Introduction

- Information Security is a serious topic that needs to be included in the curriculum of every classroom that uses a computer. It is important for teachers, administrators, and technology coordinators to be fluent on this topic in order to protect the integrity of school records, student information, and institution credibility.

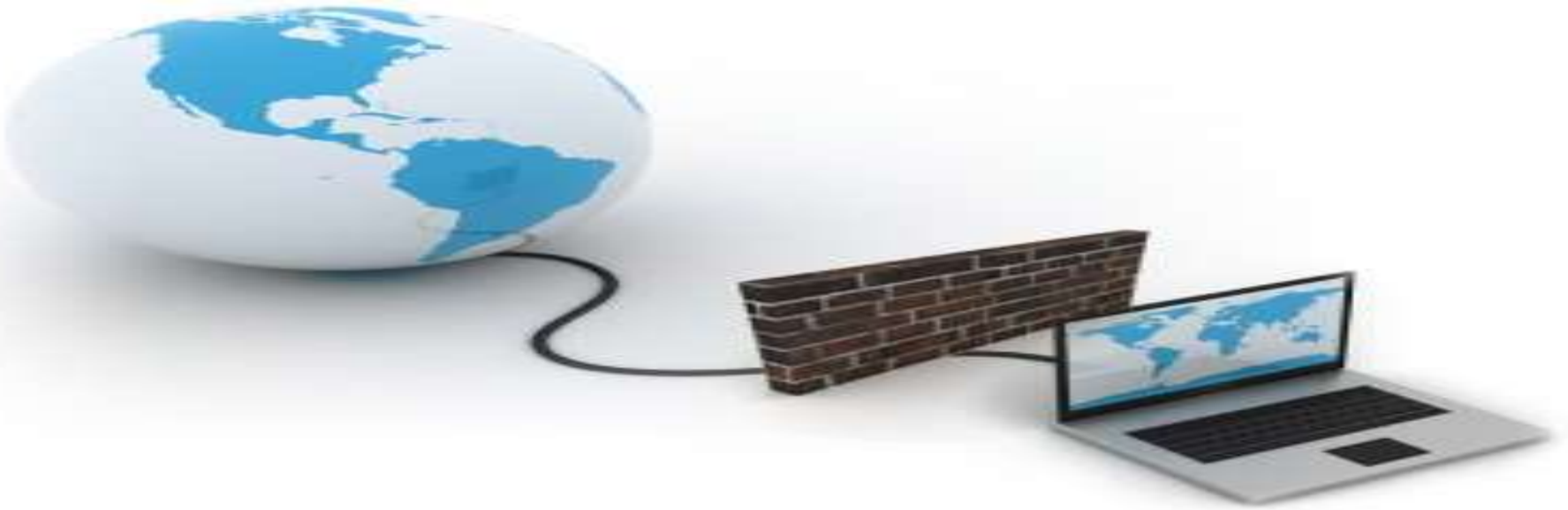
- But, it is EQUALLY important that the students understand the basics of information security in order to protect themselves, their work, and school environment.

- So, now that we all want to include information security as a topic in our classroom…How do we implement these ideas?

What is information security ?

The protection of information and its critical elements, including systems and hardware that use, store, and transmit that information

Necessary tools: policy, awareness, training, education, technology

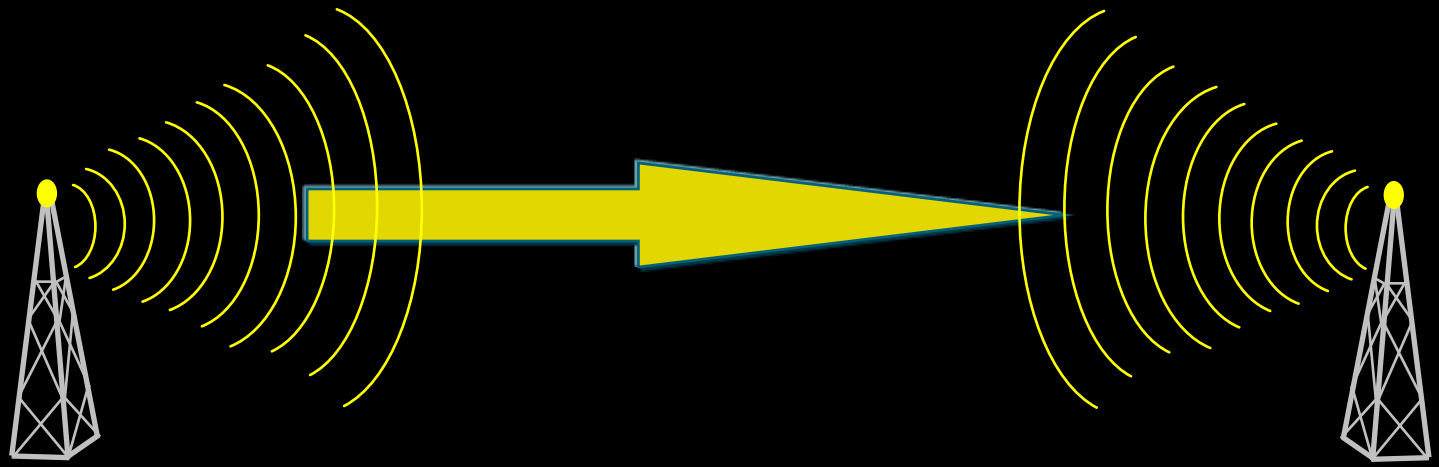


Information security ...

- Information security is the application of measures to ensure the safety and privacy of data by managing its storage and distribution. Information security has both technical and social implications.

- Information security system is the process of protecting the data from unauthorized access, disclosure, destruction or disruption.

What are the threats ?



Confidentiality: unauthorized **disclosure** of information

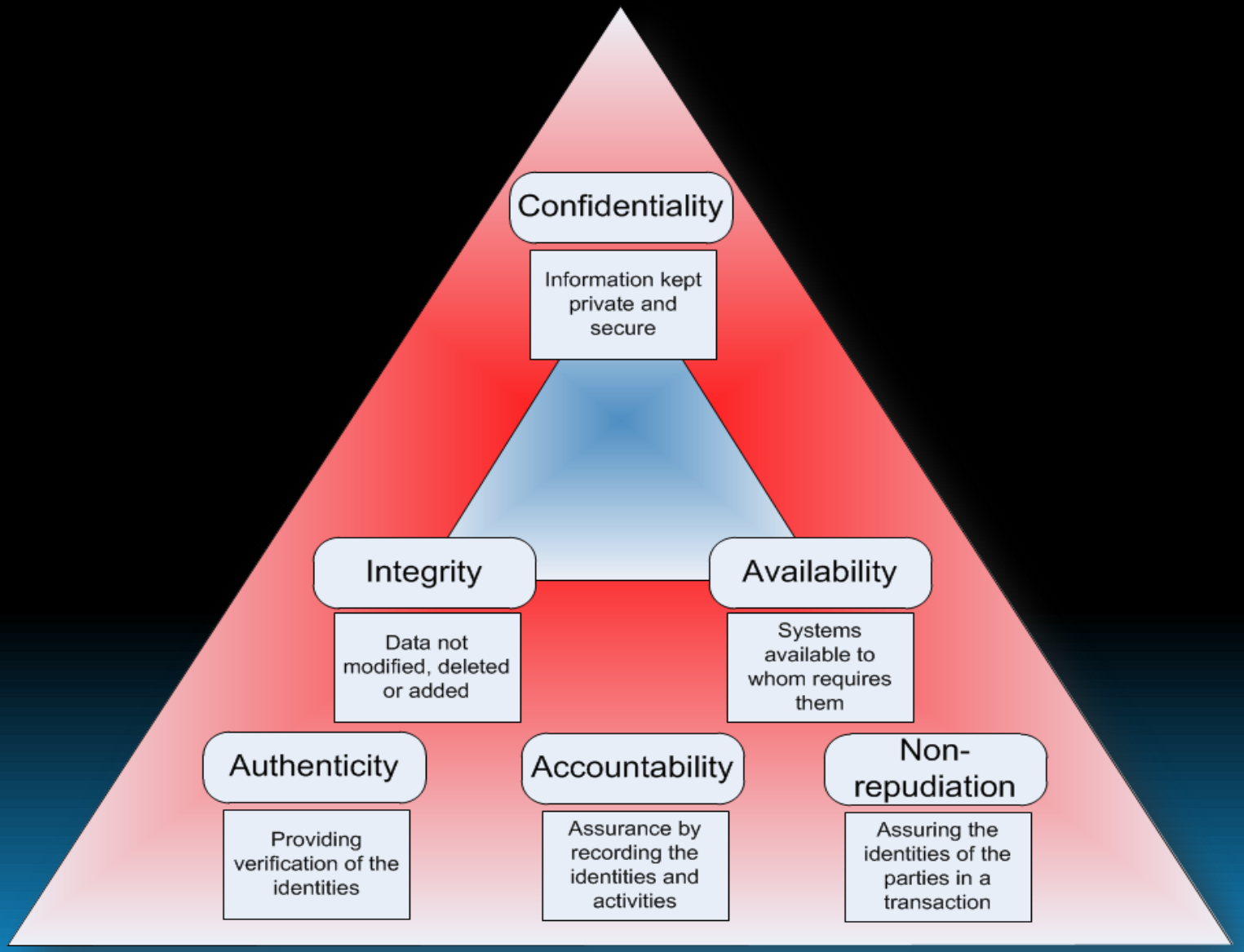
Integrity: unauthorized **modification** of information

Authenticity: unauthorized **use** of service

Security Threats:

- Destruction
- Disclosure
- Modification of data
- Denial of service

Elements of Information Security



Confidentiality

Confidentiality is the term used to prevent the disclosure of information to unauthorized individuals or systems.

- Data should be keep secret. The owner of data has to decide who can only access the data and who can't. Example: Password hacking in online money transaction systems .

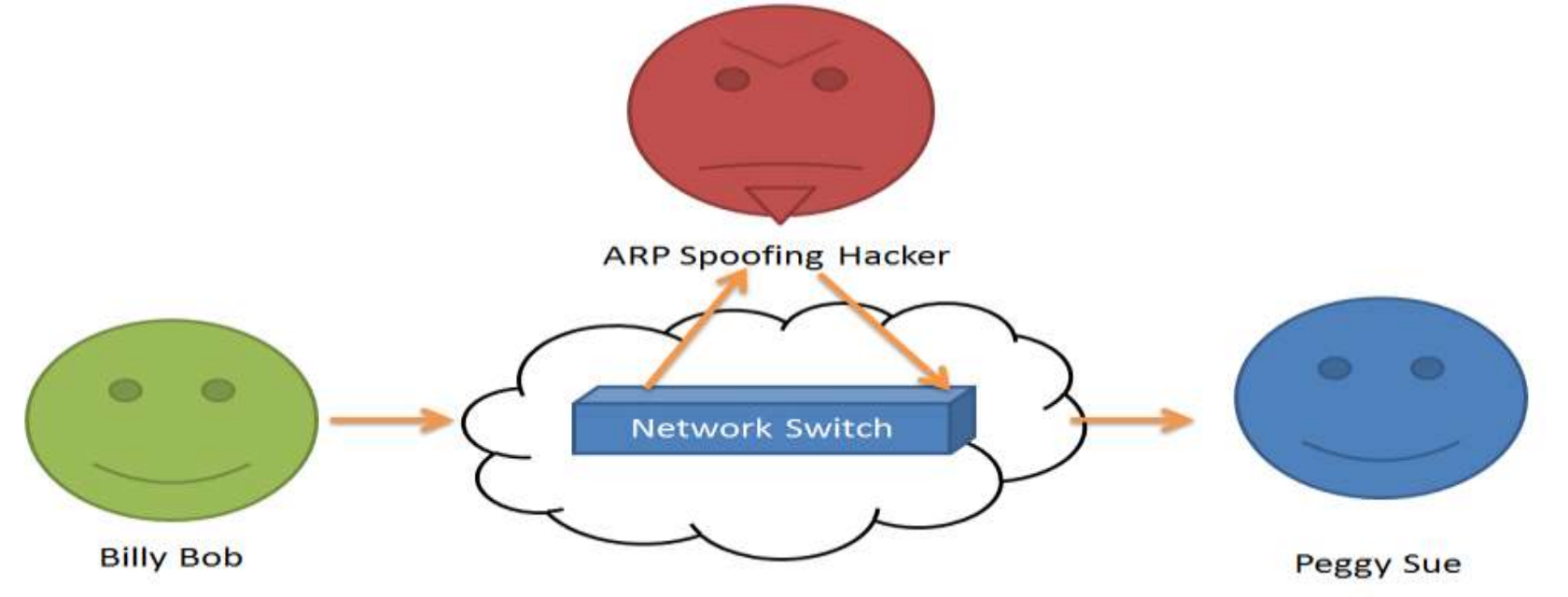
Prevention: by encrypting the data and by limiting the places where it might appear.

Integrity

Integrity means that data cannot be modified undetectably.

- Unauthorized persons should not modify the data without owner's permission. Not only modification, they should not remove the data and add the false data.

Example:

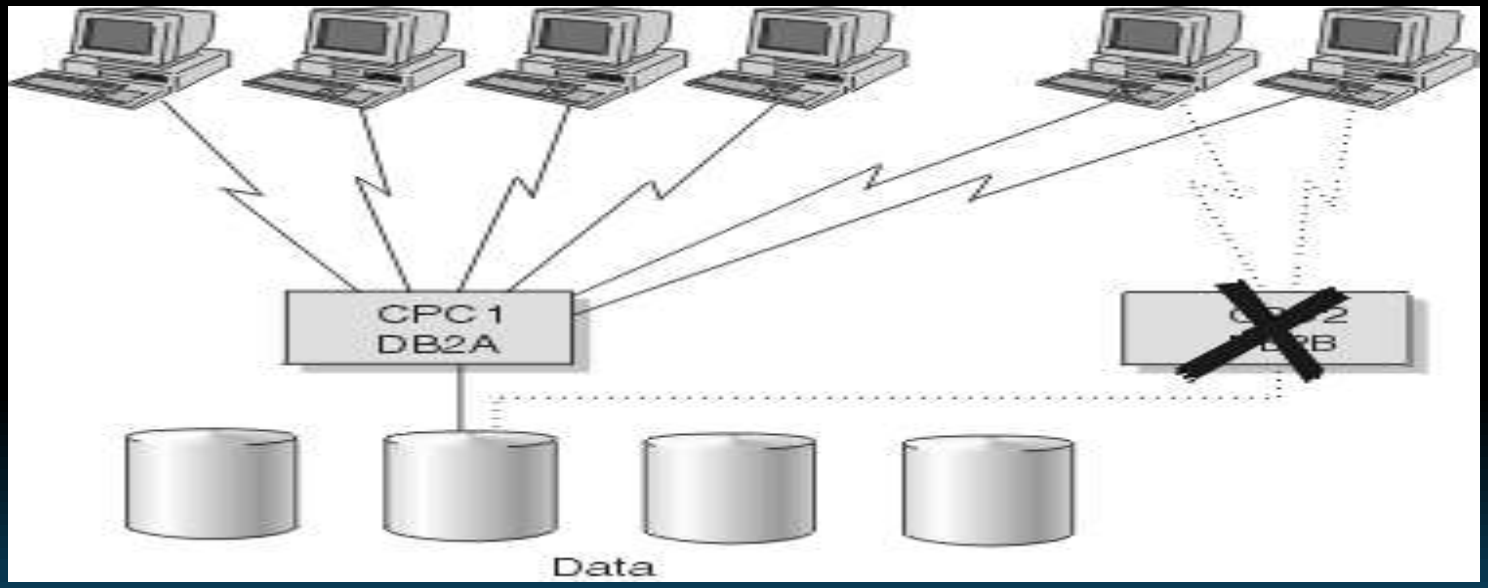


Prevention: message authentication & integrity codes (MAC/MIC), and message digests such as MD5 or SHA-1 hashes.

Availability

Ability of the infrastructure to function according to business expectations during its specified time of operation

Nobody can disturb the system to make it unusable.



Prevention: Backup systems

Authenticity

- Computer system to be able to verify the identity of user.

Goals with corresponding threats to them.

Goals		Threats
Data Confidentiality	–	Exposure of data.
Data Integrity	-	Tampering with data.
System Availability	-	Denial of Service.
Authenticity	–	No Authentication.

Types of IT Threats

1. Computer virus
2. Trojan Horses
3. DNS poisoning
4. Password grabbers
5. Network worms
6. Logic Bombs
7. Hijacked home page
8. Password cracker

Types of Attacks

1. SQL Injection
2. Dictionary attack
3. Phishing
4. Cross site scripting (XSS)
5. UI redressing

Security in different aspects:

- Data Security
- Computer Security
- Network Security

Data Security

- Data security helps to ensure the privacy of the individuals and the organizations.
- Data security is a method of protecting the data from unauthorized use.
- It has become an important part of the computer related business around the world.
- Data security is very important for the smooth operations in any organization.

Data Security...

- One way to avoid the loss of data due to hard disk crash, accidental removal or due to virus attack is to take regular backup of your data on the CD-ROM, hard drives, USB drive or any other medium.
- If you have lost your critical data then there are many ways to recover it you just need to find a data recovery specialist in your area.

Computer Security

- Every computer is susceptible to different attacks.
- It's the responsibility of the computer user who manages the security of the computer to protect it from these attacks.
- Every computer system must have a predefined security measures to protect it from the viruses, spyware, adware, Trojan horses, web worms, internet security threats and hackers' attacks.
- Firewall software provides a security mechanism that protects your computer from the unauthorized access and hackers' attacks.

Network Security

- Network security means the protecting your network from unauthorized
  use, viruses, spyware and internet threats. Protecting a computer network is the most important responsibility of the persons
- who manages the security of the network.

Security mechanisms... to protect the Network

- Install up-to –dated antivirus program,
- make regular backup of critical data,
- use strong firewall program,
- keep your system patched,
- use strong passwords,
- install and configure file encryption program,
- place your network server at very secure place and only authorized users should be allowed to enter in the server room.

Basic security measures for Computer

1. Install up-to-dated antivirus program.
2. Use strong passwords.
3. Don't leave your computer unattended,
4. Enable default firewall settings in Windows XP
5. Keep your operating system up-to-dated.
6. Encrypt your critical files.
7. Take regular backup of your data.

...Basic security measures for Computer

8. Limit the access of users.
9. Increase the security settings in the browsers.
10. Disable annoying startup programs.
11. Install the latest service packs.
12. Regularly scan your computer for vulnerabilities and security holes.
13. Adjust event viewer settings.

Internet Security Threats

- There are many known internet threats that can invade any computer that is connected to the internet.
- If you have not installed and configured any internet security suite then your computer can host many viruses, spyware and adware.

The best safeguard against the internet security threats

* To install a internet security software, Install firewall software or hardware, Monitor incoming emails,
* Disable scripting features in the email programs,
* Disable Java and ActiveX and monitor the activities of the users' on the internet.