Introduction to Cyber Security Monitoring Service for OT System

Panasonic Cyber Security Team

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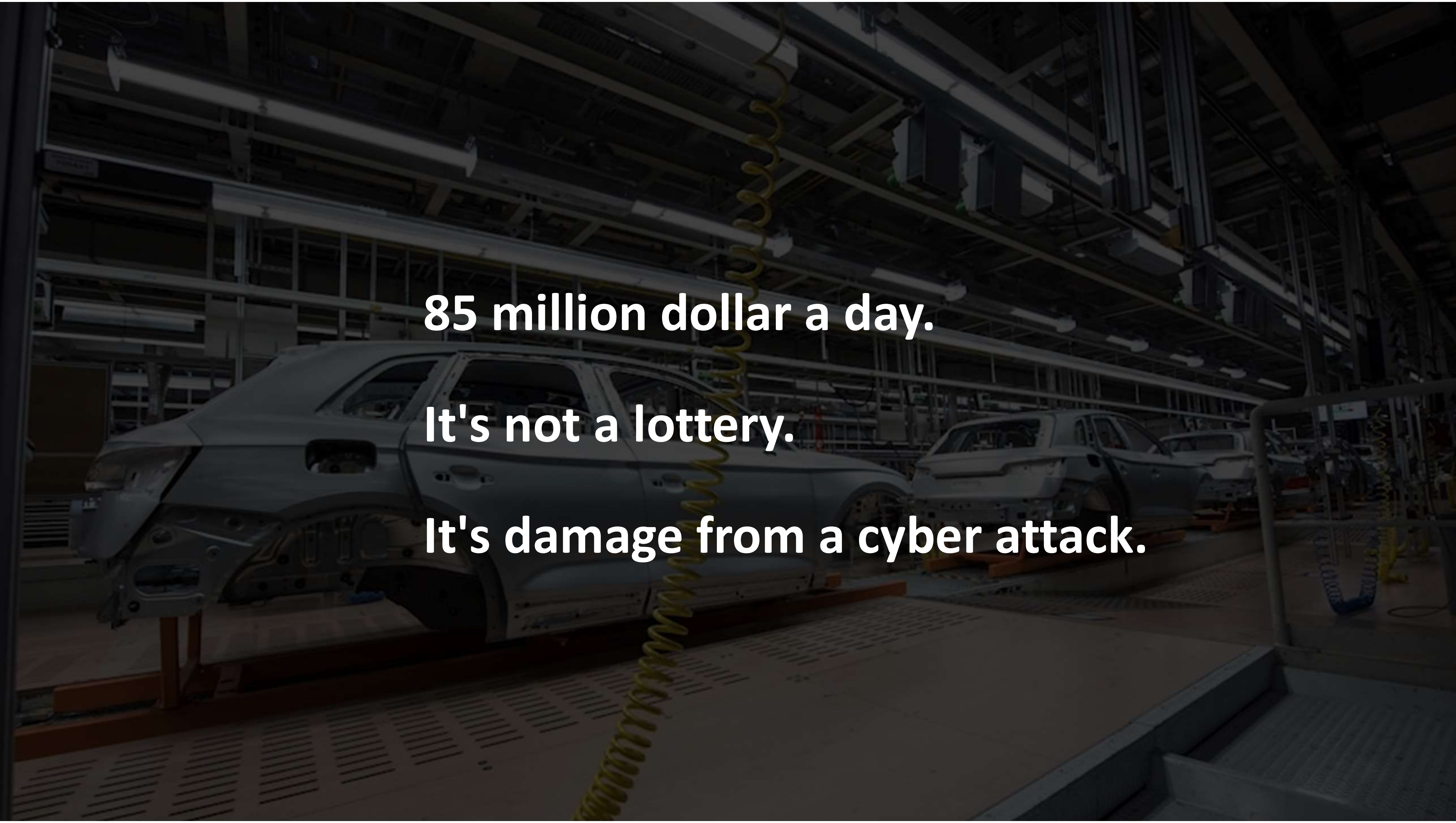


85 million dollar a day.

It's not a lottery.

It's damage from a cyber attack.

Market Background

Market Background

Once an OT system is compromised by a cyberattack, its core functions can be severely disrupted—potentially halting production and causing significant damage to the business.

2018

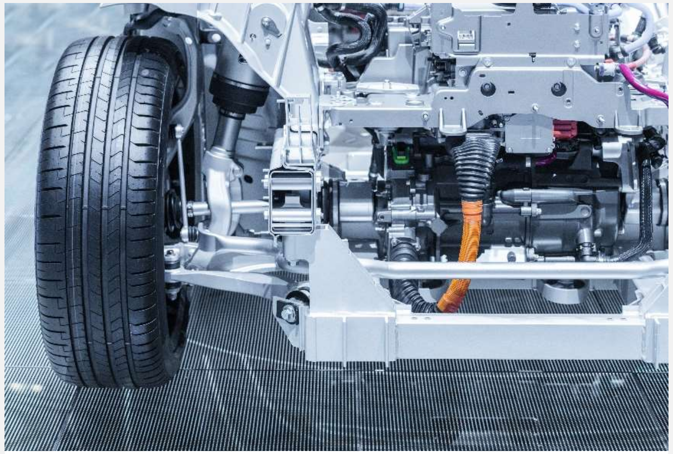
Semiconductor company hit by ransomware

More than 10,000 PCs were infected with a variant of the ransomware "WannaCry“, causing factory shutdown. The damage is said to be about $256 million. The infection was caused by human error—new devce was connected to the network without undergoing the required virus scan.

2020

Targeted Attack at automobile company

A targeted cyberattack brought global production to a standstill at a major automaker. As IT and OT become deeply integrated in manufacturing, this incident served as a wake-up call—cyber threats now have the power to shut down physical operations worldwide.



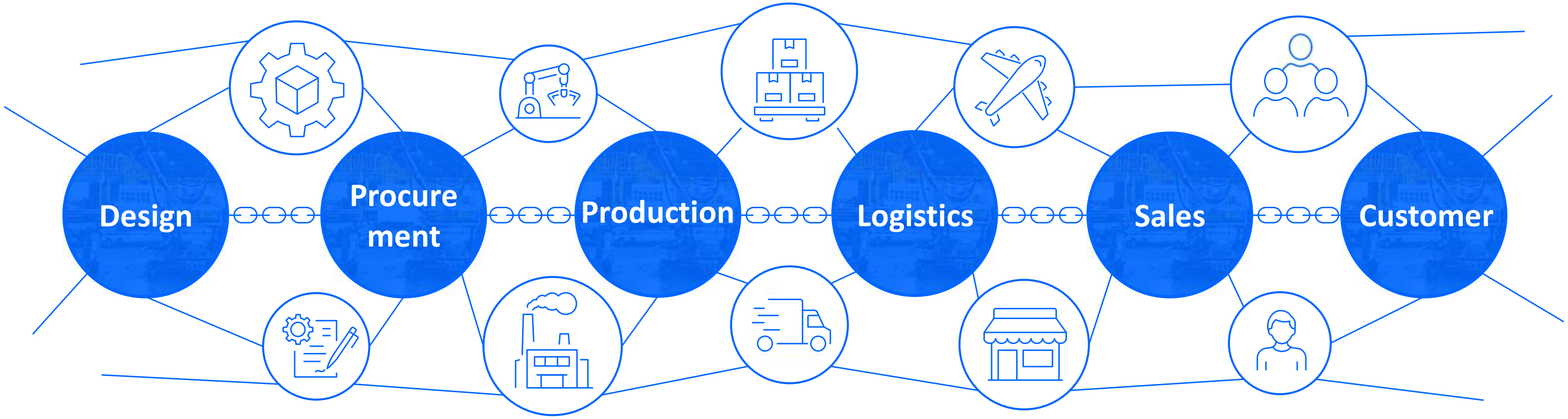
2022

Supply Chain Attack

A ransomware attack on a subsidiary parts supplier forced its parent company to halt operations at all domestic plants.
This incident highlighted the vulnerability of supply chains to cyberattacks and sparked global awareness of the need for stronger cybersecurity.

Market Background

In the coming era, securing the entire supply chain will be critical to ensuring operational stability and business resilience.



Today’s supply chains are deeply interconnected, involving numerous companies and processes that depend on one another. This complexity increases the risk of cyberattacks, especially through suppliers and partners. Such attacks can have a widespread impact on business operations. To address this, it is essential to implement comprehensive security measures across the entire supply chain. Doing so not only reduces risk and ensures business continuity but also strengthens trust with customers and partners.

Market Background

Among various international standards, security monitoring is required for Operational Technology.

NIST SP800-82 Rev.3

NIST SP 800-82 Rev.3 provides cybersecurity guidance for Industrial Control Systems (ICS) and Operational Technology (OT). It emphasizes availability and safety, supporting risk management, defense-in-depth, network segmentation, continuous <u>security monitoring</u>, and anomaly detection.

NIST SP800-171

NIST SP 800-171 defines security requirements to protect Controlled Unclassified Information (CUI) in non-federal systems. It includes 14 control families and emphasizes not only prevention but also <u>detection</u>—such as logging and monitoring—<u>to identify and respond to threats quickly</u>.

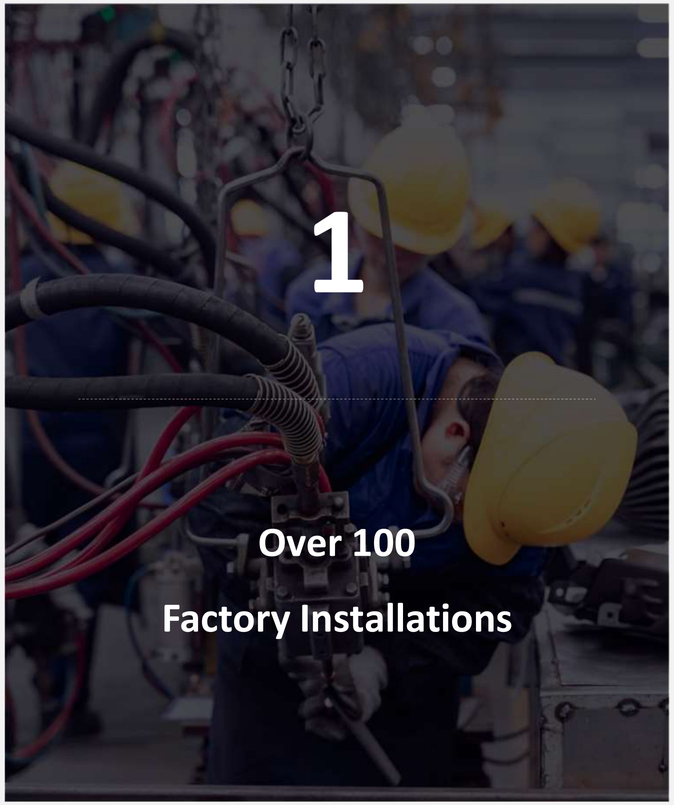
ISA/IEC62443

IEC 62443 is a global cybersecurity standard for industrial control systems. It defines a layered defense approach and <u>mandates threat detection capabilities, such as network monitoring</u>, to identify anormaly activities and enhance operational security and resilience.

Panasonic
Factory Security Initiatives

Panasonic's Factory Security Initiatives

Three Initiatives Only Global Manufacturers Can Do



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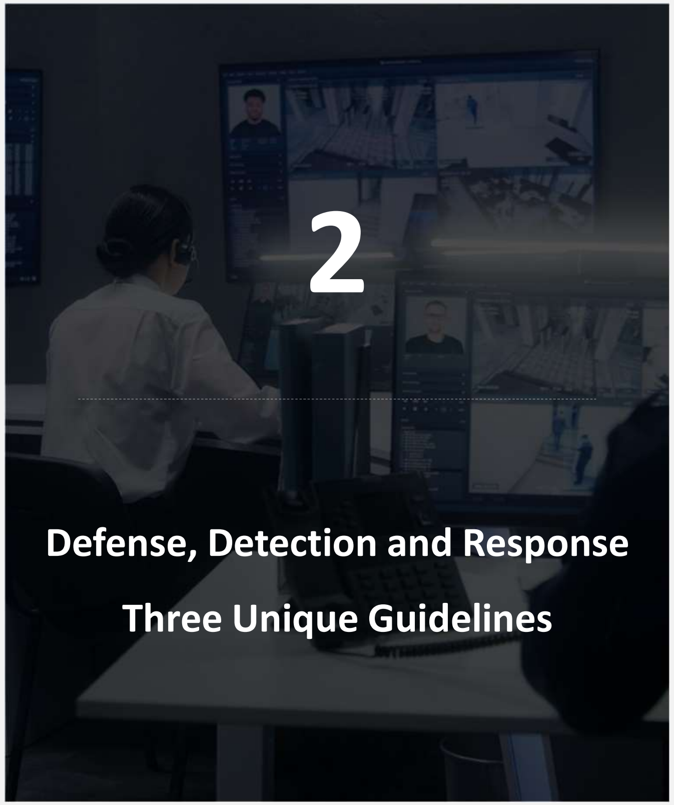
Over 100

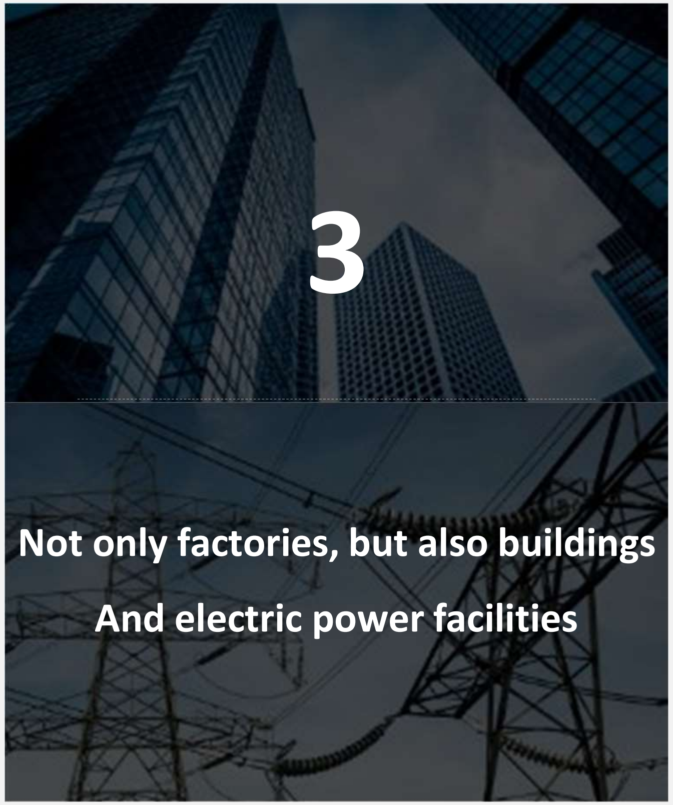
Factory Installations



2

Defense, Detection and Response

Three Unique Guidelines



3

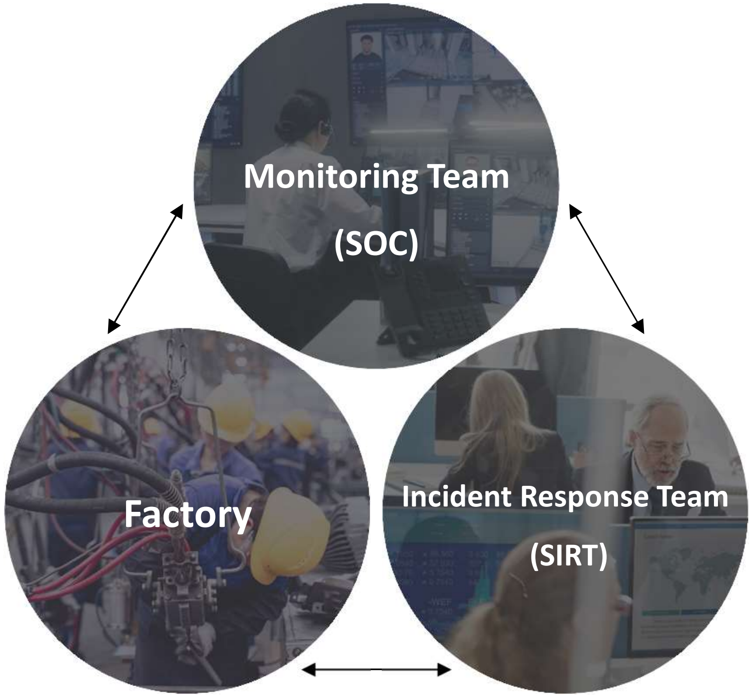
Not only factories, but also buildings

And electric power facilities

Panasonic's Factory Security Initiatives

We conduct cybersecurity monitoring of over 100 diverse factories.

Panasonic operates approximately **300 manufacturing sites globally**. These factories produce a wide range of products—not only consumer electronics, but also chip resistors, housing materials, and more.
To date, we have implemented monitoring systems at over 100 of these sites, enabling tailored security monitoring based on the unique characteristics of each factory. Through this initiative, **we have accumulated valuable expertise in accurately identifying and managing the risks associated with diverse manufacturing operations.**
We have established a robust security framework through close collaboration between our factory teams, security monitoring teams, and incident response teams. This structure minimizes the impact on production activities in the event of an incident.
Looking ahead, we aim to complete the rollout of these systems across all sites by the end of fiscal year 2025. This will further enhance product safety and quality, allowing us to continue delivering products that earn the trust of our customers.

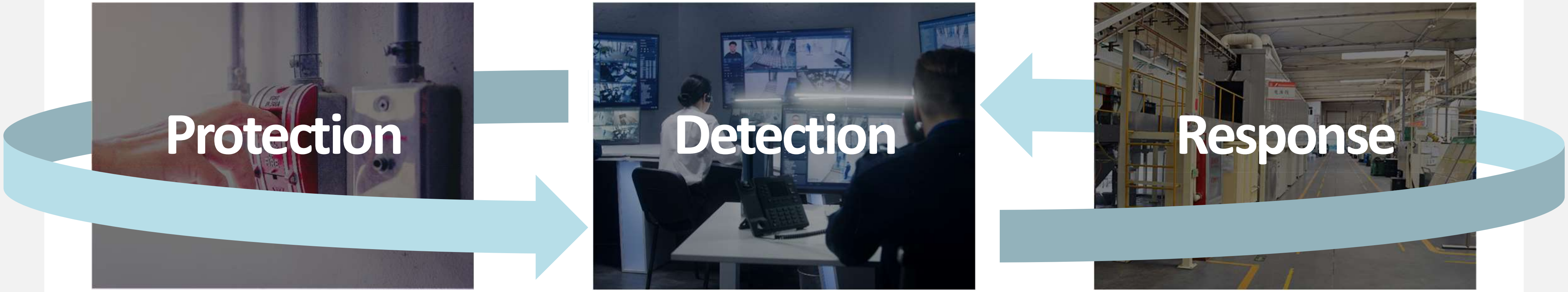


SOC: Security Operation Center

SIRT:Security Incident Response Team

Panasonic's Factory Security Initiatives

We have established three proprietary guidelines—Defense, Detection, and Response—to reinforce management and control. Through continuous improvement, we are constantly enhancing the security measures at our factories.



The Protection Guidelines Established in 2016

We enforce strict physical and network security measures, including security zoning, access control, equipment handling procedures, virus checks, firewalls, and network segmentation—ensuring robust protection against unauthorized access to our factories.

The Detection Guidelines Established in 2017

We mandate the implementation of detection systems that monitor network traffic, identify abnormal communications, and analyze threats, along with a dedicated security monitoring framework. This enables early detection of cyberattacks and minimizes potential damage to our factories.

The Incident Response Guidelines Established in 2018

We have established clear protocols for communication, initial response, containment, investigation, recovery, and recurrence prevention in the event—or risk—of factory shutdowns or data breaches. These measures aim to minimize damage and prevent future incidents.

Panasonic's Factory Security Initiatives

We are also expanding our service across various fields beyond factory

Panasonic
Cyber Security Team

Factory

Automobile

Building

Electric Power Plant (EMS)

Panasonic’s cybersecurity monitoring service is built on **cutting-edge technology and years of proven experience, protecting your manufacturing operations**. Leveraging expertise from our own factories, we are expanding into buildings, energy management system (EMS), and automotive fields—contributing to a safer society and a more prosperous future.

Cyber security for factories
Features of monitoring services

Features of Cyber Security Monitoring Services for Factories

Panasonic provides end-to-end cybersecurity monitoring service —from risk assessment to incident response.

Risk assessment service

We identify critical assets and develop threat scenarios to visualize security risks in factories. Based on these insights, we propose countermeasures that prioritize factory availability.

Cyber security monitoring service

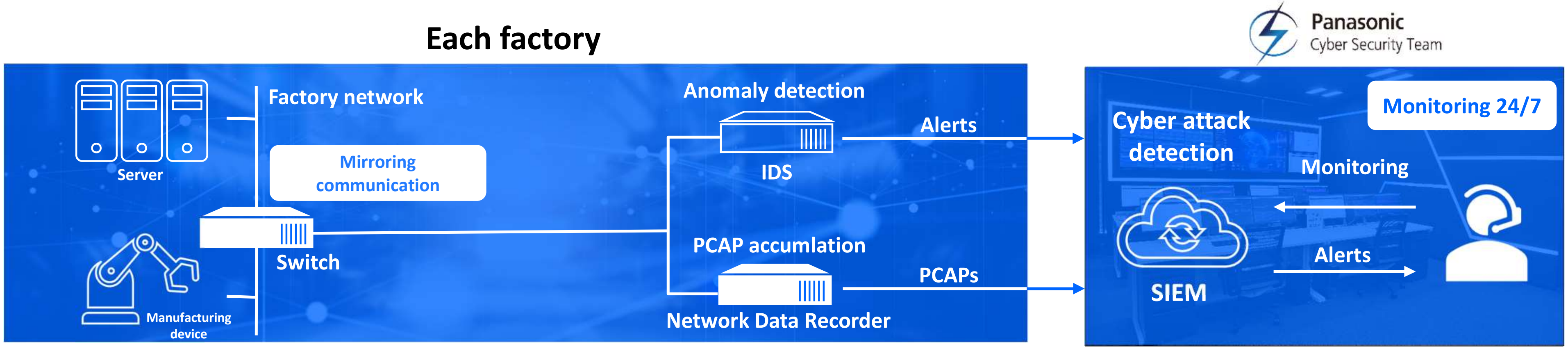
When an anomaly such as malware intrusion is detected, communication data is thoroughly analyzed to determine whether the affected device should be immediately isolated or if the impact would be minimal even without isolation. This approach helps minimize factory downtime. Panasonic offers a security monitoring service that prioritizes factory availability above all else.

Incident response support service

We create use case scenarios and conduct training. In case of a real incident, we work closely with on-site teams for swift response—covering containment, investigation, recovery, and prevention.

Features of Cybersecurity Monitoring Service for Factories

Our security monitoring system enables early detection of anomalies and minimizes factory downtime.



Passive Monitoring That Doesn't Impact Factory Networks

Passive monitoring uses mirrored network traffic, ensuring no impact on the factory's existing network infrastructure.

Anormaly Detection

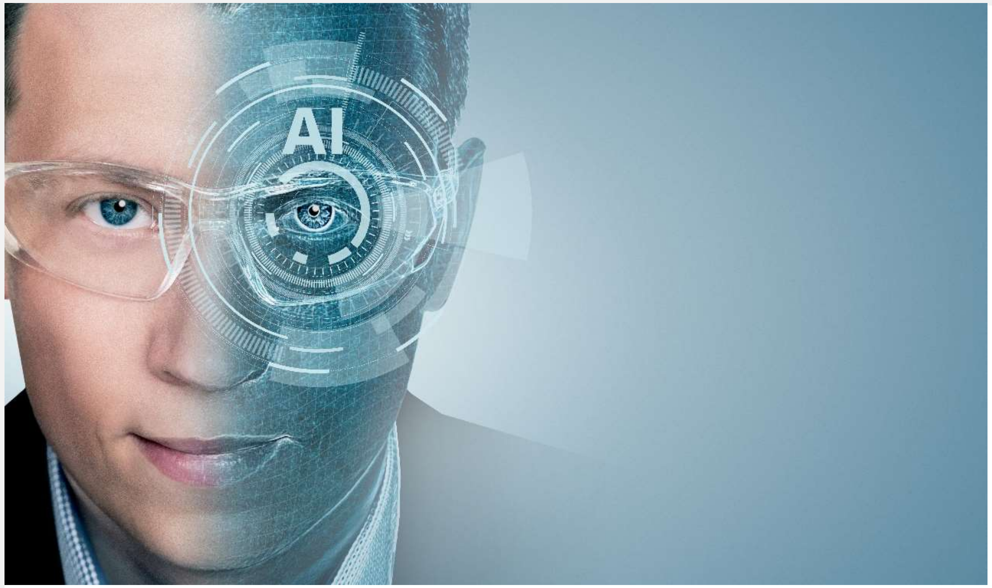
IDS(Intrusion Detection System) functions as a sensor that issues alerts when it detects abnormal or suspicious activity within network traffic.

24/7 Security Monitoring System

We deliver 24/7 global security monitoring around the world. Our service enables early threat detection for industrial environments, helping protect factories from cyberattacks.

Features of Cybersecurity Monitoring Service for Factories

We focus on reporting only the alerts that truly matter to you.



Double check by attack detection engine and analyst

Certified* and Experienced Analysts

*

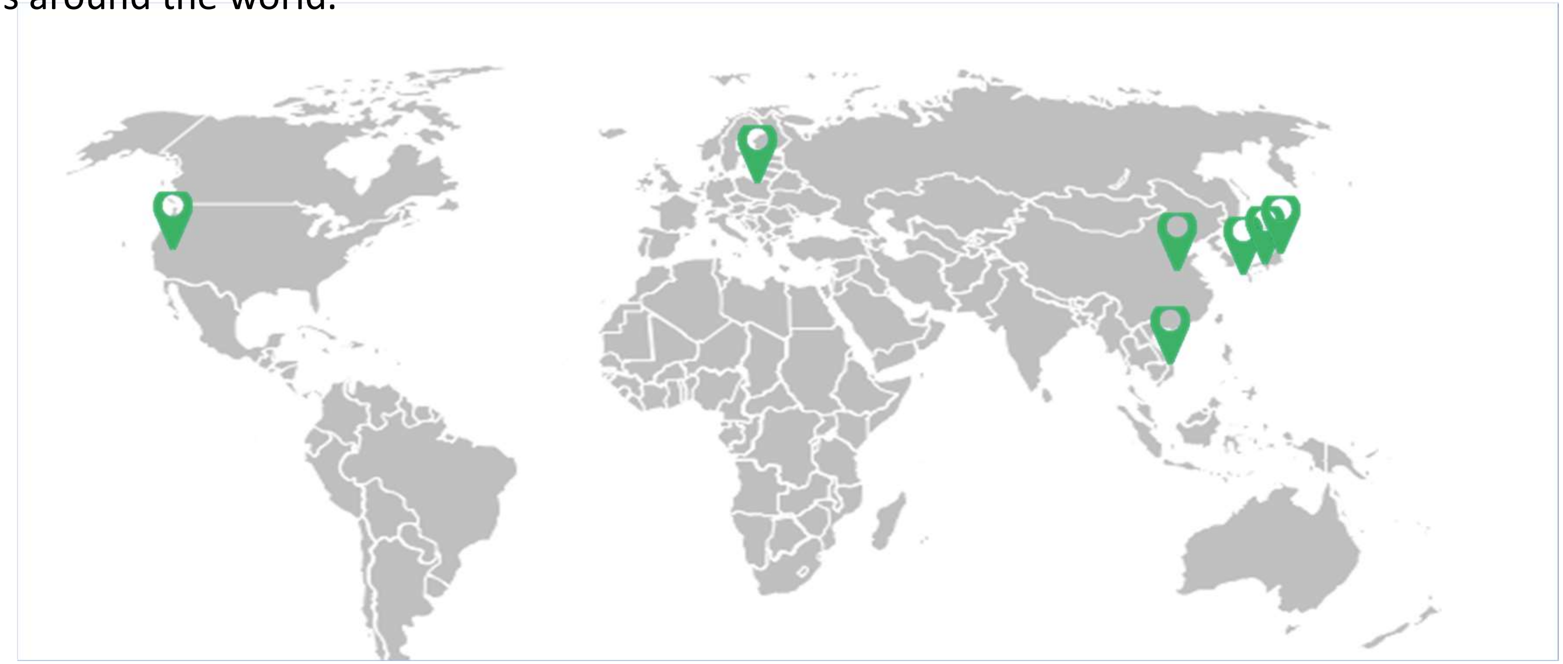
Automatically detected alerts often include a high number of false positives and over detections. Our team of certified security analysts—experts with extensive hands-on experience gained from monitoring over 100 of our own factories—carefully reviews and filters these alerts. By leveraging their deep expertise, they ensure that only the most critical and relevant alerts are reported, providing focused and effective monitoring for your factory.

*CEH (Certified Ethical Hacker) / CISSP(Certified Information Systems Security Professional) / OSCP(Offensive Security Certified Professional) / Registered Information Security Specialist, etc.

Features of Cybersecurity Monitoring Service for Factories

Our monitoring sites

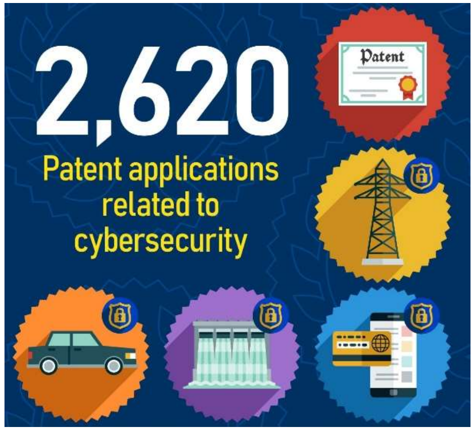
We have cybersecurity monitoring sites located in the United States, EU, Japan, China, and Southeast Asia. As a global manufacturing company, we are uniquely positioned to provide services to our customers' factories around the world.



Features of Cybersecurity Monitoring Service for Factories

Panasonic's Globally Recognized Cybersecurity Initiatives

Panasonic ranks
1st
In Japan* for cybersecurity patent applications



Panasonic holds the highest number of cybersecurity-related patents in Japan.

Panasonic Achieved the Highest Number of Cybersecurity-Related Patents in Japan.(2024) In the field of automotive security, Panasonic also demonstrates overwhelming patent strength across Japan, the United States, and Europe—holding 1,528 patents in Japan, 3,511 in the U.S., and 1,141 in Europe.

3.8　「防御」、「検知」、「対策」でエンドポイントを守るトータルサイバーセキュリティ

（a4-2）IoT向けセキュリティ構築技術（IoT機器向け評価検証プラットフォーム技術の研究開発）
委託先：パナソニック株式会社
（b5-1）IoTセキュリティ社会実装（IoTセキュリティ社会実装技術の研究開発）
委託先：パナソニック株式会社
再委託先（共同実施先）：PwCコンサルティング合同会社

【研究開発の目的】

IoT技術を活用することにより生産性やサービスの利便性が飛躍的に向上するため、IoT機器の普及が急速に進んでいる。一方で、IoT機器を標的とした攻撃も急増し、IoT機器を踏み台とした大規模な攻撃も発生している。IoT機器への攻撃は生命・財産に影響を及ぼす可能性もあるため、安全な社会インフラを実現するとともに、国内企業のグローバルな競争力を強化するためには、IoT機器に対するサイバー攻撃の対策は喫緊の課題である。

このような背景のなか、IoT機器におけるセキュリティの設計・指針となるガイドラインは策定されているが、具体的な実装方法が分からないことがIoTベンダーのお困りごととなっている。サイバー攻撃を防ぐためには、スペックの低いIoT機器でもITと同様の暗号・認証機能を実装し、暗号・認証機能で防げない攻撃に対しては早期に発見して対策する必要がある。また、攻撃者はセキュリティ対策が十分でないIoT機器を狙ってシステムへの侵入を試みるため、IoT機器のセキュリティ対策を全体的に底上げする必要がある。そこで、幅広いIoT機器で活用できるセキュリティ技術を開発するとともに、開発したセキュリティ技術を社会普及させるために、実装方法のガイドラインを作成する。

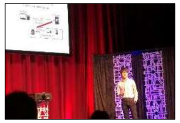
【研究開発の内容】

攻撃者はIoT機器の認証機能やソフトウェアの脆弱性を攻撃してIoT機器に侵入し、データの不正取得、改ざんなどを行うため、セキュリティ対策としては、なりすましによる不正侵入も含めてこれらの攻撃を防ぐことができる公開鍵暗号方式を用いたPKI（Public Key Infrastructure）による暗号・認証機能や、被害が拡大する前に早期にサイバー攻撃を検知する攻撃検知機能が有効である。PKIによる暗号・認証機能は、安全な通信を実現する暗号・認証機能だけでなく、暗号・認証鍵を生成する鍵生成機能、安全な鍵の生成

64　（SIP）重要インフラ等におけるサイバーセキュリティの確保　研究開発成果集

black hat EUROPE 2020

World's Largest Cybersecurity Conference



S4

OT Cybersecurity Conference

escar Embedded Security in Cars

Automotive Cybersecurity Conference

Participation in Government R&D Projects and Publishing papers at Security Conferences

Panasonic has been selected for a government R&D project and is participating in an initiative led by the METI in Japan to enhance factory security. Panasonic is also actively involved in international conferences on cybersecurity.

Thank you for your attention.

Panasonic Cyber Security Team