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# IIoT Applications: Plant Security and Safety


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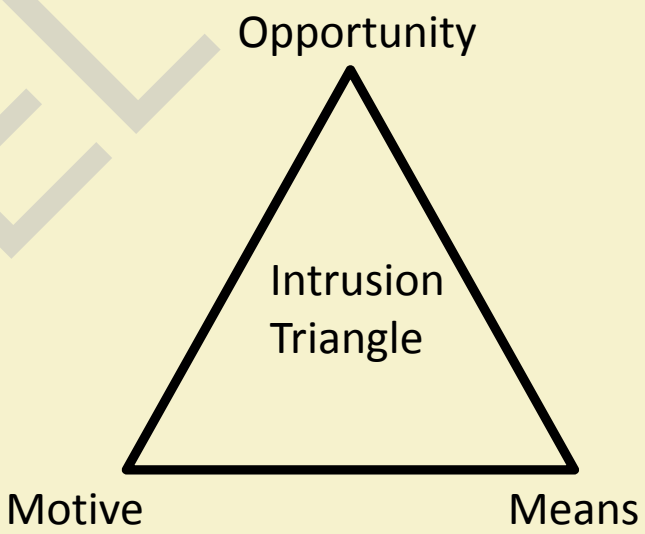
# Plant Security and Safety

*"freedom from risk or danger; safety"*

[The American Heritage Dictionary]

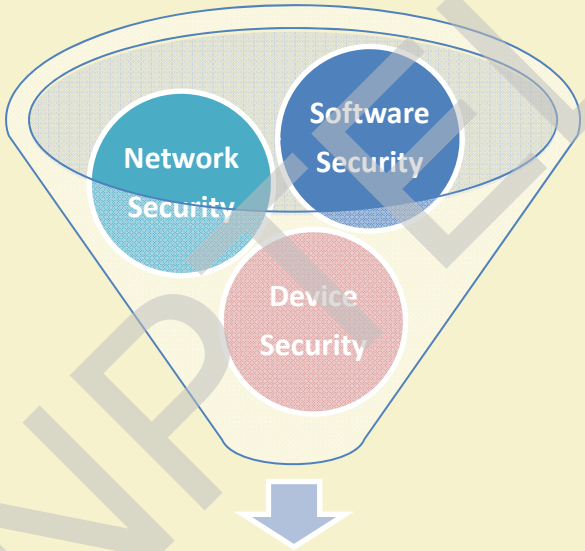


# Plant Safety

- Health and well being of the industry as a whole
- Hazards in a plant are catastrophic
- Aim: Protection of human and plant resources

https://pixabay.com/en/helmet-engineer-hard-hat-hardhat-35053/

# Plant Security and Safety

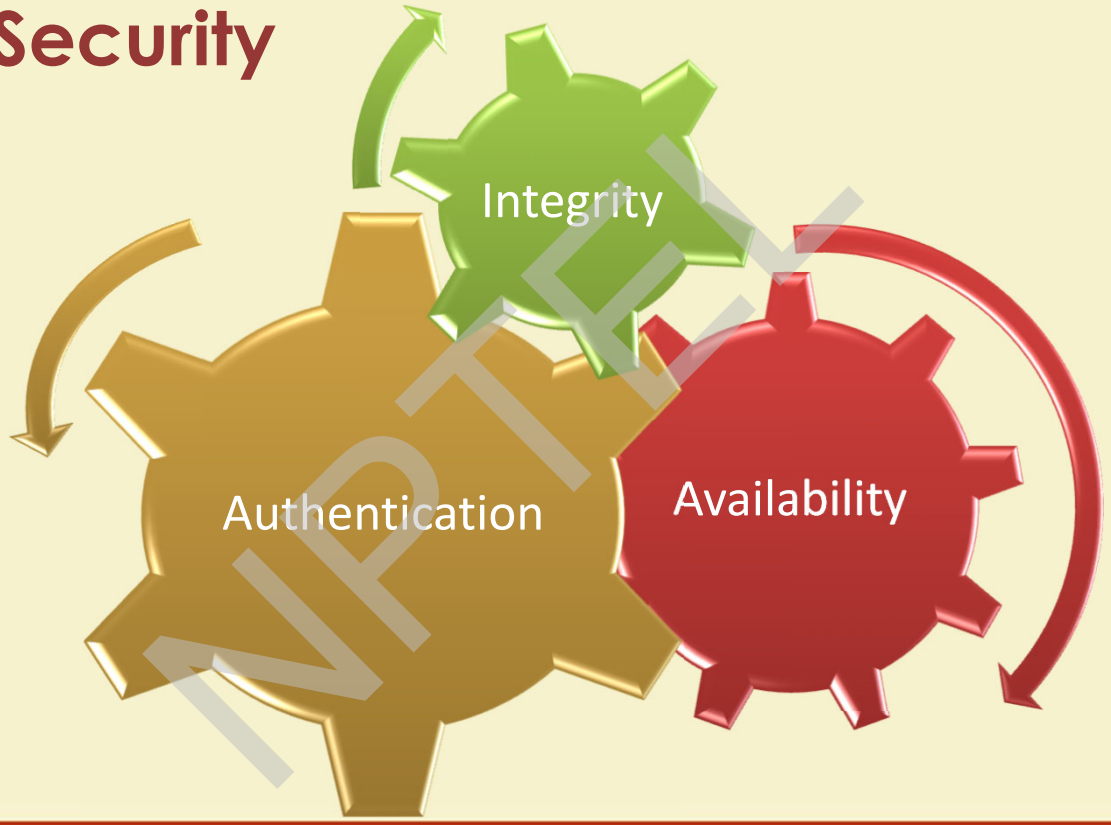



Plant Security and Safety

# Need for Software Security

- Steal valuable information
- Unauthorized monitoring of sensitive content
- Corrupt behavior of software
- Denial of Service (DoS) attacks
- Overflows, Overrides and Overwrites
- Padding

# Software Security



# Integrity

- Assurance of an uncorrupted data
- Correct functioning even under malicious attack
- Maintain consistency, accuracy, and trustworthiness of data over its entire life cycle
- Assurance that data is not altered by unauthorized people

# Authentication

- Identification of user
- Verification of credentials entered (local or remote)
- Access control based on these credentials
- Protection of resources

# Availability

- Ratio of time of functioning to the total time
- Extent to which the software continues functioning when a component or set of components fail
- Strong relation between availability and reliability

# Requirements

- Good programming techniques
- Install good firewalls
- Detect intrusions
- Good preventive measures

# Network Security

- Maintain usability and integrity of network and data
- Management of access to the network
- Both hardware and software
- Protection against variety of threats

# Types of Network Security

- Access control
  - Provide access based on user identity
- Antivirus and antimalware software
  - Scan for malware detection and prevention
- Application security
  - Protection of software after creation

# Types of Network Security (contd.)

- Behavioral analytics
  - Detection of abnormal behavior by the network
- Data loss prevention
  - Prevention of unauthorized sharing of sensitive data
- Email security
  - Protection against phishing attacks

# Types of Network Security (contd.)

- Firewalls
  - Barrier between trusted internal network and the external networks
- Intrusion prevention systems
  - Detection and blocking attacks
- Mobile device security
  - Device level security

# Types of Network Security (contd.)

- Network segmentation
  - Divide the network into smaller parts and enforce security policies explicitly
- Security information and event management
  - Gather information for security staff to identify and respond to threats
- Virtual Private Network (VPN)
  - Encrypt connection from an endpoint to a network

# Device Security

- Protection of sensitive information stored on and transmitted by portable devices
- Portable devices:
  - Smart phones
  - Tablets
  - Laptops
  - Other mobile devices

# Components

- Endpoint security
  - Monitoring of mobile devices (files and processes) that access a network
- Virtual Private Network (VPN)
  - Encrypt connection from a mobile device to a network
- Secure web gateway
  - Identification of an attack on one location and prevention of the same at other locations (integration of security with the cloud)

# Components (contd.)

- Email security
  - Protection against phishing attacks
- Cloud access security broker
  - Securing the tasks being performed on the cloud

# Virtual Reality (VR)

- Computer generated interactive environment
- Transpose the user
- Isolate the user from the current world
- Example: Oculus Rift, Samsung Gear VR, Google Cardboard

# Augmented Reality (AR)

- Enhanced reality (adds a digital layer over the real world)
- Does not isolate the user to a different world
- Can add details to things a user tries to examine (can be used by retailers to sell their products)
- Examples:
  - Bus stop prank by Pepsi Max
  - Pokémon Go

# Risks (AR/VR)

- Prone to attacks by hackers
- Compromised content on the screen
- Intellectual Property (IP) rights
- Privacy and Security issues
- Risks pertaining to user's health

# Reference

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# Thank You!!