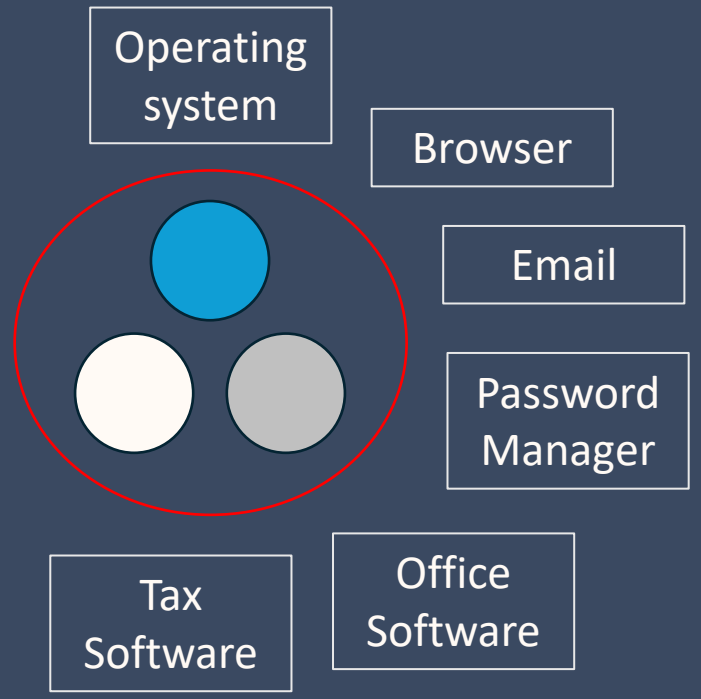
Password managers:
- Bitwarden (Recommended)
- 1Password
- Proton's Pass

And in the future (more time for maturity is needed):
- Apple's Passwords

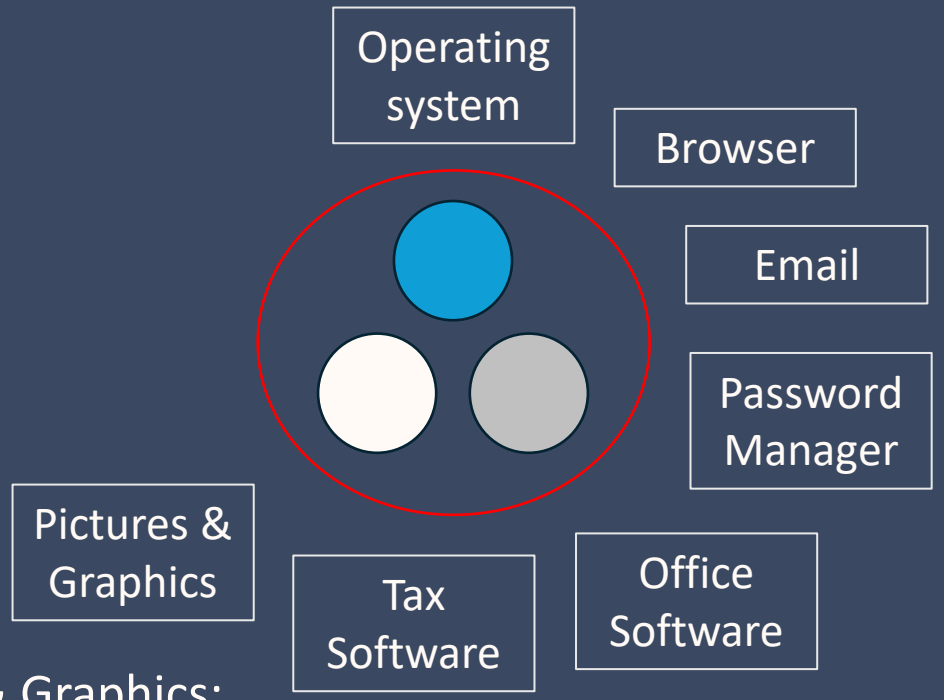
We'll cover Password Managers later



Office Software:
- Microsoft Office
- Libre Office
- Apple’s iWork

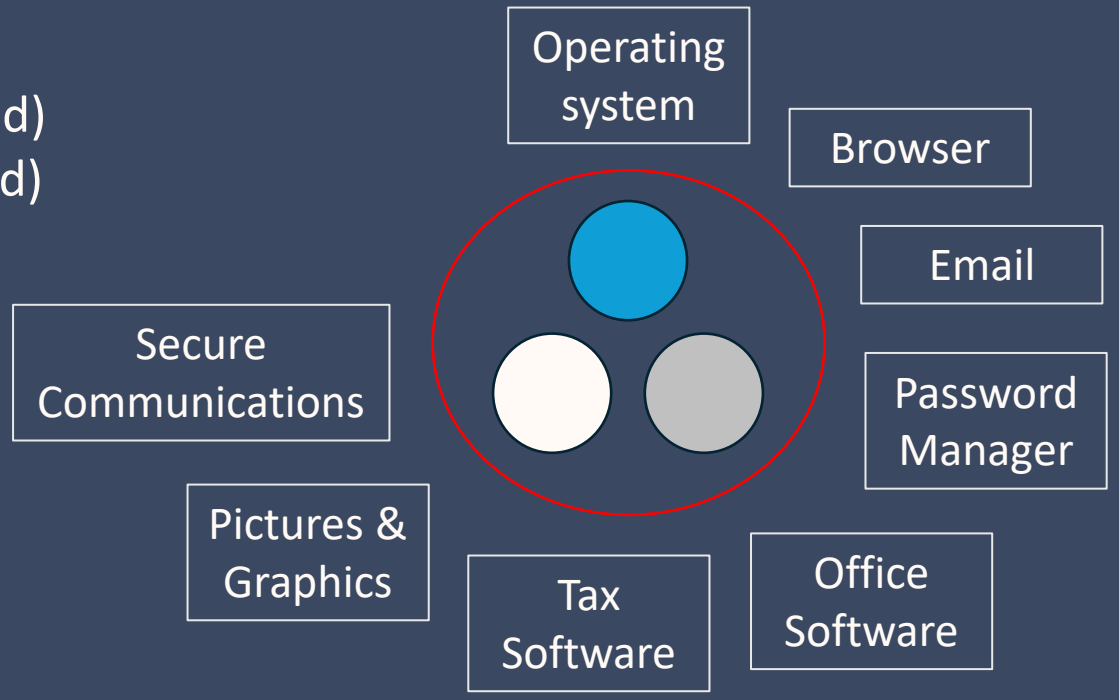


Tax Software:
TurboTax
Others



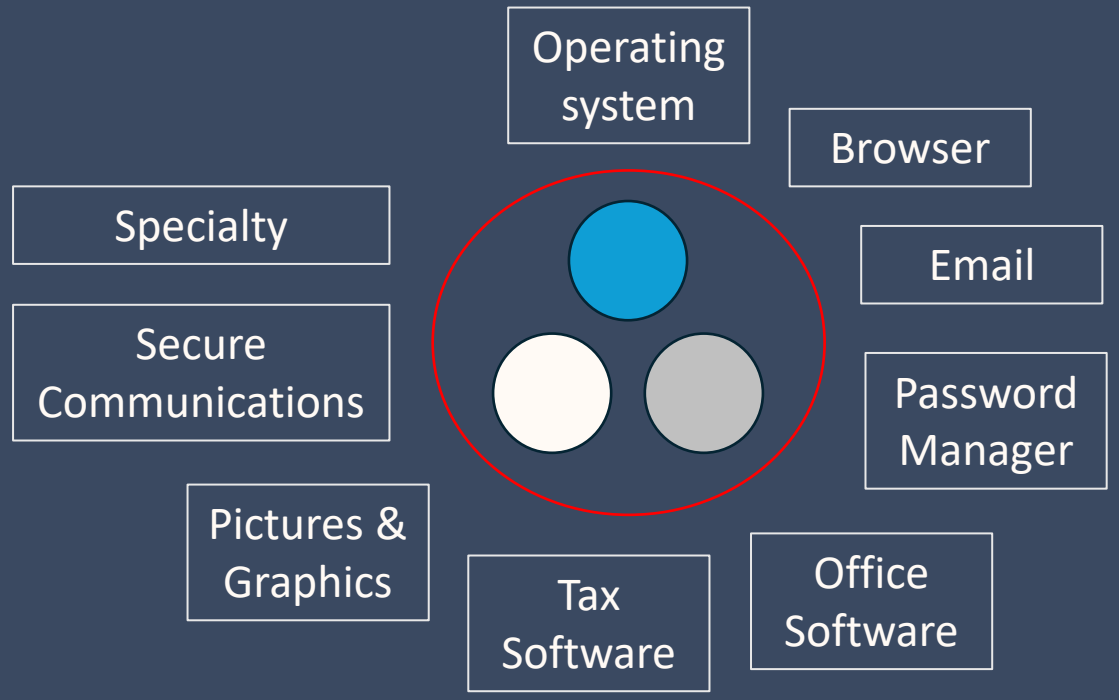
Pictures & Graphics:
- Photo editors
- Graphics creation

Secure Communications:
- Signal (Recommended)
- Proton Mail (Recommended)
- Proton VPN (Recommended)
- And others



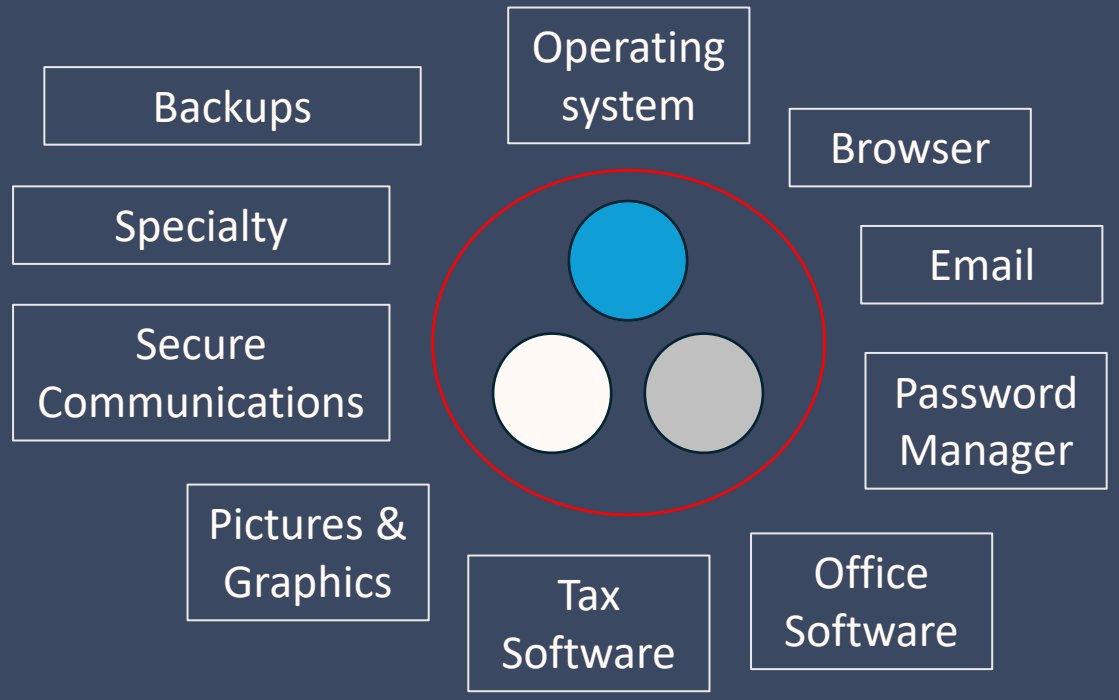
We'll cover Secure Communications later

Specialty:
- Genealogy
- Obsidian (note taking)
- And others



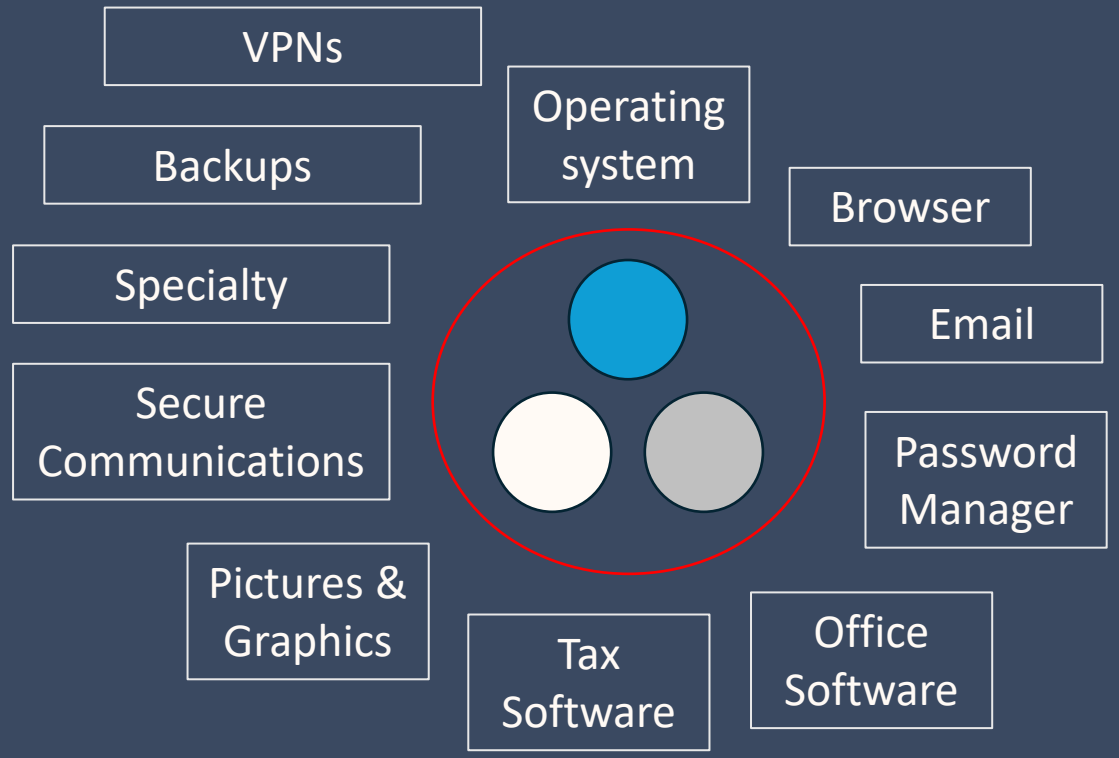
Backups:

- Proton Drive (Recommended)
- Macrium Reflect (Recommended)
- One Drive
- And others



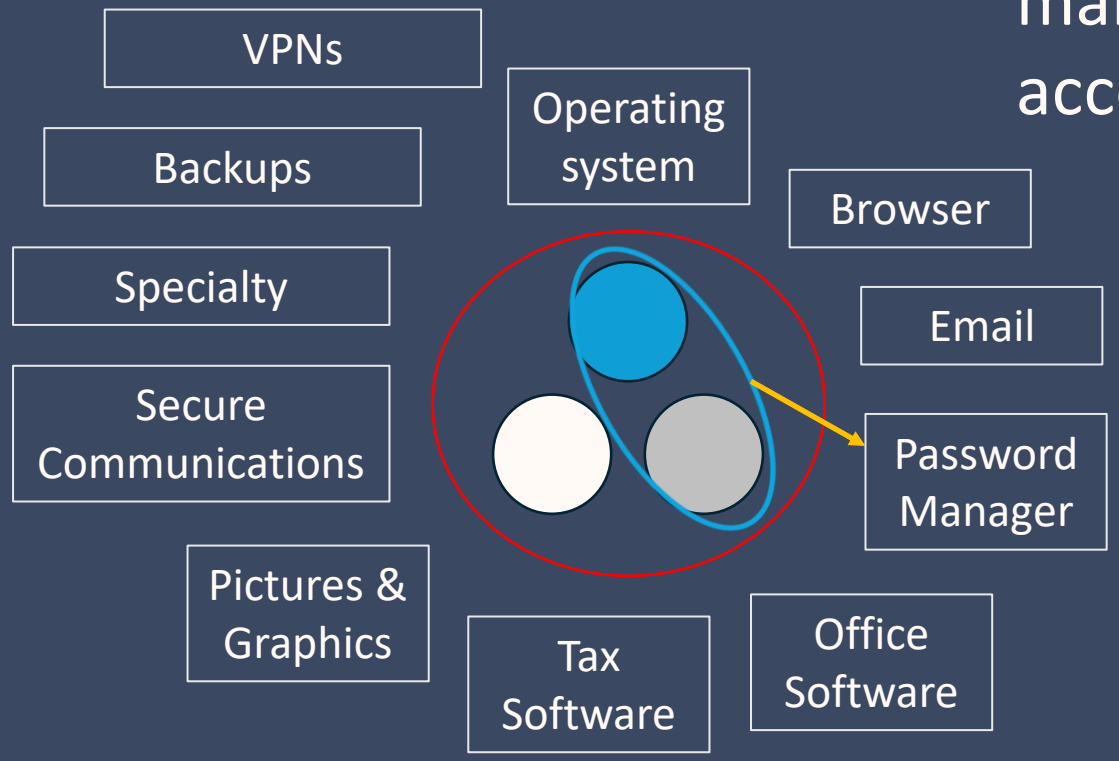
We'll cover Backups

VPNs:
- Proton VPN (Recommended)
- Mullvad VPN
- And others



We'll cover Virtual Private Networks (VPNs) later

Move sensitive information to a password manager to minimize access by other software.



We'll cover Password Managers later

Keep Operating Systems and Apps Up to Date

- Routinely update the OS and apps on all your devices
- Enable automatic updates for your OS and apps when available.
- For operating systems and apps without automatic updates, set aside a time in your schedule to check for and install updates manually.

Source: *Keep Your Device's Operating System and Applications Up to Date*, https://www.cisa.gov/resources-tools/training/keep-your-devices-operating-system-and-applications-date, Retrieved January 21, 2025

Keep Operating Systems and Apps Up to Date

- Ensure you install updates from official sources, such as your device's standard OS update feature or a trusted app store.
- Exercise caution if prompted to install an update through a browser pop-up or email, as these may be phishing attempts.
- Remove (delete) any apps you are not using.

Source: *Keep Your Device's Operating System and Applications Up to Date*, https://www.cisa.gov/resources-tools/training/keep-your-devices-operating-system-and-applications-date, Retrieved January 21, 2025

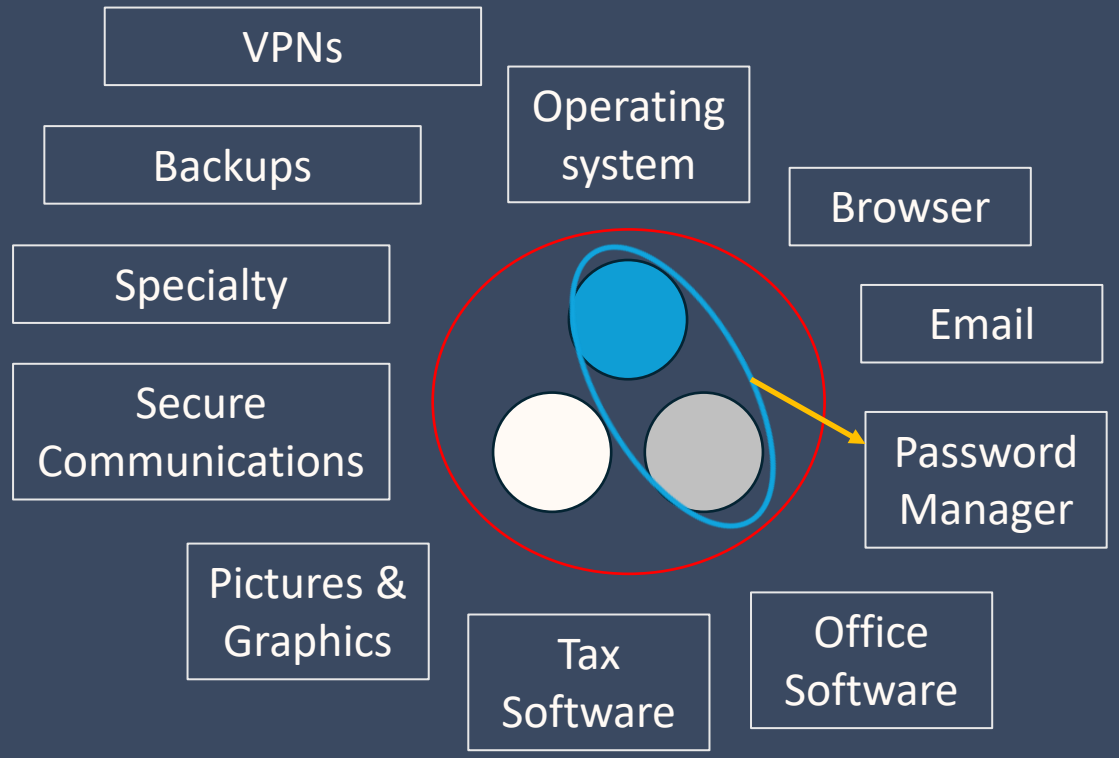
Keep Operating Systems and Apps Up to Date

- For detailed how-to instructions for Windows, macOS, iOS, and Android, see the CISA Source below.
- If you're using Windows and not using a Microsoft account, use *Patch My PC Home Updater* https://patchmypc.com/product/home-updater

Source: *Keep Your Device's Operating System and Applications Up to Date*, https://www.cisa.gov/resources-tools/training/keep-your-devices-operating-system-and-applications-date, Retrieved January 21, 2025

Basic Cybersecurity Concerns

- Vet technologies before using them ✓
- Keep your device's operating system and apps up to date ✓
- Ensure OS Antivirus and Malware Protections are active
- Avoid hardware with known vulnerabilities
- Protect the physical security of your digital devices
- Implement User Account Control to protect your computer
- Manage application permissions for privacy and security



Malware

Malware is also software.

Sometimes malware is embedded in real software. The software does what it is supposed to do, while the malware steals personal information.

Malware causes harm and exploits vulnerabilities

- Steals sensitive information such as login credentials, credit card numbers, social security numbers and other data
- Disrupts operations through ransomware or denial-of-service attacks
- Gains unauthorized access through backdoors to remotely access or control a system or spyware to monitor or collect personal information
- Destroys data or damages computing devices

Malware causes harm and exploits vulnerabilities

Spreads misinformation, manipulate public opinion, or interfere with political processes

Source: *Malware, Phishing, and Ransomware*, https://www.cisa.gov/topics/cyber-threats-and-advisories/malware-phishing-and-ransomware, No Date

Source: *What Is the Purpose of Malware?*, https://www.checkpoint.com/cyber-hub/threat-prevention/what-is-malware, No Date

Source: *Identity theft is being fueled by AI & cyber-attacks*, Kennedy Meda, https://www.thomsonreuters.com/en-us/posts/government/identity-theft-drivers, 3 May 2024

Source: *What Is the Purpose of Malware?* Prompt, Gemini 1.5 Flash, January 14, 2025

AntiMalware recommendations

- Cell phones
  - iPhones
    - have iOS Security and App Store Security
    - have “Find My” feature allowing remote wiping
    - Malwarebytes
  - Android phones
    - Use Google Play Protect to keep apps safe and data private
    - Malwarebytes
    - Bitdefender Mobile Security

Source: *Use Google Play Protect to help keep your apps safe & your data private,* https://support.google.com/googleplay/answer/2812853, Retrieved Jan 21, 2025

Antimalware recommendations

- Desktops and laptops
  - macOS
    - Has a three-layer defense against malware
      - Prevents the launch or execution of malware
      - Blocks malware from running
      - Remediates malware that has executed
    - Malwarebytes for Mac
    - Bitdefender Antivirus for Mac

Source: *Protecting against malware in macOS,* https://support.apple.com/en-bw/guide/security/sec469d47bd8/web, Retrieved Jan 21, 2025

Antimalware recommendations

- Desktops and laptops
  - Linux distributions
    - Bitdefender
    - ClamAV

Antimalware recommendations

For how-to instructions for
- Windows,
- macOS,
- iOS,
- Android

see the CISA Source below.

Source: *Ensure Your OS Antivirus and Anti-Malware Protections are Active,* https://www.cisa.gov/resources-tools/training/ensure-your-os-antivirus-and-anti-malware-protections-are-active, Retrieved Feb 6, 2025

Basic Cybersecurity Concerns

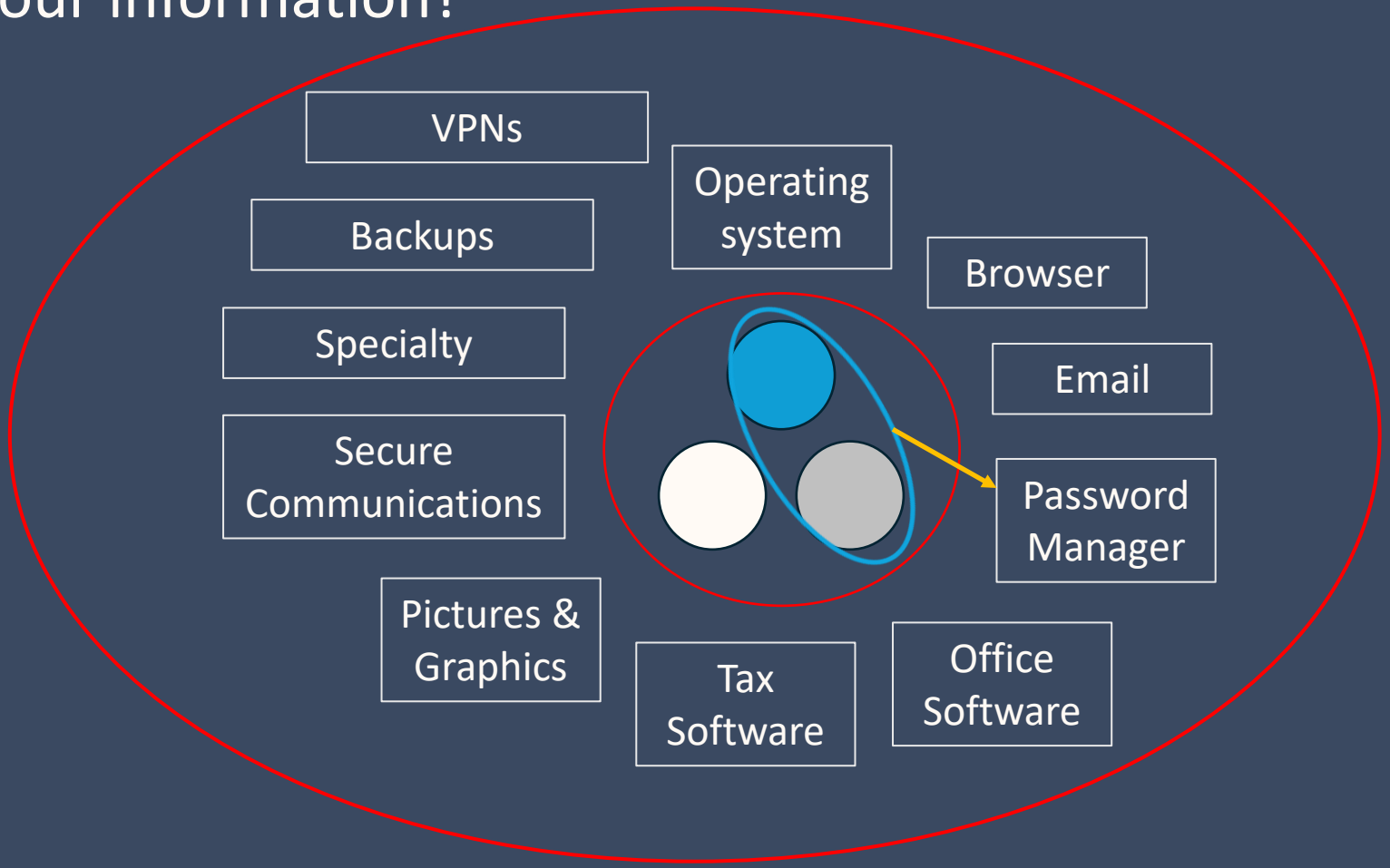
- Vet technologies before using them ✓
- Keep your device's operating system and apps up to date ✓
- Ensure OS Antivirus and Malware Protections are active ✓
- Avoid hardware with known vulnerabilities
- Protect the physical security of your digital devices
- Implement User Account Control to protect your computer
- Manage application permissions for privacy and security

Don’t let criminals access your personal information
by using hardware devices
with known vulnerabilities

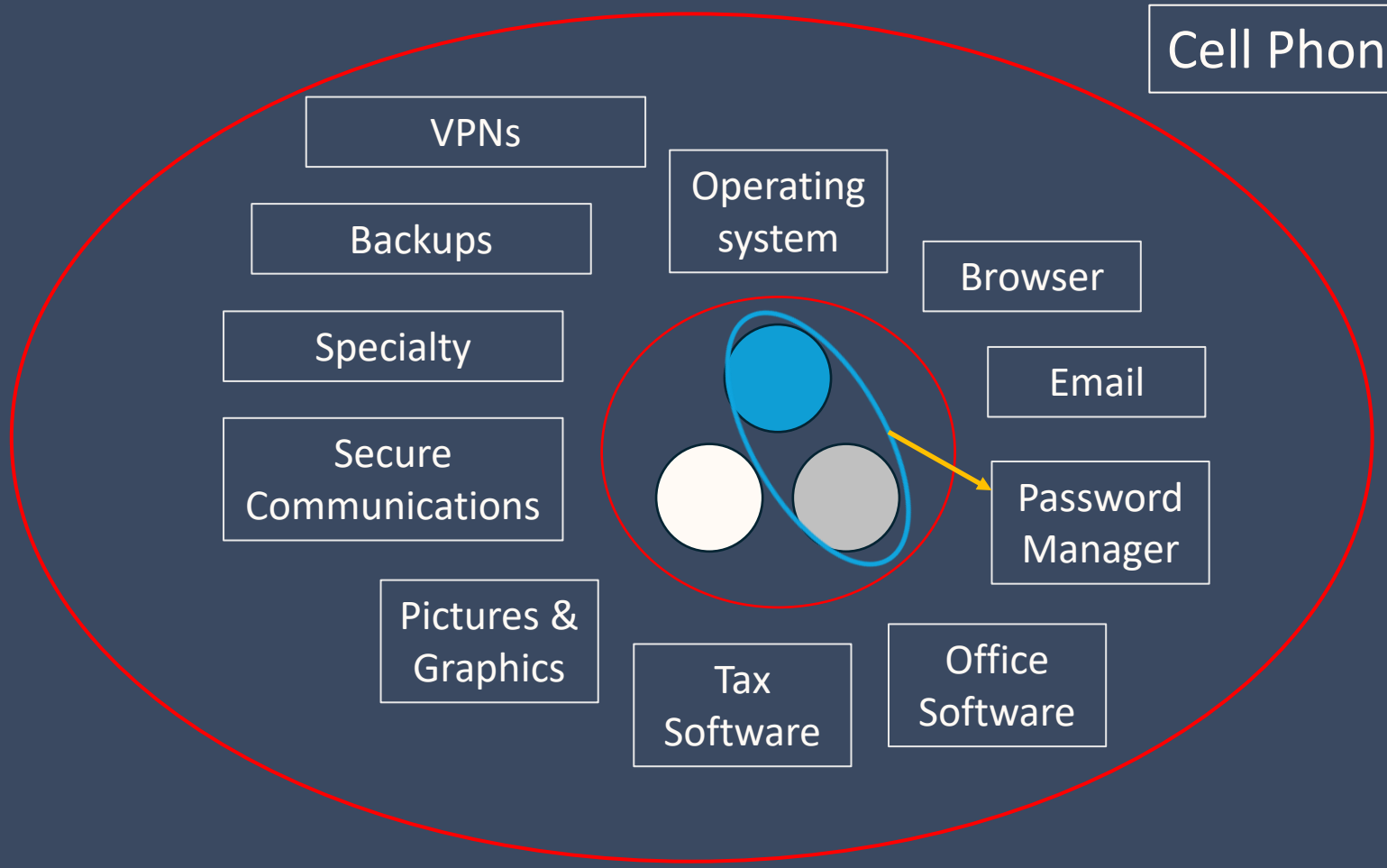
Best Hardware Practices

- Purchase and use hardware devices from reputable vendors (not headquartered in China or Russia)
- Replace the device after 5 to 7 years
- Turn off and dispose of any hardware devices you are not using
- Don’t discard computers and cell phones until they’re “scrubbed”

What hardware devices have access to your information?



Cell Phones



Vendors:

- Apple
- Google
- Samsung (South Korea)
- Sony (Japan)

Cell Phones

Towers - Desktop

Vendors:

- HP
- Dell
- Falcon Northwest
- Origin PC
- System76
- Asus (Taiwan)
- Acer (Taiwan)

Cell Phones

Towers - Desktop

Laptops

Vendors:

- HP
- Dell
- Falcon Northwest
- Origin PC
- System76
- Asus (Taiwan)
- Acer (Taiwan)

Cell Phones

Towers - Desktop

Laptops

Keyboards

Vendors:
Logitech
Razer

Cell Phones

Towers - Desktop

Laptops

Keyboards

Webcams

Vendors:
Logitech
Microsoft

Cell Phones

Towers - Desktop

Laptops

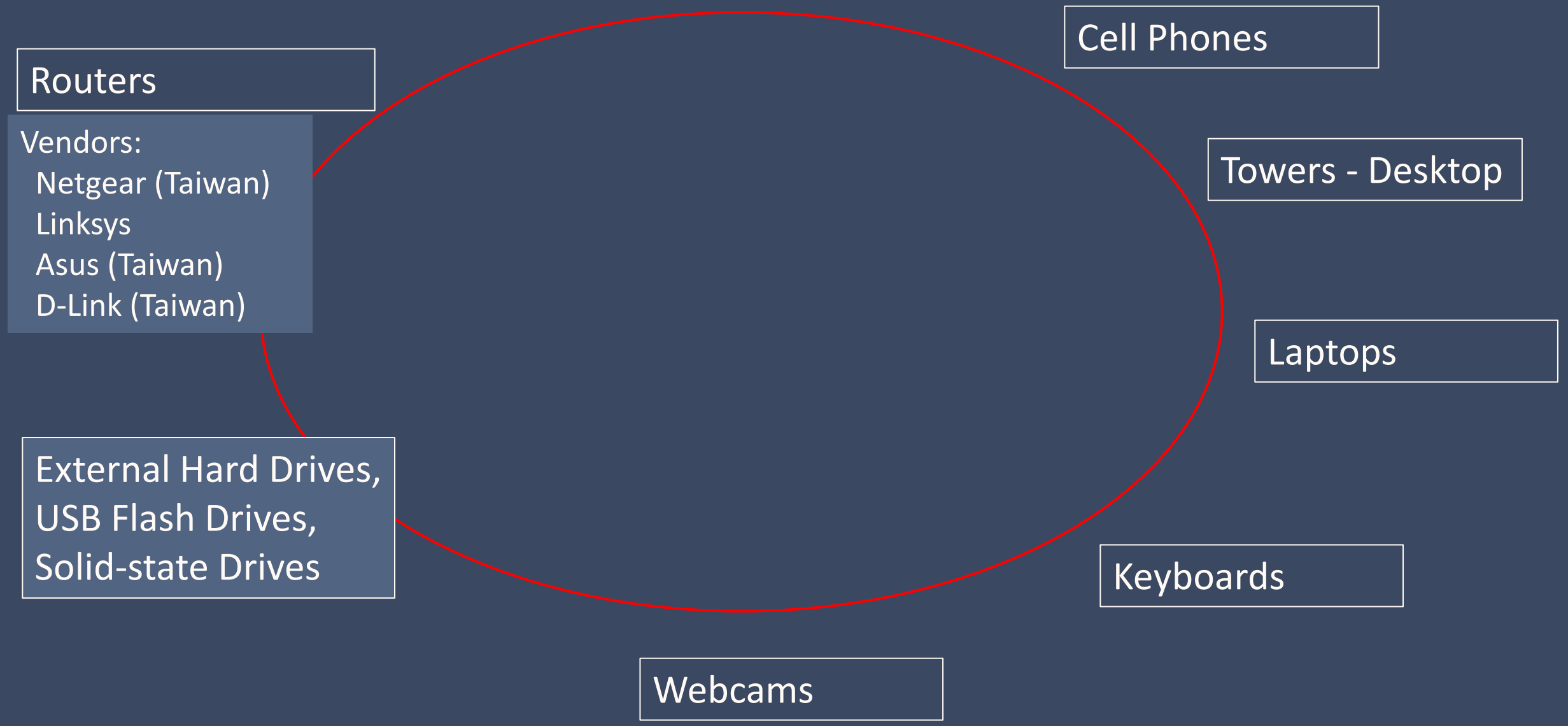
External Hard Drives,
USB Flash Drives,
Solid-state Drives

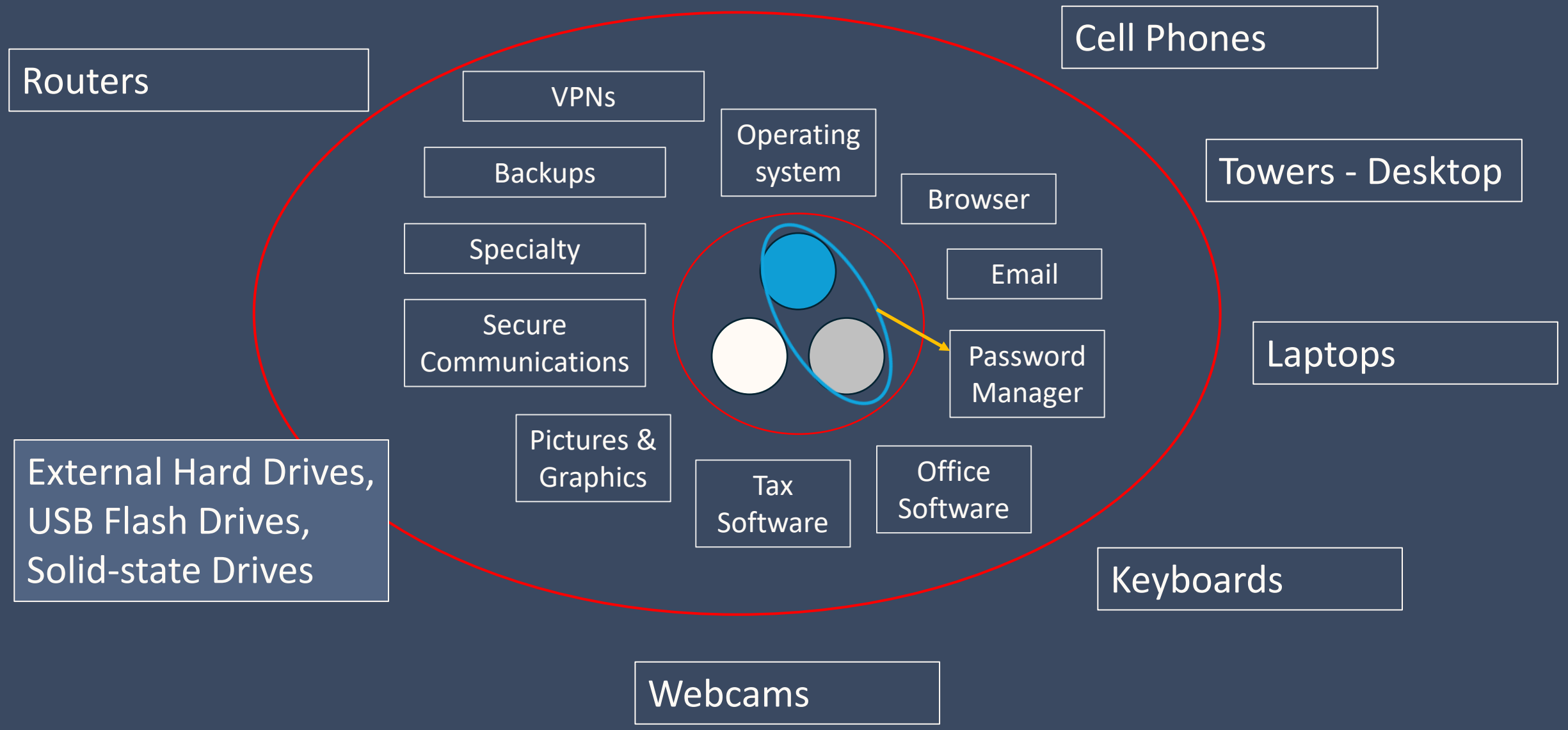
Keyboards

Vendors:
- Western Digital
- SanDisk
- Seagate

Webcams

TP-Link routers are made by a company headquartered in China. They consistently have multiple vulnerabilities that are being exploited. TP-Link routers are *not* recommended.




Routers
Cell Phones
VPNs
Operating system
Backups
Towers - Desktop
Browser
Specialty
Email
Secure Communications
Password Manager
Laptops
Pictures & Graphics
External Hard Drives, USB Flash Drives, Solid-state Drives
Tax Software
Office Software
Keyboards
Webcams

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The Physical Security Problem

Without physical safeguards, these compromises could happen:

- Direct installation of malware or spyware
- Loss or theft of computing devices or your personal data
- Unauthorized access of your personal data

Protect Your Device's Physical Security - Access

- Ensure there are physical security controls in the areas where you store your devices

  To protect your devices (including your home Wi-Fi router), keep them locked in a secure physical area with limited access by others (*lock your apartment or house when you aren't home*).

- Keep important documents in a secure location

  Documents containing security information, such as the master password to your password manager, should be kept in a safe or similar security system

Source: *Protect the Physical Security of Your Digital Devices,* https://www.cisa.gov/resources-tools/training/protect-physical-security-your-digital-devices, Retrieved Jan 21, 2025

Protect Your Device's Physical Security – Access

- Lock your device if you have to step away from the screen
  - Especially in a public area
  - Auto-lock the screen if the device is idle for more than 15 minutes
- Do not leave your devices unattended in a public space

Source: *Protect the Physical Security of Your Digital Devices,* https://www.cisa.gov/resources-tools/training/protect-physical-security-your-digital-devices, Retrieved Jan 21, 2025

Protect Your Device's Physical Security - Loss

- Have a recovery plan for data loss or theft
- Regularly back up your computers or mobile devices
- Have a plan to reduce further damage if your device is stolen
  - Use remote factory reset for mobile devices
  - Use full disk encryption for laptops / desktops
- Make a list of all accounts that your devices are automatically logged into, such as email and messaging apps, so that you can immediately reset those account passwords

Source: *Protect the Physical Security of Your Digital Devices,* https://www.cisa.gov/resources-tools/training/protect-physical-security-your-digital-devices, Retrieved Jan 21, 2025

Protect Your Device's Physical Security - Dispose

- Do not throw away or sell your old devices
  Protect your personal information on your device first
- Windows: *Before you recycle, sell, or gift your Xbox or Windows PC*, https://support.microsoft.com/en-us/account-billing/before-you-recycle-sell-or-gift-your-xbox-or-windows-pc-78ee8071-c8ab-40c4-1d89-f708582062e4
- macOS: *What to do before you sell, give away, trade in, or recycle your Mac*, https://support.apple.com/en-us/102773
- iOS: *What to do before you sell, give away, trade in, or recycle your iPhone or iPad*, https://support.apple.com/en-us/109511
- Android: *Reset your Android device to factory settings*, https://support.google.com/android/answer/6088915?hl=en

Source: *Protect the Physical Security of Your Digital Devices,* https://www.cisa.gov/resources-tools/training/protect-physical-security-your-digital-devices, Retrieved Jan 21, 2025

Protect Your Device's Physical Security - Usage

- Do not insert unknown media storage devices (e.g., thumb drives) into your computer.
  - It may contain malicious software that will infect your computer.
- Do not charge your device in a public USB port without a data blocker
  - Don't plug your phone into a rental vehicle's USB port
  - The threat is low but it can happen

Source: *Protect the Physical Security of Your Digital Devices,* https://www.cisa.gov/resources-tools/training/protect-physical-security-your-digital-devices, Retrieved Jan 21, 2025

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Implement User Account Control

- When you set up your computer, usually you'll be asked to set up an Administrator account.
- Administrator accounts make it easier for threat actors to access your data or make changes to your computer, effectively taking over your computer.
- A Standard account requires an administrator password to install software.
- To set up a Standard account, see the how-to information at the below CISA Source.

Source: *Implement User Account Control to Protect Your Personal Computer,* https://www.cisa.gov/resources-tools/training/implement-user-account-control-protect-your-personal-computer, Retrieved Feb 6, 2025

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Manage Application Permissions

- Apps can access personal information about you.
- Only install apps you need.
- Remove apps you no longer use.
- Manage app permissions to deny access to data or functions you do not want an app to have.
- How-to information for managing app permissions on iOS, Android, macOS, and Windows is at the CISA Source below.

Source: *Manage Application Permissions for Privacy and Security,* https://www.cisa.gov/resources-tools/training/manage-application-permissions-privacy-and-security, Retrieved Feb 6, 2025

Basic Cybersecurity Concerns

- Vet technologies before using them ✓
- Keep your device's operating system and apps up to date ✓
- Ensure OS Antivirus and Malware Protections are active ✓
- Avoid hardware with known vulnerabilities ✓
- Protect the physical security of your digital devices ✓
- Implement User Account Control to protect your computer ✓
- Manage application permissions for privacy and security ✓

Thank You,

Bill Skelly

Computer Club volunteers are available to help.

Phone: 717-464-6330, option 1

Email: GetHelp@wvcomputerclub.org

Website: wvcomputerclub.org, click on *Get Help* for lists of volunteers

The slides for this presentation will be available
on our website, wvcomputerclub.org, under *Presentations*
in the next few days.

Don’t let criminals access your personal information
by using software or hardware
with known vulnerabilities

Protecting Your Accounts from Compromise

October 8, Wednesday, 10 am

Cultural Center Education Room

Articles

For the latest cybersecurity information, these are accurate and reliable sources:

Ars Technica	arstechnica.com
Bleeping Computer	bleepingcomputer.com
CISA	cisa.gov
Forbes	forbes.com
Proton Blog	proton.me/blog
Proton VPN Blog	protonvpn.com/blog

Books

Beginner's Introduction to Privacy, Naomi Brockwell, (Independently Published, 2023)

Means of Control: How the Hidden Alliance of Tech and Government is Creating a New American Surveillance State, Bryon Tau, (Crown, 2024)

Your Face Belongs to Us: A Tale of AI, A Secretive Startup, and the End of Privacy, Kashmir Hill, (Crown, 2024)

Extreme Privacy: What It Takes To Disappear, 5th Edition, Michael Bazzell, (Independently Published, 2024)

Firewalls Don't Stop Dragons, 5th Edition, Carey Parker, (Apress, 2024)

YouTube Channels

David Bombal, [Cybersecurity, Privacy, IT] https://www.youtube.com/@davidbombal

Naomi Brockwell TV, [Privacy]
https://www.youtube.com/channel/UCSuHzQ3GrHSzoBbwrIq3LLA

PC Security Channel, [Cybersecurity, Malware]
https://www.youtube.com/channel/UCKGe7fZ_S788Jaspxg-_5Sg

Questions?