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Computer Security in an Increasingly Mobile World

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U.S. DEPARTMENT OF ENERGY

Computer and Information Security Concerns of Mobile Devices in the Nuclear Field

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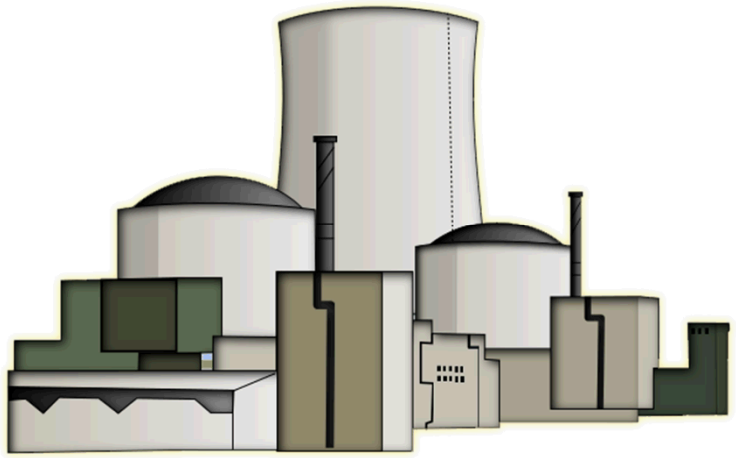
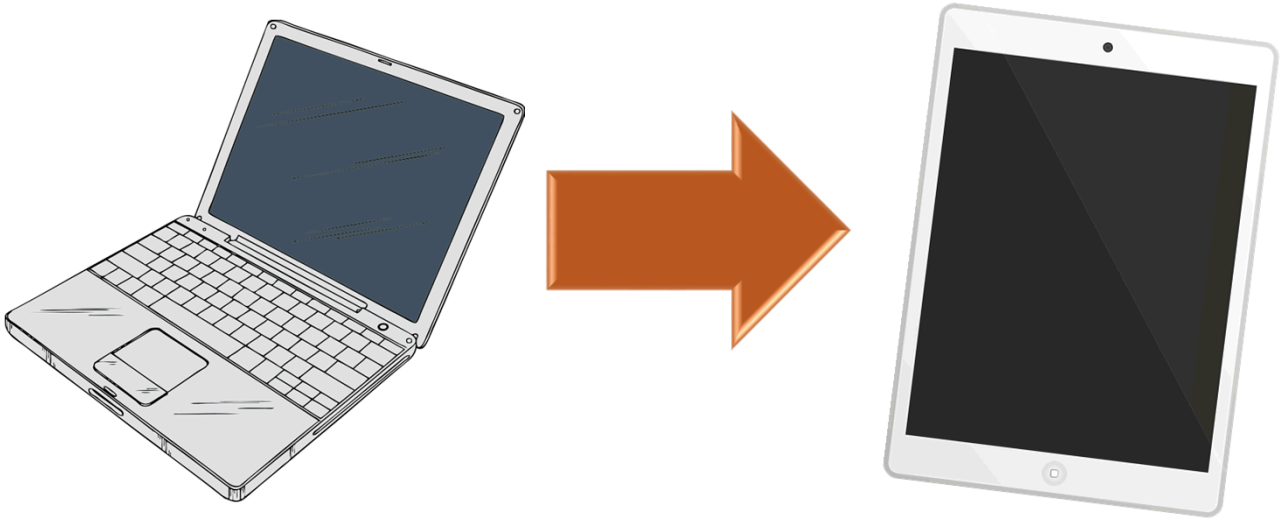
- Two International Safeguards Scenarios
  - Base Case
  - Expanded Case
- Identify information and computer security concerns
- Propose general mitigation strategies
- Offer applications relevant to other mobile technology users in the nuclear field



Base Case: Tablet Computer Replacing Inspector Laptop

- Mobile device will be a tablet computer
- Tablet will replace inspector laptop
  - Required to run all software currently used on laptop
- Data connections will be conducted wirelessly
- Tablet will not replace safeguards verification equipment



Computer and Information Security Concerns (Base Case)

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- Network Connections and Data Transmission
  - Wireless connection inherently less secure than wired
  - Confidentiality and integrity concerns
  - Vulnerability from network being used to access Internet
- Data Storage and Processing
  - Data brought from IAEA Headqua
    tablet could be viewed and altere
- User-Generated Security Concern
  - Users play critical role: can expos
  - Tablets will likely be used for pers
    laptops currently are
    - Can expose devices to threats re

Computer and Information Security Concerns (Base Case)

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- Transnational Information Security
  - Multi-country inspection trips require transporting multiple countries' safeguards-relevant data
    - Can make an enticing target
  - Information security concerns for i networks
    - A compromised device can transf
- Safeguards-Specific Issues
  - Authentication keys on device for
  - Mobile technologies would likely r Safeguards Environment

Mitigation Strategies (Base Case)

- Encryption
  - Currently: laptops have full-disk encryption
  - Disk encryption is common feature on most major tablet platforms
  - Virtual Private Network (VPN) to address insecure wireless network connection
- Remote Wiping
  - Application-, manufacturer-, or se
  - Mandatory “check-in” policy to en

Mitigation Strategies (Base Case)

- User Permissions
  - Current use of laptops is business and personal on same device
    - Would likely continue for tablets
  - Laptop hard drives are partitioned to separate official data from personal use
    - Tablets would likely use a softwar
- Training and Security Practices
  - Critical for users to be trained on l controls put in place
    - Can be a challenge given the diffe
  - Practice effective security in main
    - Timely updates and patching, anti

Expanded Case: More Technologies and Further Integration

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- Additional technologies
  - Smart phone, smart watch, wearable cameras, other wearable technology
- More complex data management system
  - Provide access to documents and reporting; live tasking support from Headquarters
- Global Positioning System capabi
  - Navigation and situational awaren
    Verification or Complementary Ac
- Integration with IAEA safeguards
- Inspector travel support
  - Voice-to-text language translation support

Computer and Information Security Concerns (Expanded Case)

- Broader Attack Surface
  - Each additional technology is a distinct platform that must be secured
  - Increased connectivity between devices could put more devices and information at risk from a single device's vulnerability
  - Increased availability of informatic
- System Availability
  - Highly connected feedback loops in field and at IAEA Headquarters concern

Mitigation Strategies (Expanded Case)

- Additional Training
- IAEA Safeguards Equipment Authorization process
  - May be required if mobile device fundamentally integrates with safeguards equipment
  - Includes usability and safety testir other verification
- Additional and alternative authenti
  - E.g., biometrics

Recommendations for Nuclear Community

Deploy the minimal necessary mobile technologies to meet the prescribed use case

Train users

Prioritize connection to secure networks

Engage with industry

Thank you

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