WLAN & BMO Training Introduction to Cyber Security

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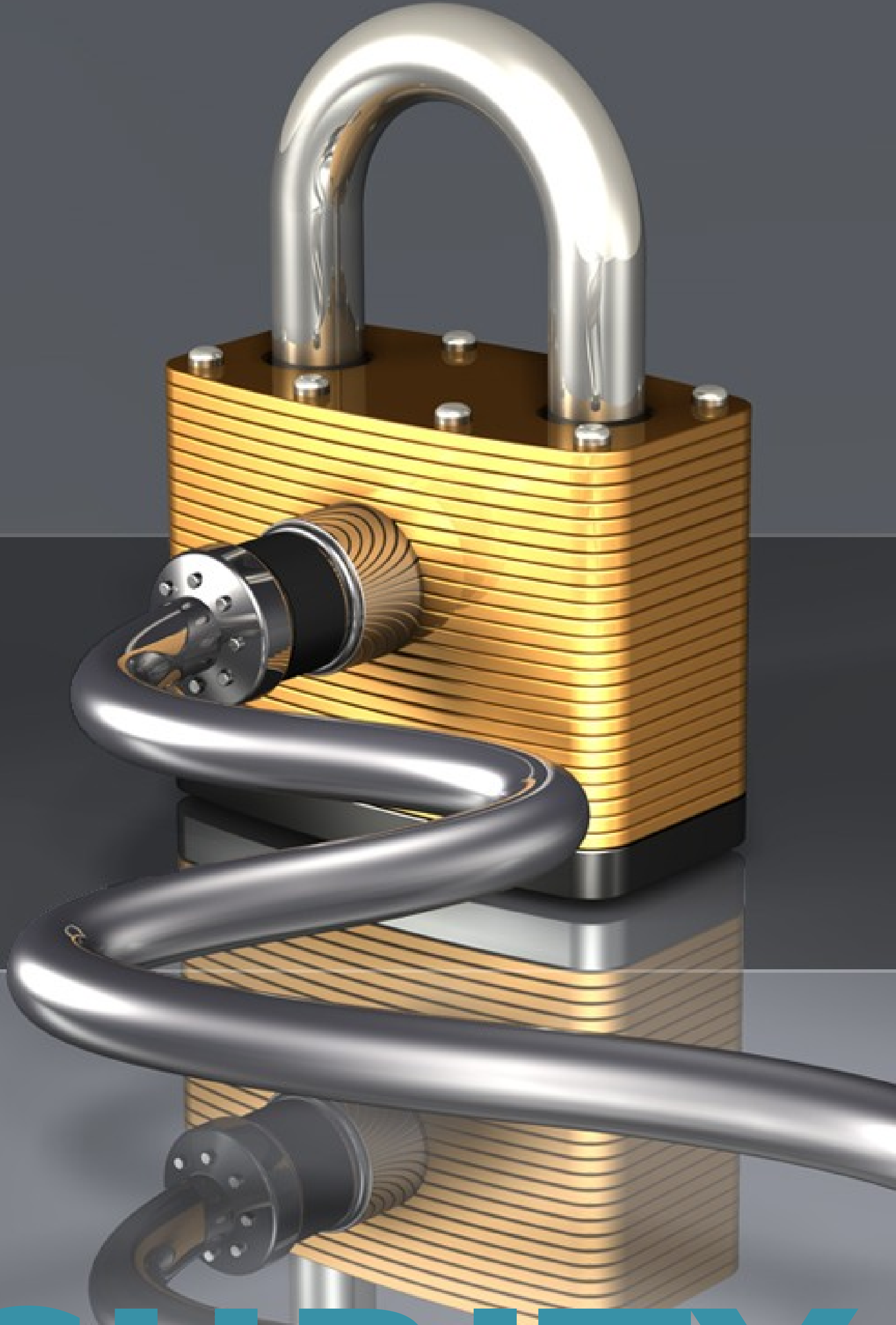
CYBER

YOU HAVE BEEN HACKED !



SECURITY

WHAT IS CYBER SPACE..?

Cyber space is wide range of computers connected together by a common media called the *INTERNET.*

We have now become so much reliant on *Internet* ,to the extent that we use it from sending friendly e-mails to hyper sensitive data. And as the picture suggests.., ***IS IT SAFE..?***

And it comes across as no surprise that the internet which has given so many boons obviously tracks along some hiccups too.. **CYBER SECURITY** being the major one..!!

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WHO ARE THE CULPRITS..?

- They are *malicious programmers* looking to access personal and business data's or simply disrupt net services, mainly through *e-mails* and *web links*.
- There are large scale pranksters as well, whom we can't call as such because they do it intentionally to mine valuable data(bank account) or to corrupt stock markets, air traffic controls, power grids etc

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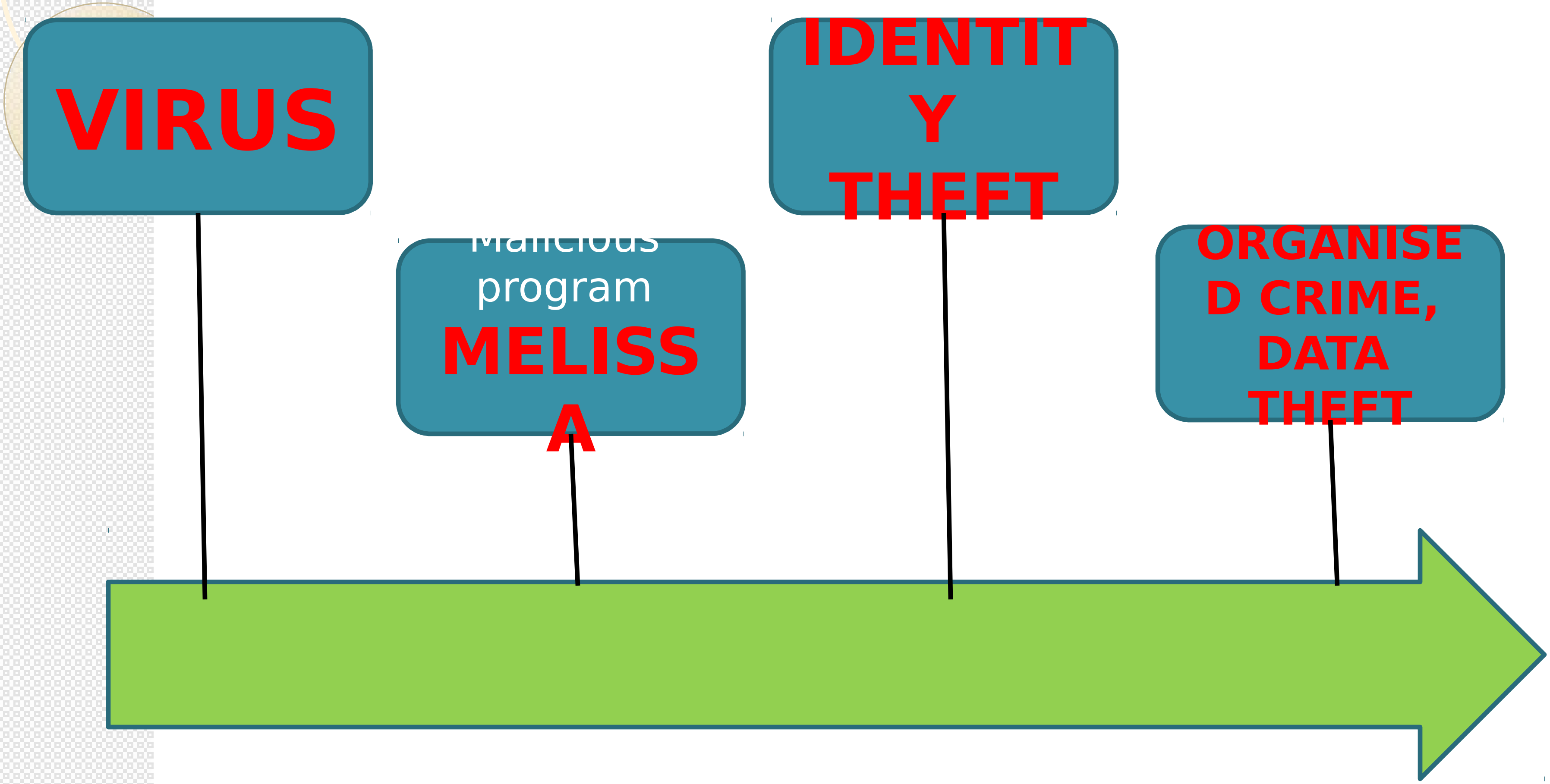
CYBER THREAT EVOLUTION



VIRUS

Malicious program

MELISSA

IDENTITY THEFT

ORGANISED CRIME, DATA THEFT

1977 2000 2005- 06

2007- 08

PROMINENT CYBER ATTACKS

- Web defacement.
- Spam
- Proxy scan.
- Social engineering Scams.
- Malicious code like virus, bots.
- D

rootkit phishing malware worm trojan virus spam hackers spyware security

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WAYS TO HANDLE THIS NUISANCE:

- Using **ANTI-VIRUS** programs, not only using them but keeping them updated as well.
- Using of hack proof or steal proof systems, like **BIOMETRIC SYSTEMS**.
- Most companies employ **ETHICAL HACKERS** to counter this rising menace.

ETHICAL HACKING is finding the vulnerabilities in a system and fixing them. Thereby creating a system which can resist future attacks.

Follow all the instructions that are do’s and don'ts while surfing the net..!

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What is Cyber Security?

- Almost Everything Relies on Computers and the Internet Now
  - Communication (email, cell phones)
  - Entertainment (digital cable, mp3’s)
  - Transportation (car engines, airplane navigation)
  - Shopping (online stores, credit cards)
  - Medicine (equipment, medical records)
- Cyber security involves protecting that information by Preventing, Detecting, and Responding to attacks on electronic data.

What Can You Do?

- Protect Yourself by Recognizing the Following:
  - Identifying the Risks
  - Understanding the Terminology

What Are the Risks?

- Among These Dangers Are:
  - Viruses erasing your entire system
  - Someone breaking into your system and altering files
  - Someone using your computer to attack others
  - Someone stealing your credit card information and making
  - unauthorized purchases.
- There's not a 100% guarantee you'll be protected, but there are steps you can take to minimize the chances.

Terminology

- Hacker, Attacker, or Intruder
  - Applied to the people who seek to exploit weaknesses in software and computer systems for their own gain.
  - Attacks can be harmless, but usually are in violation of the intended use of the systems they are exploiting.
  - The results can range from mere mischief to malicious activity (i.e. stealing or altering information).

Terminology

- **Malicious Code**
- Sometimes called malware, is a broad category that includes any code that could be used to attack your computer.
- Malicious code can have the following characteristics:
  - It might require you to actually do something before it infects your computer.
  - This action could be opening an email attachment or going to a particular web page.
  - Some malicious code claims to be one thing while in fact doing something different behind the scenes.
  - Once a machine is infected, the code can be passed on

Terminology

- Vulnerabilities
  - Often caused by programming errors in software.
  - Attackers might be able to take advantage of these errors to infect your computer/cell phone/smart phone.
  - It is important to apply updates or patches that address known vulnerabilities.
- Patches
  - Are updates that fix a particular problem or vulnerability within a program. A version upgrade to a program may also be called a patch.

Patches

- When patches are available, vendors usually put them on their websites for users to download.
- It is important to install a patch as soon as possible.
- Some software will automatically check for updates, while others may offer automatic notifications.
- If these automatic options are available, we recommend that you take advantage of them.
- If they are not available, check your vendors' websites periodically for updates.

Patches

- Make sure that you only download software or patches from websites that you trust.
- Do not trust a link in an email message
  - Attackers have used email messages to direct users to malicious websites where users install viruses disguised as patches.
  - Beware of email messages that claim that they have attached the patch to the message
    - Again, these attachments are often viruses.

Viruses

- Virus Basics & Protecting Yourself

Virus Basics

- What is a Virus?
  - Small software program that is designed to spread from one computer to another and to interfere with computer operation.
  - Some viruses are harmless, while others may damage or even destroy files.
  - Viruses used to be spread when people shared floppy disks and other portable media, now viruses are primarily spread through email messages.
  - Unlike worms, viruses often require some sort of user action (e.g., opening an email attachment or visiting a malicious web page) to spread.

Virus Basics

- What is a Worm?
  - A type of virus that can spread without human interaction.
  - Worms often spread from computer to computer and take up valuable memory and network bandwidth, which can cause a computer to stop responding.
  - Worms can also allow attackers to gain access to your computer remotely.

Virus Basics

- What is a Trojan Horse?
  - A computer program that is hiding a virus or other potentially damaging program.
  - It can be a program that purports to do one action when, in fact, it is performing a malicious action on your computer.
  - They can be included in software that you download for free or as attachments in email messages.

Virus Facts

- Can I get a virus by reading my email messages?
    - Yes & NO
  - Most viruses, Trojan horses, and worms are activated when you open an attachment or click a link contained in an email message.
  - If your email client allows scripting, then it is possible to get a virus by simply opening a message.
  - It is best to limit what HTML is available in your email messages.
  - The safest way to view email messages is in plain text.

Virus Facts

- How Can I Avoid a Virus Infection From Email?
- Never open anything that is attached to an email message unless you know the contents of the file.
- If you receive an attachment from a familiar email address, but were not expecting anything, you should contact the sender before opening the attachment.
- If you receive a message with an attachment and you do not recognize the sender, you should delete the message.

Avoiding Viruses

- Install Anti-Virus Software From a Reputable Vendor. Update It and Use It Regularly.
  - AVG, Microsoft Security Essentials, McAfee, Bitdefender, Avast!
- Scan for Viruses on a Regular Interval.
  - Most programs are set to run at least once a week.
- Install an “On Access" Scanner.
  - Included with most anti-virus programs.
  - Allows the user to scan files at any given time.

Avoiding Viruses

- Be careful about accepting files or clicking links you receive from chat rooms/online communities.
- Back up your data on a regular interval onto a disc or external hard drive.
  - In the event of a virus, this allows the user to utilize non-infected files.

Recognizing Fake Anti-Viruses

- What is a Fake Anti-Virus?
  - Malicious software (malware) designed to steal information from unsuspecting users by mimicking legitimate security software.
  - Makes numerous system modifications making it extremely difficult to terminate unauthorized activities and remove the program.
  - It also causes realistic, interactive security warnings to be displayed to the computer user.

Recognizing Fake Anti-Viruses

- How will I know if I am infected?
  - Extreme Presence of Pop-ups.
  - Most of these will display unusual security warnings and ask for credit card or personal information.

Wireless Network Security

- Threats Have Gone Airborne

Wireless Network Security

- How do Wireless Networks Work?
  - Rely on radio waves rather than wires to connect computers to the internet.
  - A transmitter, AKA a wireless router, is wired into an internet connection. This provides a "hotspot" that transmits the connectivity over radio waves.
  - Computers that have a wireless capability and have permission to access the network can take advantage of the network connection.

Wireless Network Security

- What Security Threats are Associated with Wireless Networks?
    - Because wireless networks do not require a wired connection, it is possible for attackers who are within range to hijack or intercept an unprotected connection.
- Wardriving Practice involving a person and a wireless device.
    - Drive around searching for unsecured wireless networks.
    - Often used with malicious intent.
        - Downloading Child Pornography, Stealing Personal Info.

Wireless Network Security

- What Can You do to Minimize the Risks?
  - Change Default Passwords
    - Most network devices, including wireless access points, are pre-configured with default administrator passwords to simplify setup.
  - Encrypt the Data on Your Network
    - WEP (Wired Equivalent Privacy) and WPA (Wi-Fi Protected Access) both encrypt information on wireless devices.
    - Encrypting the data would prevent anyone who might be able to access your network from viewing your data.

Wireless Network Security

- Install a Firewall On both your computer and wireless network.
- Maintain Anti-Virus Software
  - Install on all devices and make sure your virus definitions are up to date.
  - Many of these programs also have additional features that may protect against or detect spyware and Trojan horses.

Cloud Computing

- New Technology = New Risks

Cloud Computing

- What is the Cloud?
  - A subscription based service where you can obtain networked storage space.
  - Examples: Google Docs, Skydrive, Dropbox
  - Just Think E-mail.
  - Not housed on your physical computer.
  - It can be accessed from anywhere.

Cloud Computing

- How Can You Use the Cloud?
  - Allows You to be Mobile.
  - Your computer does not have to be used for data storage.
  - Rather, it is just a means of accessing the Cloud.
  - A cloud provider may just own/house the hardware/software necessary to run your home or business applications.

Cloud Computing Types

- Types of Clouds
  - Public Cloud - Can be accessed by any subscriber with an internet connection and access to the cloud space.
  - Private Cloud - Is established for a specific group or organization and limits access to just that group.
  - Community Cloud - Is shared among two or more organizations that have similar cloud requirements.
  - Hybrid Cloud - Is essentially a combination of at least two of the cloud types.

Cloud Computing Threats

- The information housed on the cloud is often seen as valuable to individuals with malicious intent. Why?
- More and More People are Transferring Data to the Cloud.
- This leads to an increase in personal information and potentially secure data being put on the internet.

Cloud Computing Threats

- Look into the security measures that your cloud provider already has in place.
- What encryption methods do the providers have in place?
- What methods of protection do they have in place for the actual hardware that your data will be stored on?
- Will they have backups of my data?
- Do they have firewalls set up?
- If you have a community cloud, what barriers are in place to keep your information separate from other companies?

Cloud Computing Security

- If You are Considering Using the Cloud:
- Identify what information you will be putting out in the cloud.
- Know who will have access to that information.
- Know which cloud will best fit your needs.
- Review the reputation and responsibilities of the providers you are considering before you sign up.

Cyber Threats and Mobile Devices

- Not Just for Computers Anymore

Cyber Threats to Mobile Devices

- As mobile device technology evolves, consumers are using it at unprecedented levels.
- There are an estimated 4.6 billion mobile cellular subscriptions globally at the end of 2009.
- Mobile devices have become equally susceptible to malicious cyber activity as computers.

Cyber Threats to Mobile Devices

- The following Threats are Known to Target Mobile Devices:
  - Social Engineering
  - Exploitation of Social Networking
  - Exploitation of Mobile Applications
  - Exploitation of M Commerce

Social Engineering

- Very common method for spreading malware on the Internet.
- Most malicious activity is often successful because users are deceived into believing it is legitimate.
- Extremely lucrative and will likely significantly increase in the mobile market.

Social Engineering

- Social Engineering Schemes:
  - Phishing -Attempting to manipulate a victim into providing sensitive information by appearing as a valid entity.
  - Vishing – Entice a victim to call a certain number and divulge sensitive information.
  - Smishing -Involves text messages that contain links to such things as webpages, email addresses or phone numbers that when clicked may automatically open a browser window or email message or dial a number.

Exploitation of Social Networking

- Involves social networking sites such as Facebook & Twitter.
- Information sharing often occurs with an unwarranted, inherent trust among users.
- Often share and accept data from unauthenticated parties.

Exploitation of Mobile Applications

- Commonly called “Apps”.
- Provide enhanced convenience and functionality.
- Developers have created mobile applications for various uses and activities.
- Anyone can potentially develop and distribute mobile applications with little oversight.
- Makes apps a potential attack vector for cyber criminals.

Exploitation of M-Commerce

- Consumers Can Use Mobile Devices From Any Location to:
  - Research Product Information
  - Compare Prices
  - Make Purchases
  - Communicate with Customer Support
- Using mobile devices for purchases, offers a potential for credit card/bank account information to be leaked or stolen.

Protecting Mobile Devices

- Best Practices to Help Protect Mobile Devices:
  - Maintain up-to-date software, including operating systems and applications.
  - Install anti-virus software as it becomes available and maintain up-to-date signatures.
  - Enable the personal identification number (PIN) or password to access the mobile device.
  - Encrypt personal and sensitive data.
  - Disable features not actively in use such as Bluetooth or WiFi.

Protecting Mobile Devices

- Best Practices to Help Protect Mobile Devices:
  - Set Bluetooth enabled devices to non discoverable to render them invisible to unauthenticated devices.
  - Use caution when opening email and text message attachments and clicking links.
  - Avoid opening files, clicking links, or calling numbers contained in unsolicited email or text messages.
  - Avoid joining unknown WiFi networks.
  - Delete all information stored in a device prior to discarding it.

Geotagging and Social Networks

- Geotagging: What Is It and How Can You Protect Yourself?

The Dangers of Geotagging

- It Starts With Taking a Photo Electronically...
  - What Personal Information Could Possibly be Exposed?
  - What is the Threat?
- Your photos can tell everyone:
  - Where You Live
  - Where You Spend Your Time
  - Where You Park Your Car
  - And Other Information You Would Not Want to Tell

What is Geotagging?

- Definition:
  - The process of adding your location to a file.
  - It is the equivalent of adding a grid coordinate to everything you post on the internet.
- The Dangers of Geotagging
  - Establishes Patterns
  - Exposes Places of Work, School and Home
  - Identifies Location of Potential Victims
- Turning Off the GPS Function on Phones

Practicing Good Security Habits

- General Practices for Computers and Mobile Devices

Good Security Habits

- How Can You Minimize the Access Other People Have to Your Information?
- Its easier to identify people who may have physical access to your computer/mobile device.
- However, Identifying the people who could gain remote access to your computer becomes much more difficult.
- As long as you have a computer and connect it to a network, you are vulnerable to someone or something else accessing your information.

Good Security Habits

- Lock Your Computer When You are Away From It.
- Disconnect Your Computer From the Internet When You Aren't Using It.
- Evaluate Your Security Settings.
  - Including web browsers, email clients, & social networking sites.
- Protect Your Computer Against Power Surges and Brief Outages.
- Backup All of Your Data on a Regular Interval.

Protecting Portable Devices

- Password Protect Your Device
- Keep Your Valuables with You at All Times
- Downplay the Possession of a Laptop or Mobile Device
- Be Vigilant of Your Surroundings
- Consider an Alarm or Lock

Protecting Portable Devices

- What Can You Do if Your Laptop or Mobile Device is Lost or Stolen?
- Report the loss or theft to the appropriate authorities.
- If your device contained sensitive information, immediately report the theft to your organization.
- If possible, remote data wipe the device.
  - Devices with this ability include: Android’s, iPhone’s, & Mac’s.

Cyber Security Guidance

- For Employees:
- Make your passwords complex. Use a combination of numbers, symbols and letters (upper and lowercase).
- Change your passwords regularly (every 45 to 90 days).
- Do not give any of your user names, passwords, or other computer/website access codes to anyone.
- Do not open e-mails or attachments from strangers.

Cyber Security Guidance

- For Employees:
  - Do not install or connect any personal software or hardware to your organization’s network or hardware without permission from your IT department.
  - Make electronic and physical back-ups or copies of all your most important work.
  - Report all suspicious or unusual problems with your computer or assigned cell phone to your IT department.

Cyber Security Guidance

- For Management & IT Department:
  - Establish clear policies and procedures for employees.
  - Implement Technical Defenses: firewalls, intrusion detection systems, and Internet content filtering.
  - Update your anti-virus software daily.
  - Regularly download vendor security “patches” for all of your software.
  - Change the manufacturer’s default passwords on all of your software.
  - Monitor, log, and analyze successful and attempted intrusions to your systems and networks

CONCLUSION:

- “ *The only system that is safe in the world is one which is switched off, unplugged and kept in a titanium lined locker which is surrounded by nerve gas and highly paid commandos..! Even then I doubt it..!*”

Professor Gene Spafford

Often it’s not the strongest who survives, nor the most intelligent but the one who is responsive to change..! So **ADAPT**

‘n’ ADAPT QUICKLY..!