

SIEMENS

ДОБРО ПОЖАЛОВАТЬ

SIEMENS AG ENERGY MANAGEMENT

ENERGY AUTOMATION - SMART GRID

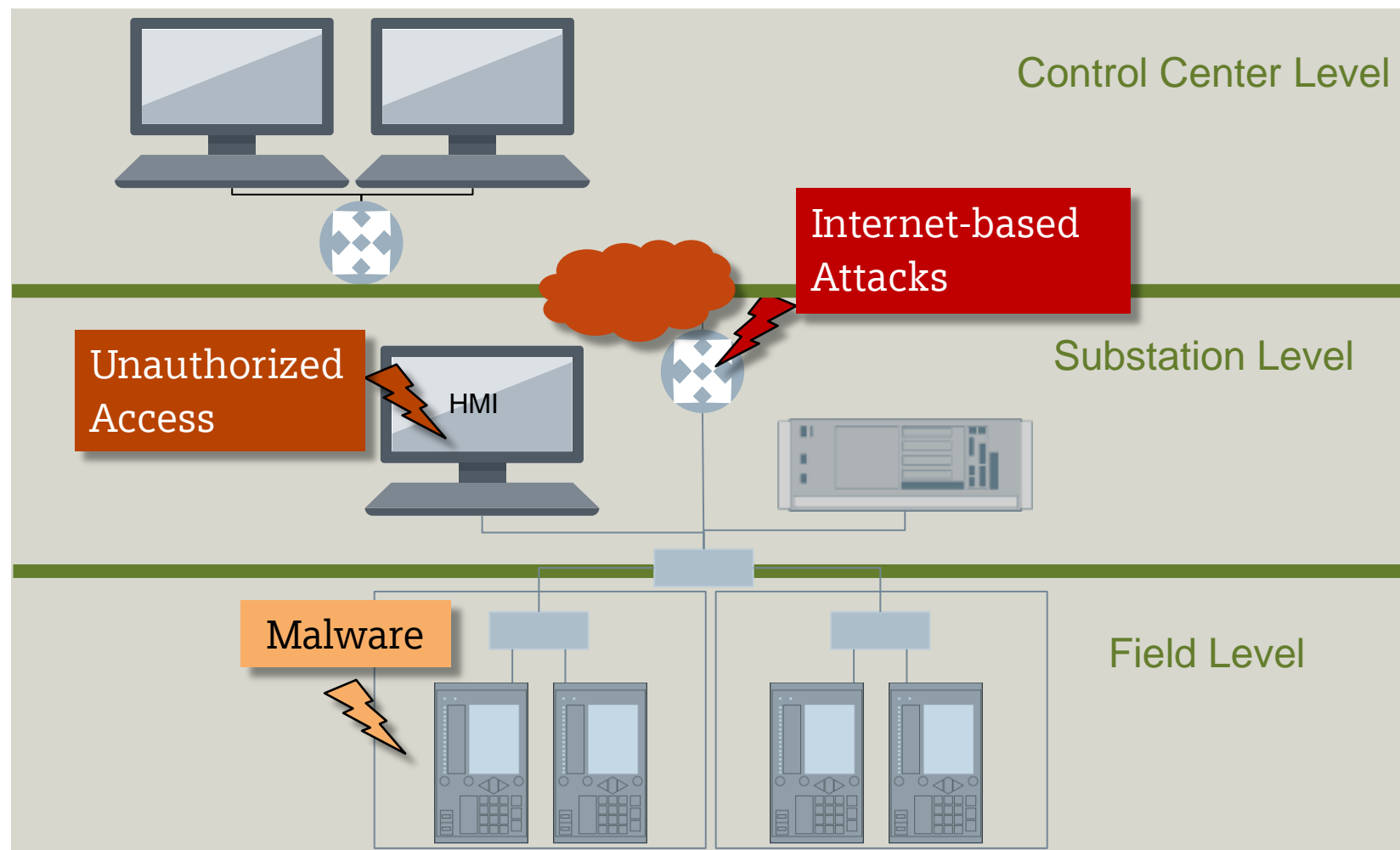


Frederic Buchi, Energy Management Division, Siemens AG

Cyber Security in Energy Networks

Digital Substations are vulnerable to Cyber Attacks

Connectivity increases the exposure to Cyber Threats



Cyber Security in Energy Management – Our Offerings

Secure Products: Example SIPROTEC 5 Protection Devices

**Encryption of the communication line
between DIGSI 5 and the SIPROTEC 5 device**

Connection password according to
NERC-CIP and BDEW White Paper

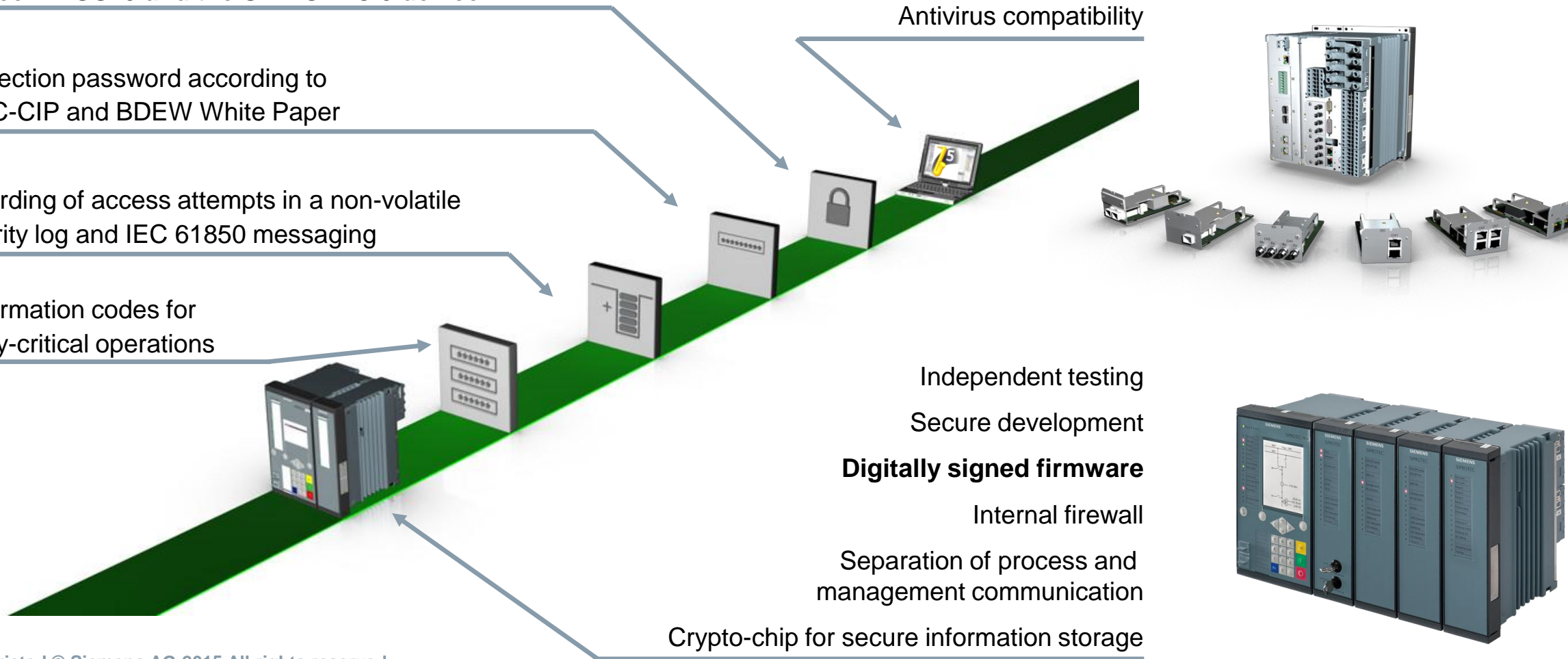
Recording of access attempts in a non-volatile
security log and IEC 61850 messaging

Confirmation codes for
safety-critical operations

Secure development
Patch management
Antivirus compatibility

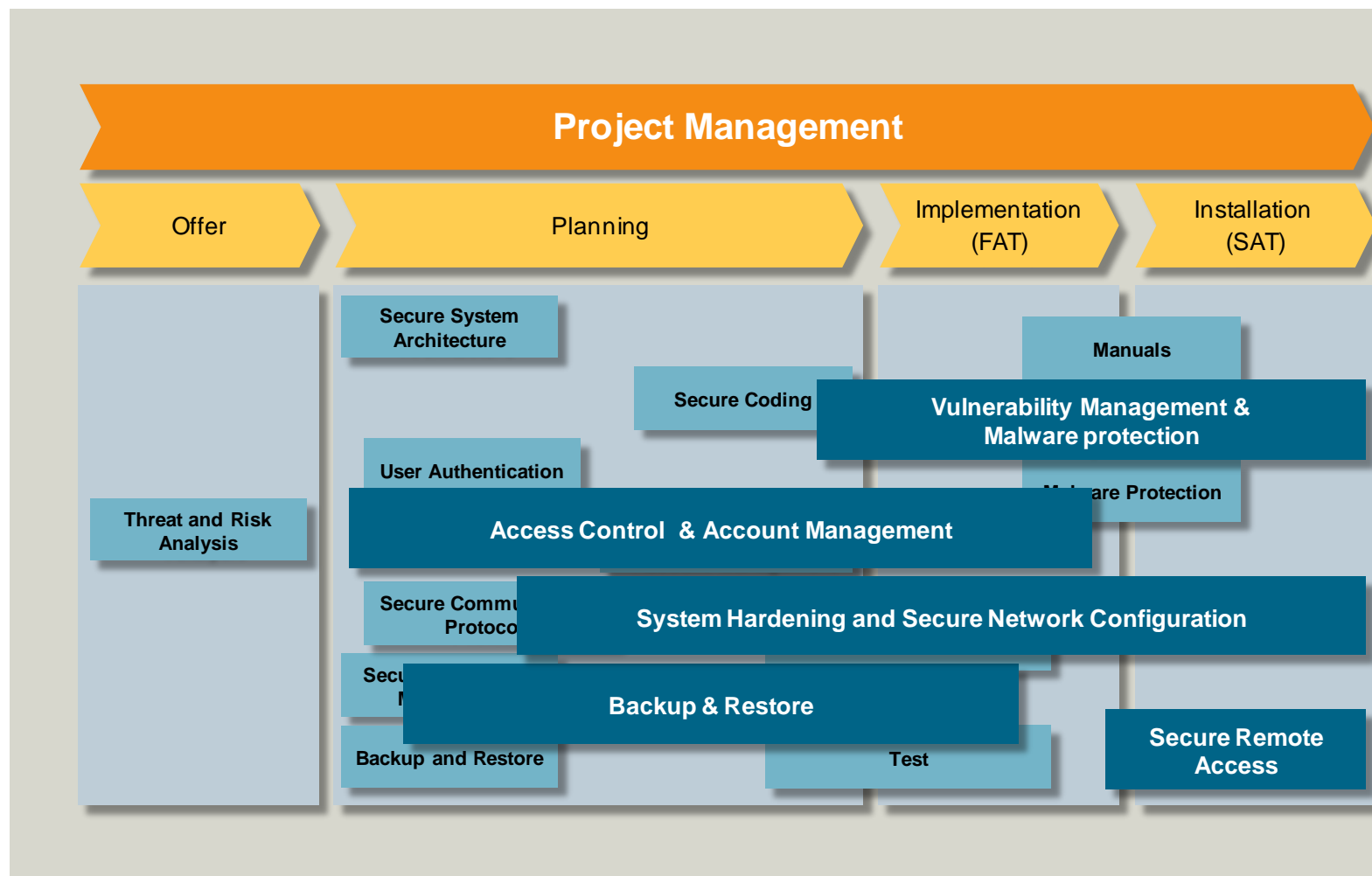
Independent testing
Secure development
Digitally signed firmware
Internal firewall
Separation of process and
management communication

Crypto-chip for secure information storage



Cyber Security over the lifecycle of a system

From Product Security to Operational Security



Cyber Security need a Holistic Approach

A holistic approach is crucial

People

- Awareness and understanding of cyber security.



Products

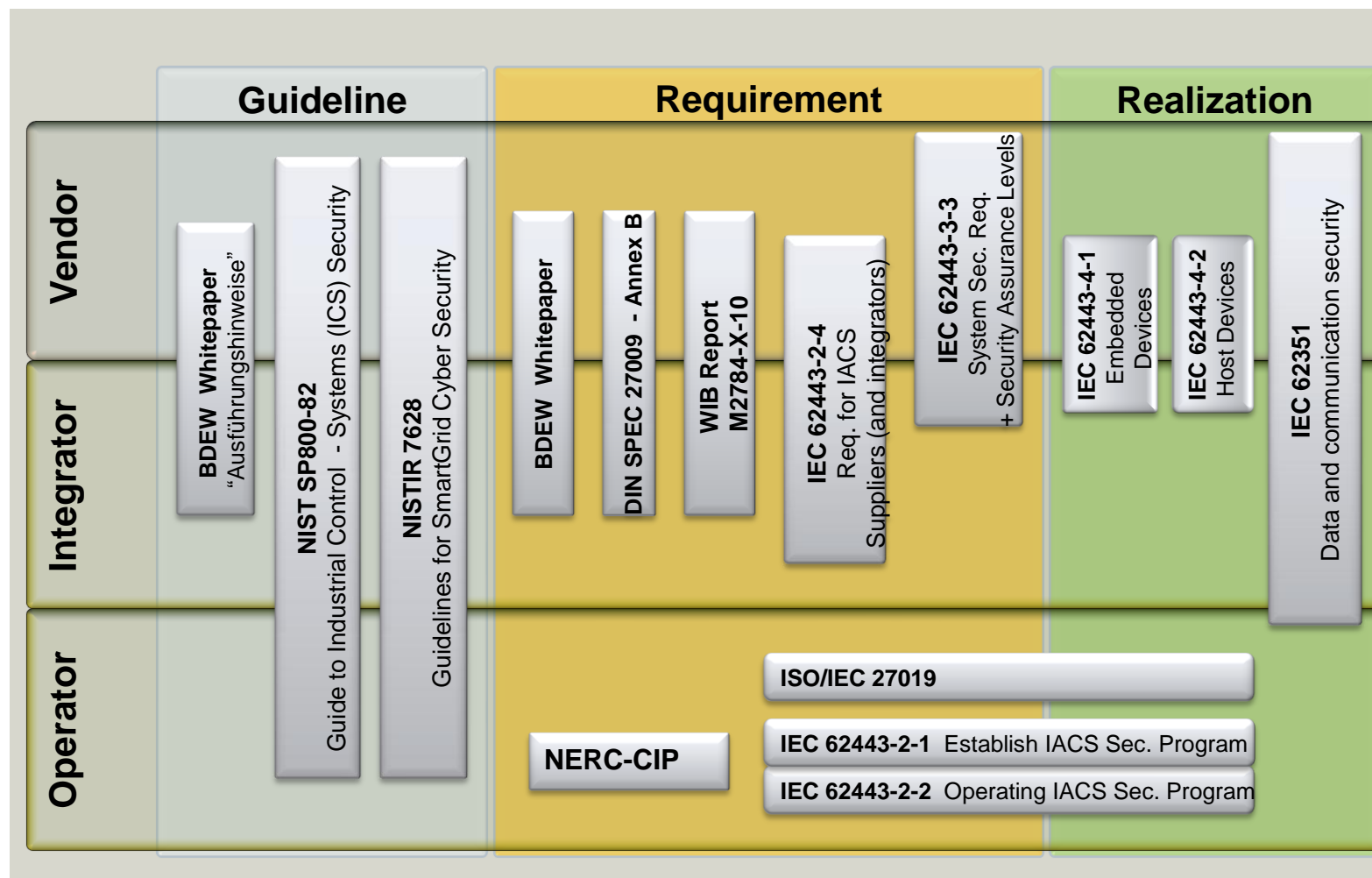
- Support of CIA criteria (Confidentiality, Integrity, Availability)
- Complying with industry standards

Processes

- Covering the whole product life-cycle
- Fostering solution and operational requirements.

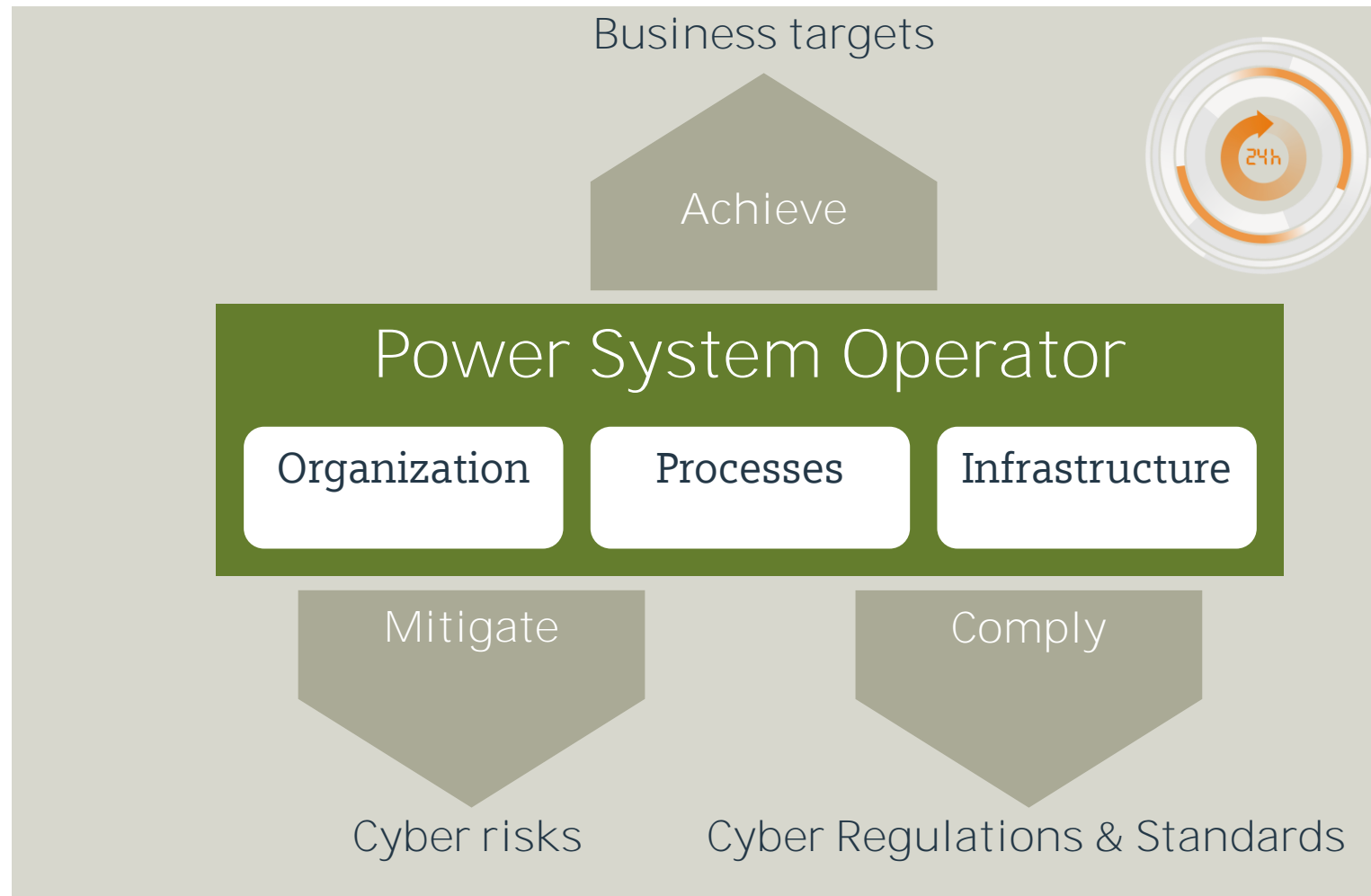
Categorization of Security Standards / Guidelines

Standard(s)
Matter(s)



Cyber Security from Operator Perspective

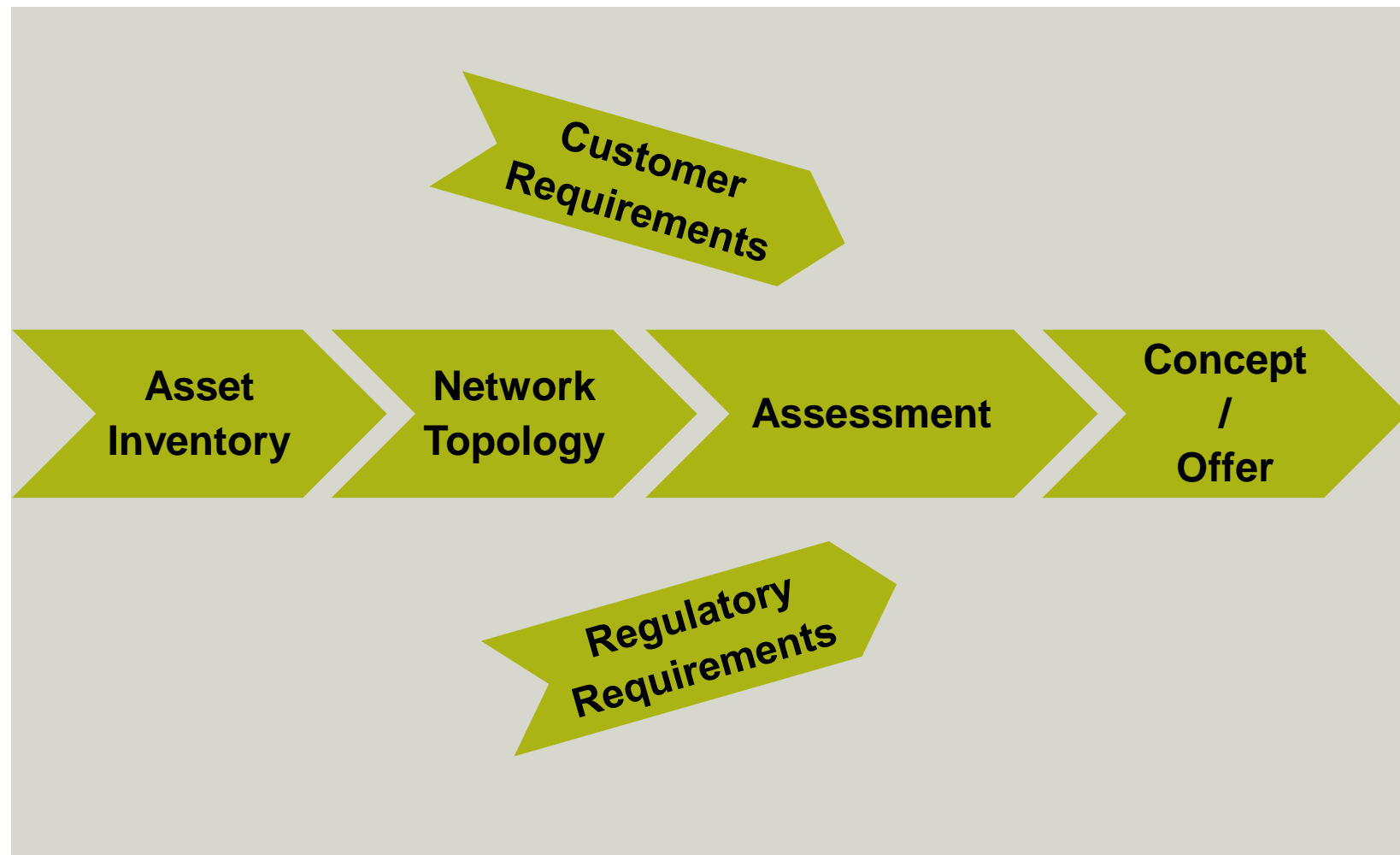
Are you prepared?



Siemens Solution

Migration concept to secure electrical substations

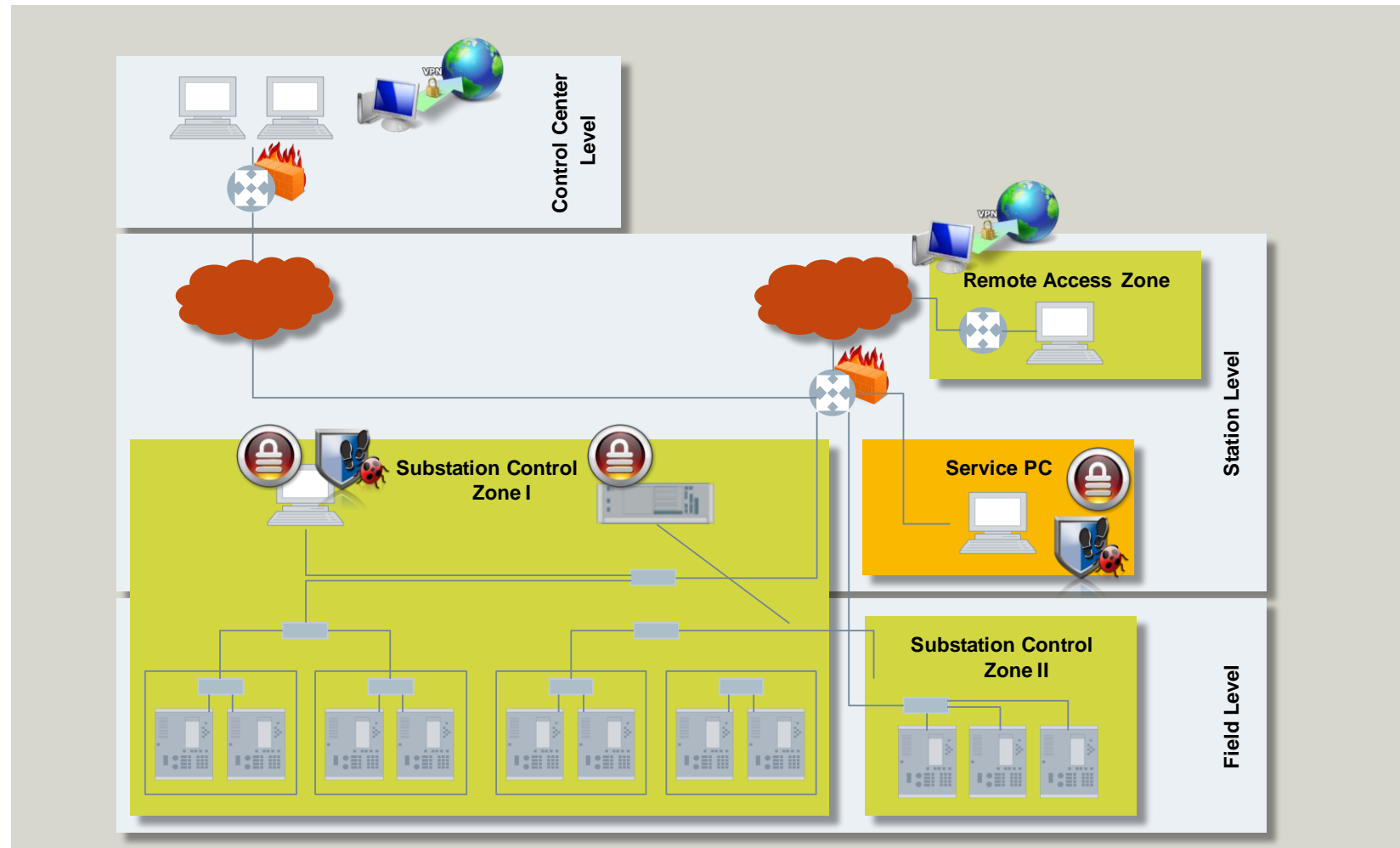
An approach for making existing substations more secure



Siemens Solution Secure Substation Blueprint

Defining a
standardized
architecture

Example
Siemens Secure
Substation
Blueprint

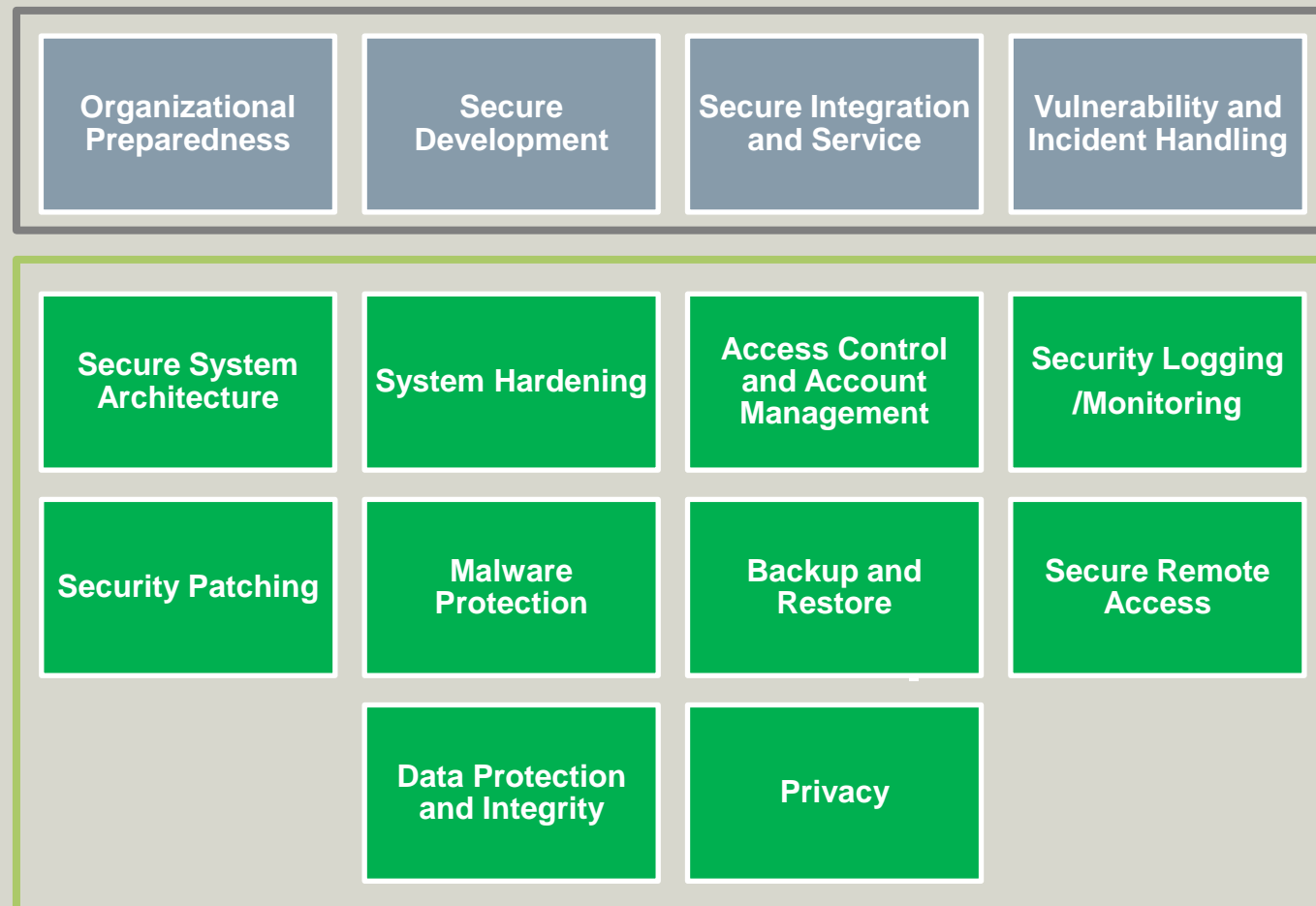


Siemens Solution

Categories of Cyber Security Controls

Implementing security controls, always a mix of:

- ✓ Processes and Policies
- ✓ Security Technologies

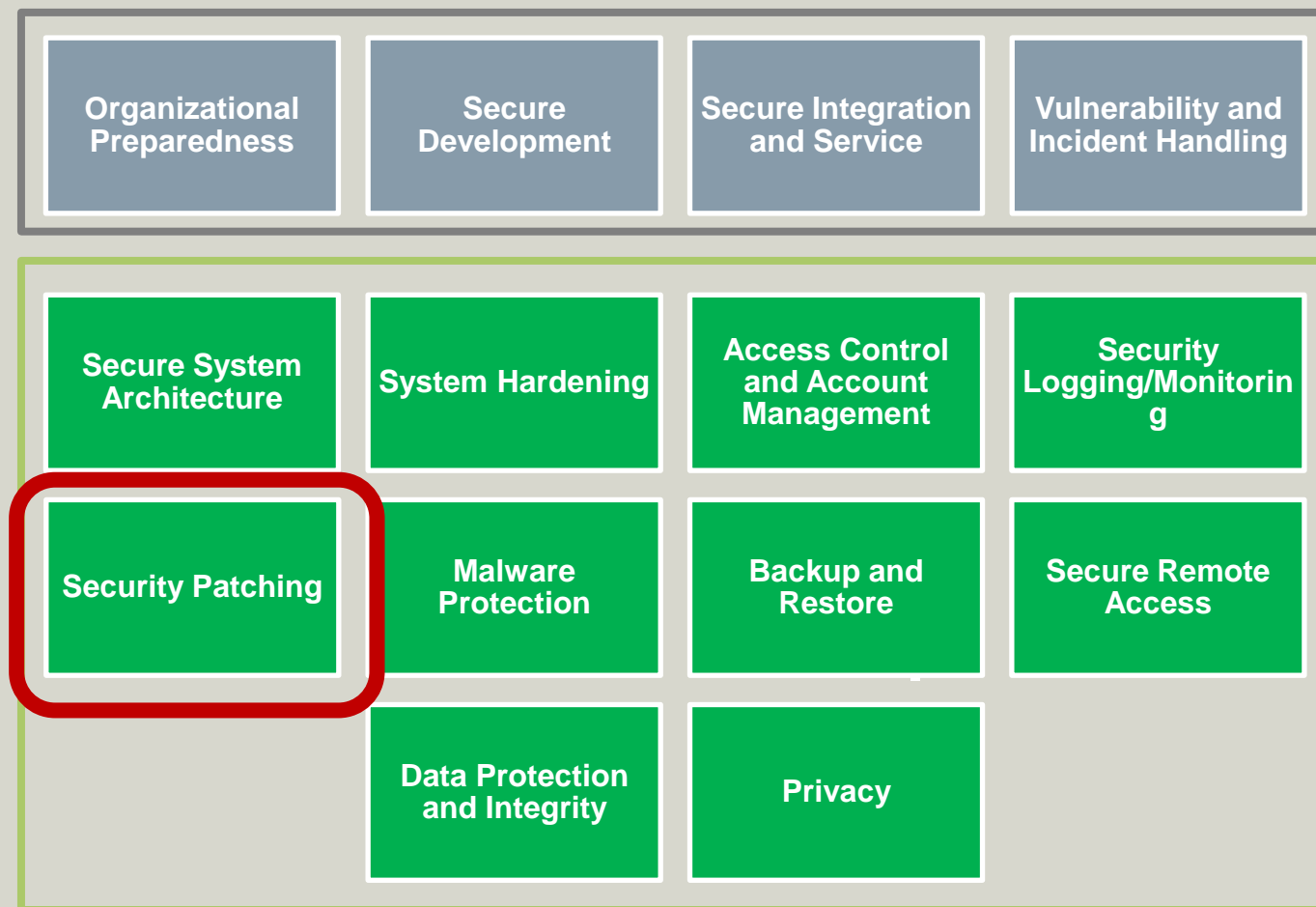


Siemens Solution

Categories of Cyber Security Controls – Zoom In Security Patching

Implementing security controls, always a mix of:

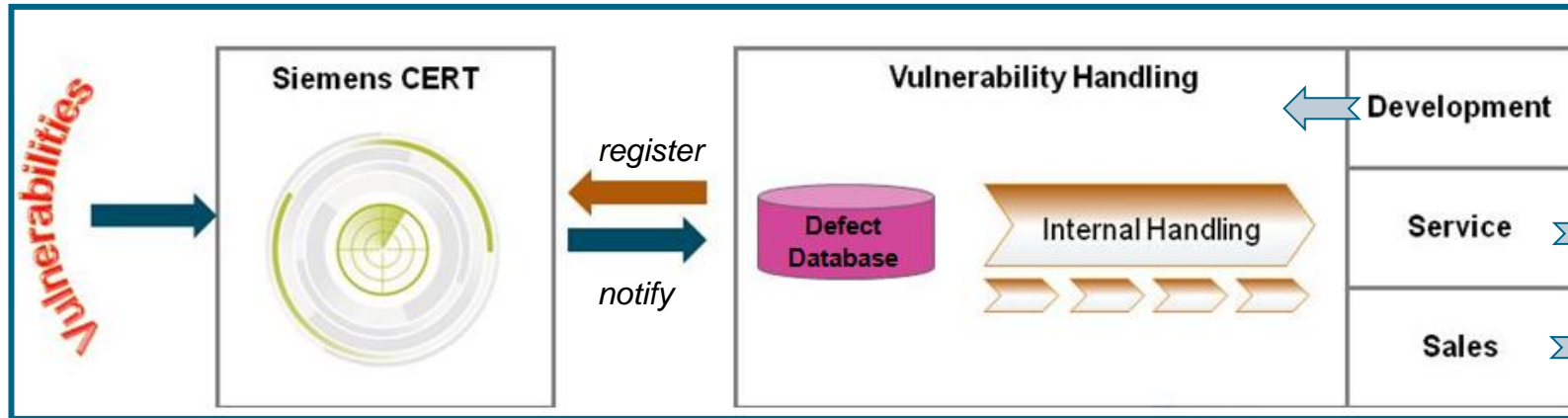
- ✓ Processes and Policies
- ✓ Security Technologies



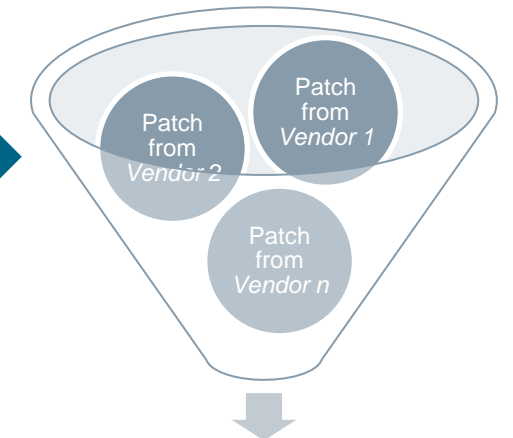
Security Patching

Keeping the Substation Secure & Up-to-date

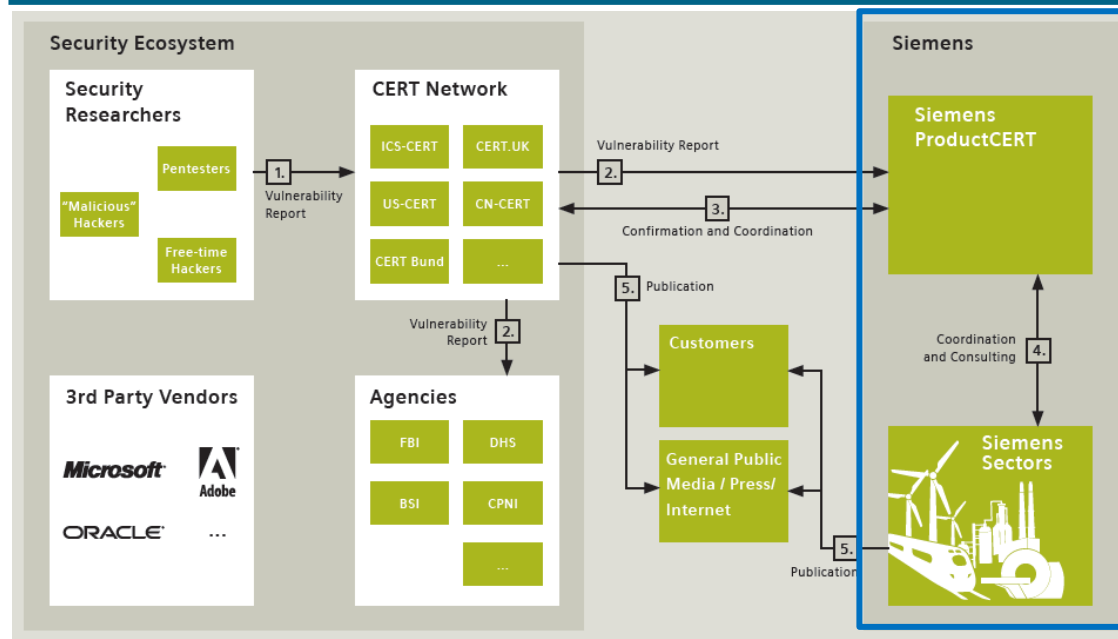
VENDOR-SIDE SECURITY PATCH MANAGEMENT



OPERATOR-SIDE SECURITY PATCH MANAGEMENT



Patches to apply in the substation



CERT: Computer Emergency Response Team

Regulation: *Keep the security patch status of DSAS up-to-date*

Challenges: *High availability and reliability of operation have priority*

Patch Management must be scalable, secure and cost-efficient

Cyber Security in Energy Management – Our Offerings

Today
Siemens Offerings

Consulting

- **Security Assessments** for existing infrastructure, e.g. Hardening
- **BDEW white paper or NERC CIP compliance audit**
- Consultancy for **secure integration of Siemens products and systems**
- Holistic Security Consultancy via **Smart Grid Compass**

Penetration Tests

- **Network penetration tests** at customer infrastructure (simulating external and internal cyber attacks)

Products & Solutions

- **Centralized Access Control and Password Management**
- **Secure Substation**, e.g. migration to a secure substation
- **BDEW white paper compliance modules and products**

Services

- **Cyber Security Training**
- **Security Patch Management**



Thank You



Frederic Buchi

**Cyber Security Promoter
Siemens Energy Management
E-mail: frederic.buchi@siemens.com**

siemens.com/answers