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Incorporating Cyber Security into Water Utility Master Planning

Thomas House – Rockwell Automation
NJ AWWA Fal Meeting
September 2018

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Rockwell Automation

where were you on

JUNE 27th 2017

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You don’t have to be the *target* to be a *victim*

CHALLENGES FACING INDUSTRIAL INFRASTRUCTURE

IT/OT Convergence

Skills Gap

Vulnerability

Inflexibility

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INDUSTRIAL CYBER RISK EQUATION

$$f\left(\text{Vulnerabilities}\right)\left(\text{Threats}\right)\left(\text{Consequences}\right)$$

$$\frac{}{\text{Countermeasures}}$$

$$\left(\text{Basic Industrial Cyber Hygiene} + \text{Advanced Countermeasures}\right)$$

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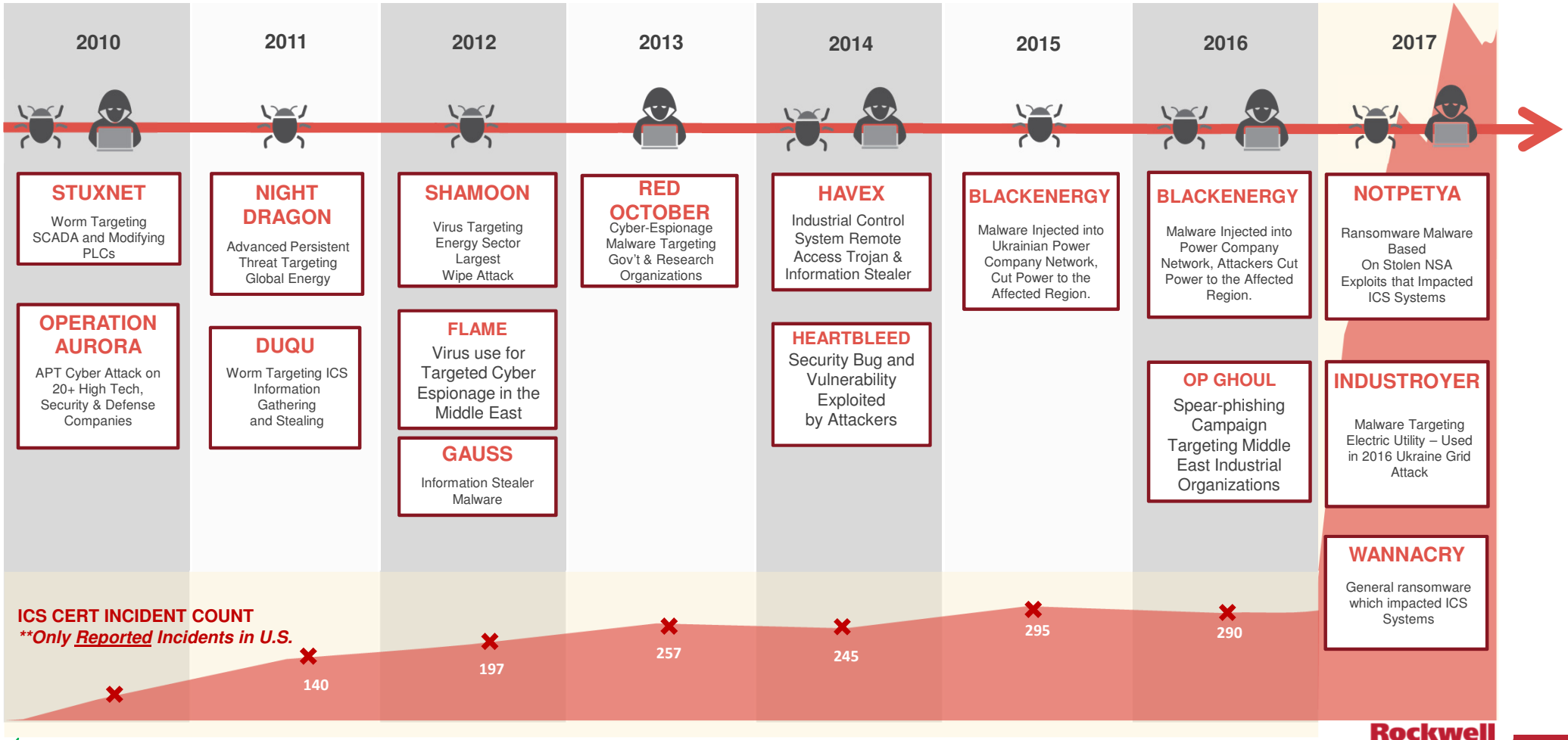
ICS-Focused Campaigns, Attacks, Frequency



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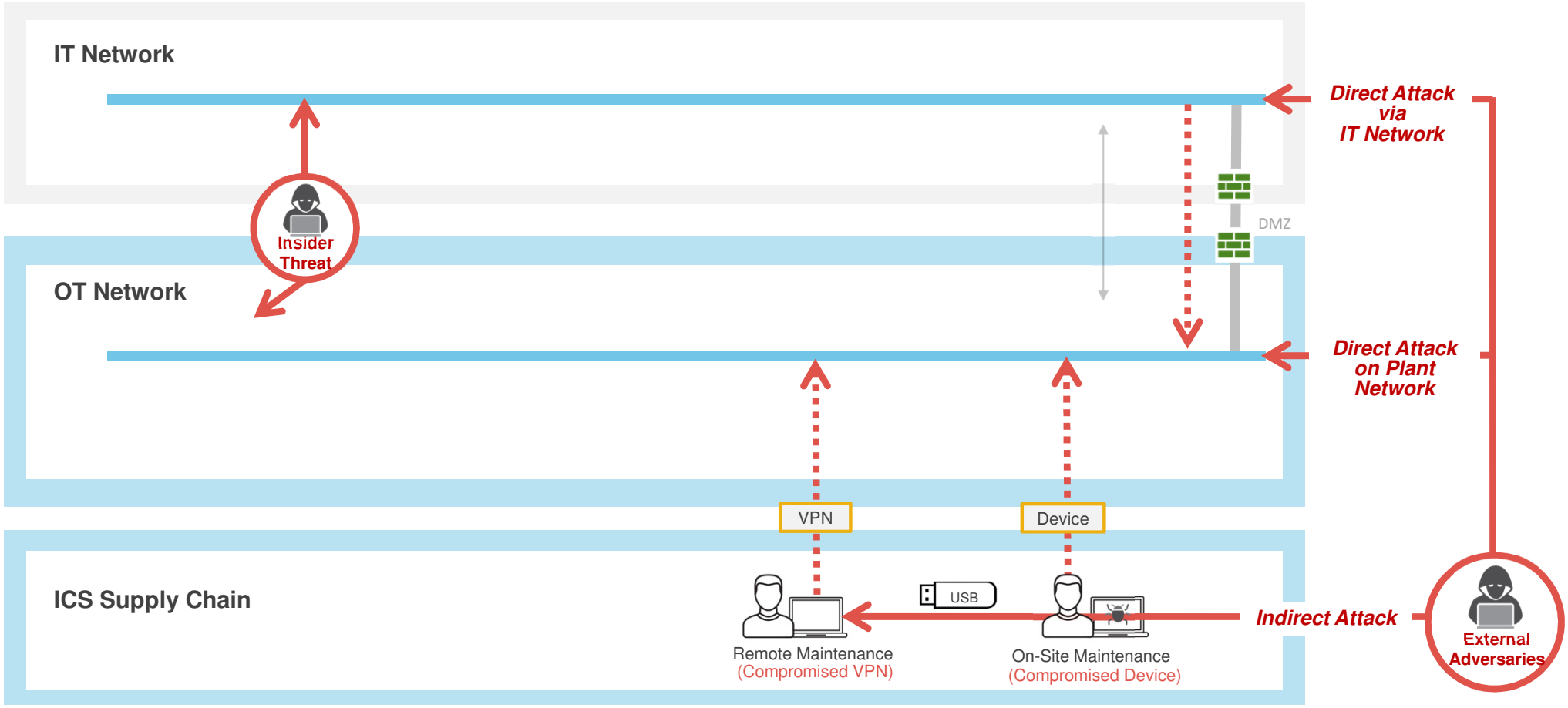
ICS THREAT VECTORS



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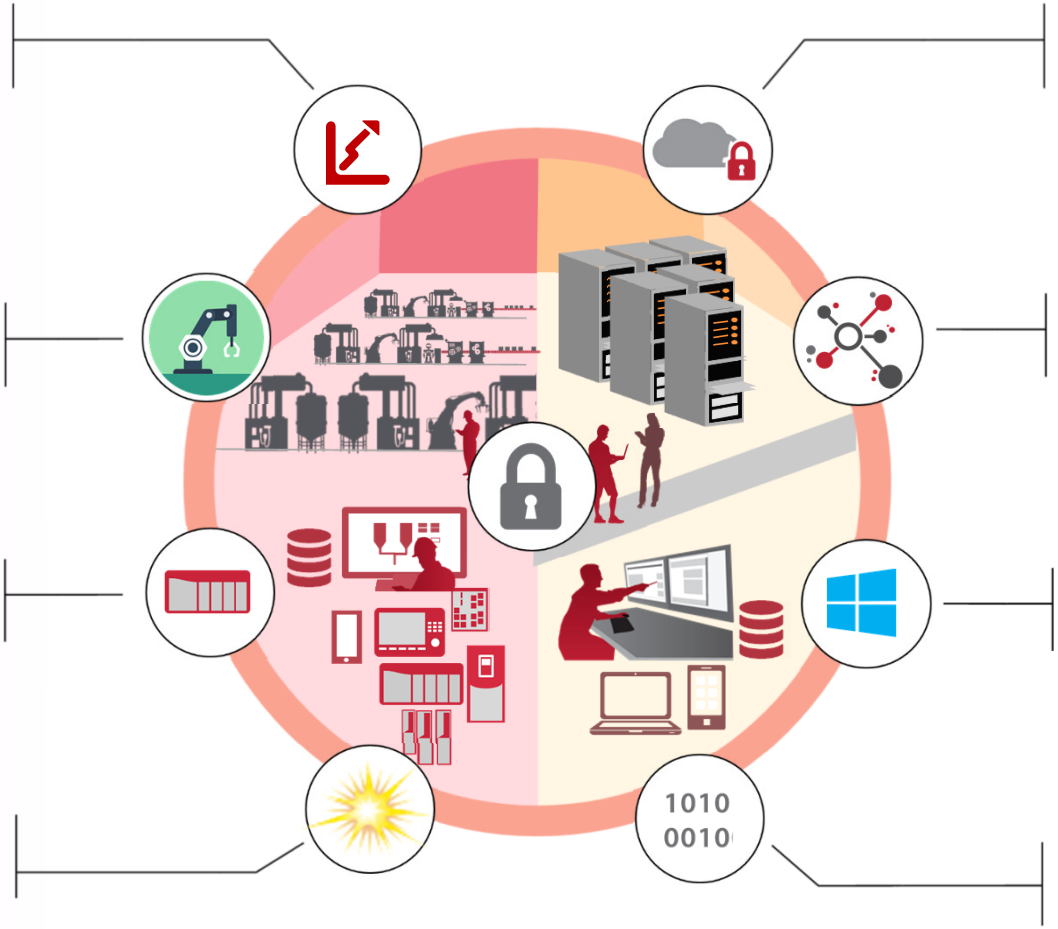
OT vs. IT

Priority is availability

Architectures are proprietary

End-points are heterogeneous, task specific with long lifespans

Outcomes are physical



Priority is confidentiality

Architectures are ubiquitous

End-points are of homogenous, multi-purpose with short lifespans

Outcomes are digital

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Attack Continuum

Identify **Protect** **Detect** **Respond** **Recover**

NIST cybersecurity framework

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Architectures Overview

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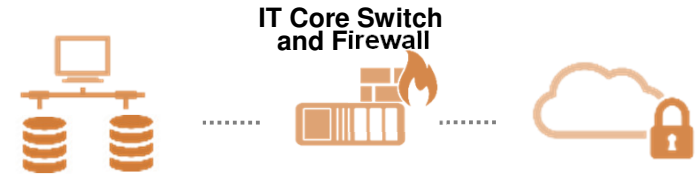
Networking Standards

Enterprise Zone: Levels 4-5



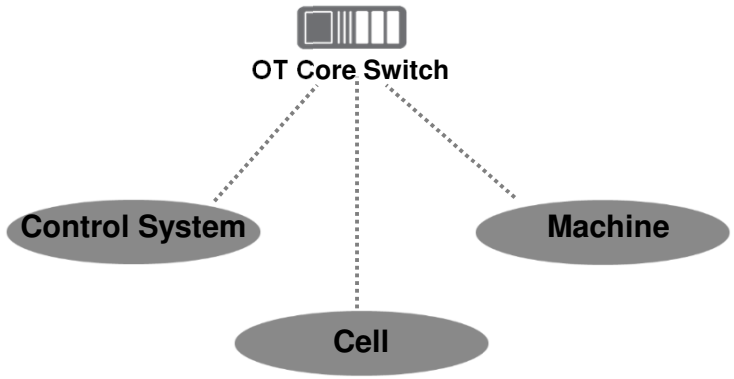
Industrial Zone: Levels 0-3

Level 3 – Site Operations

Level 2 – Area Supervisory Control

Level 1 - Controller

Level 0 - Process



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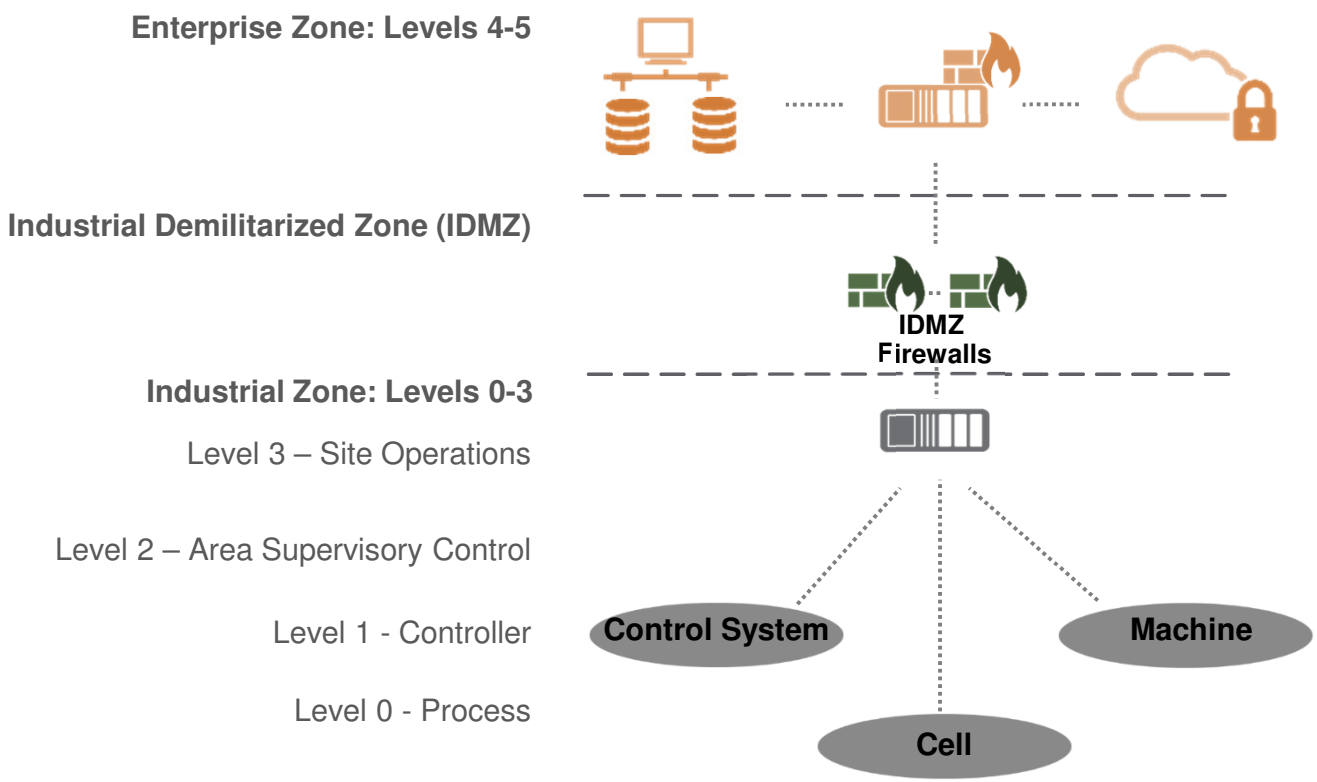
Build a Secure Network Infrastructure - IDMZ



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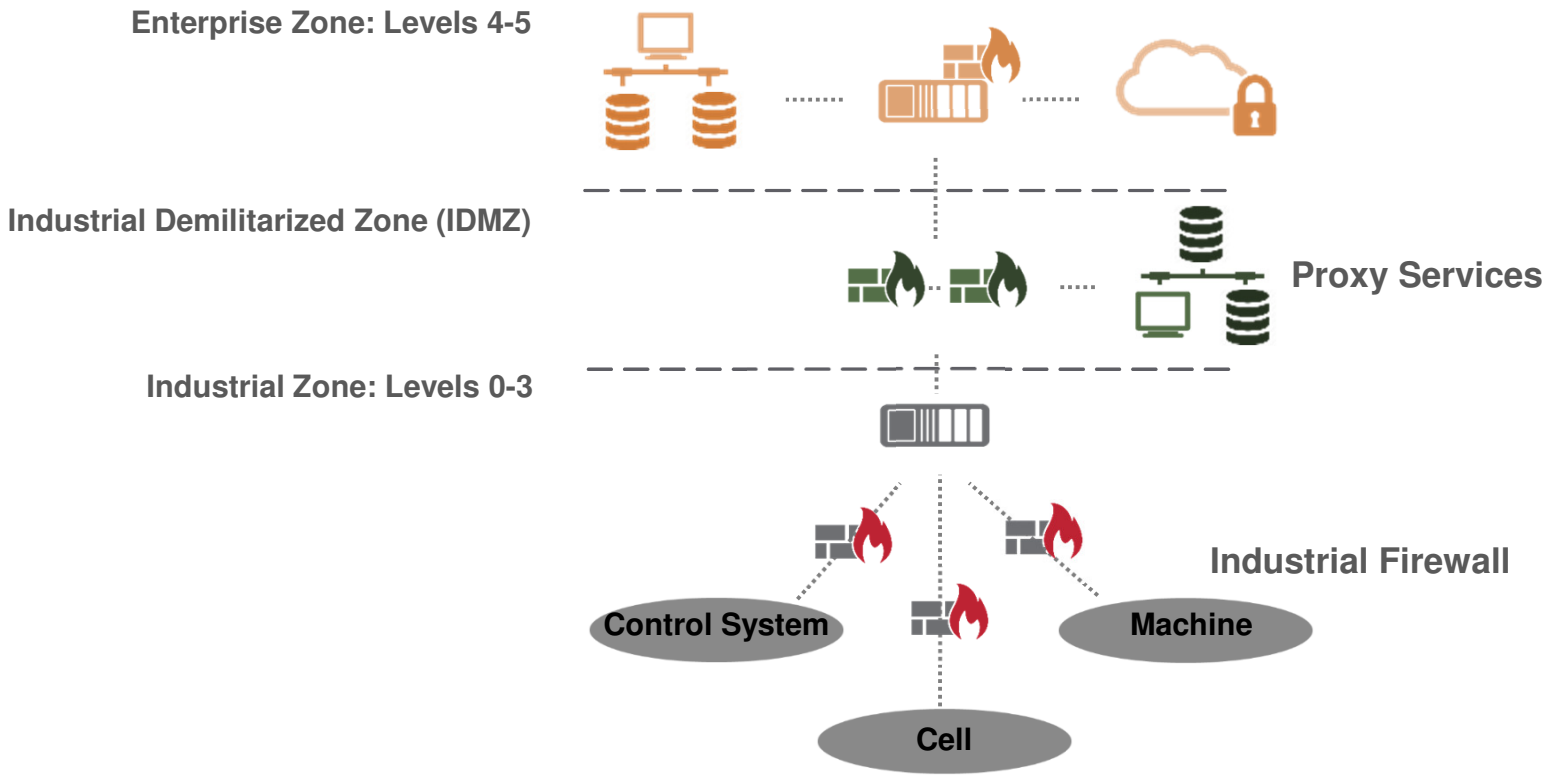
Segmentation and Best Practices



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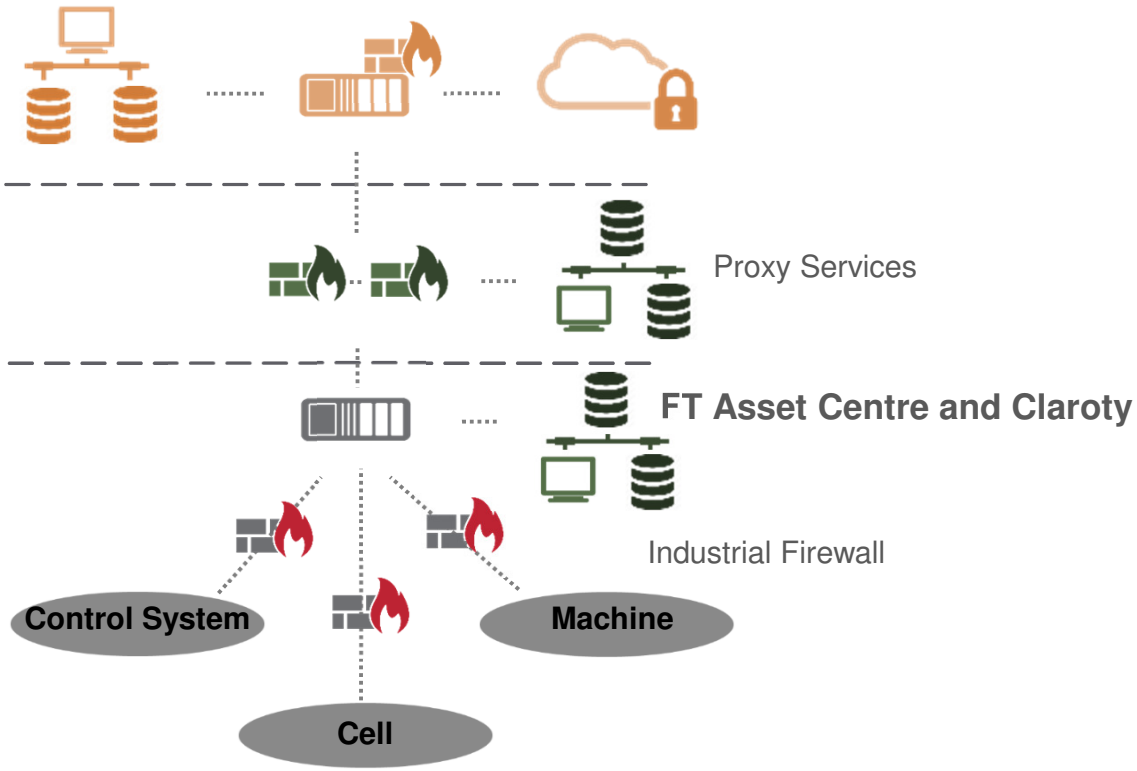
Asset Management



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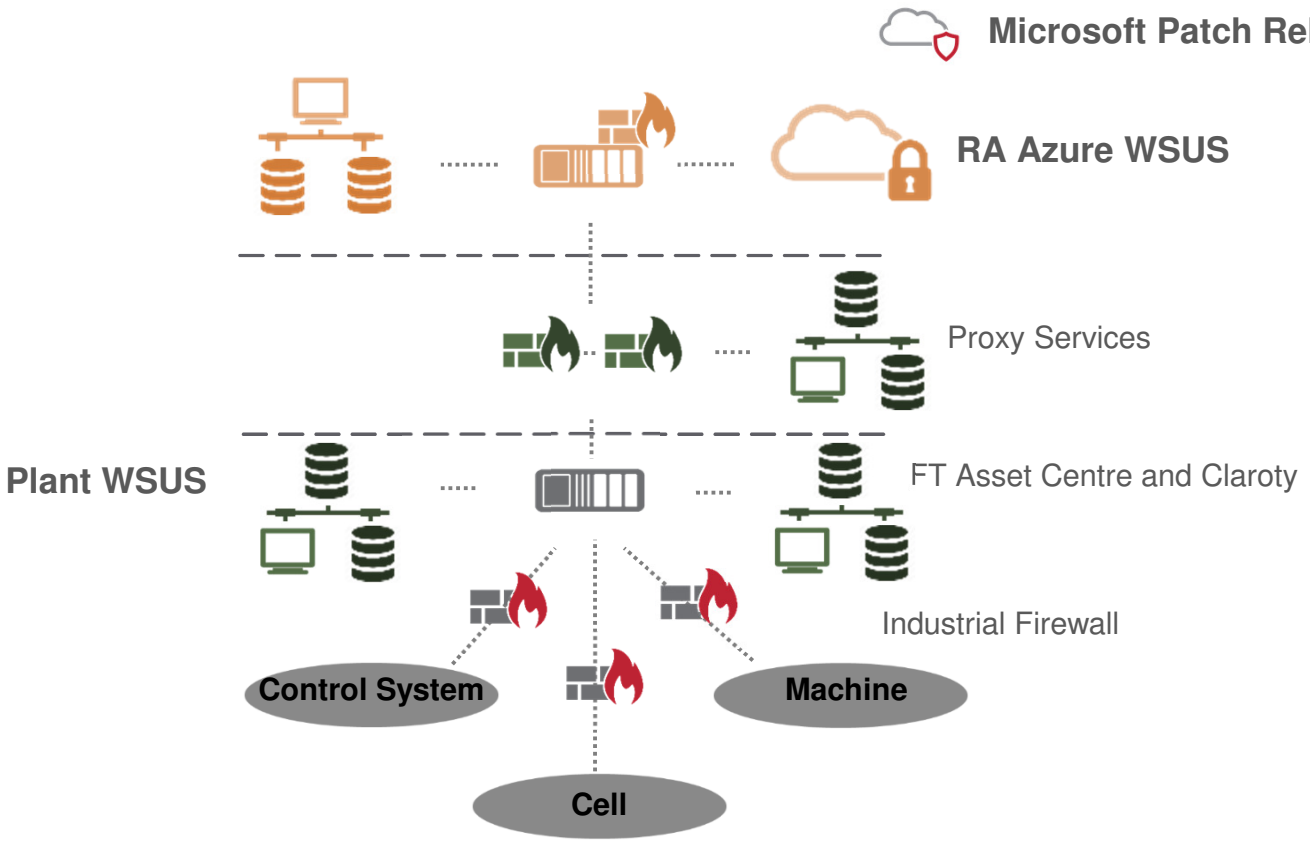
Patch Management



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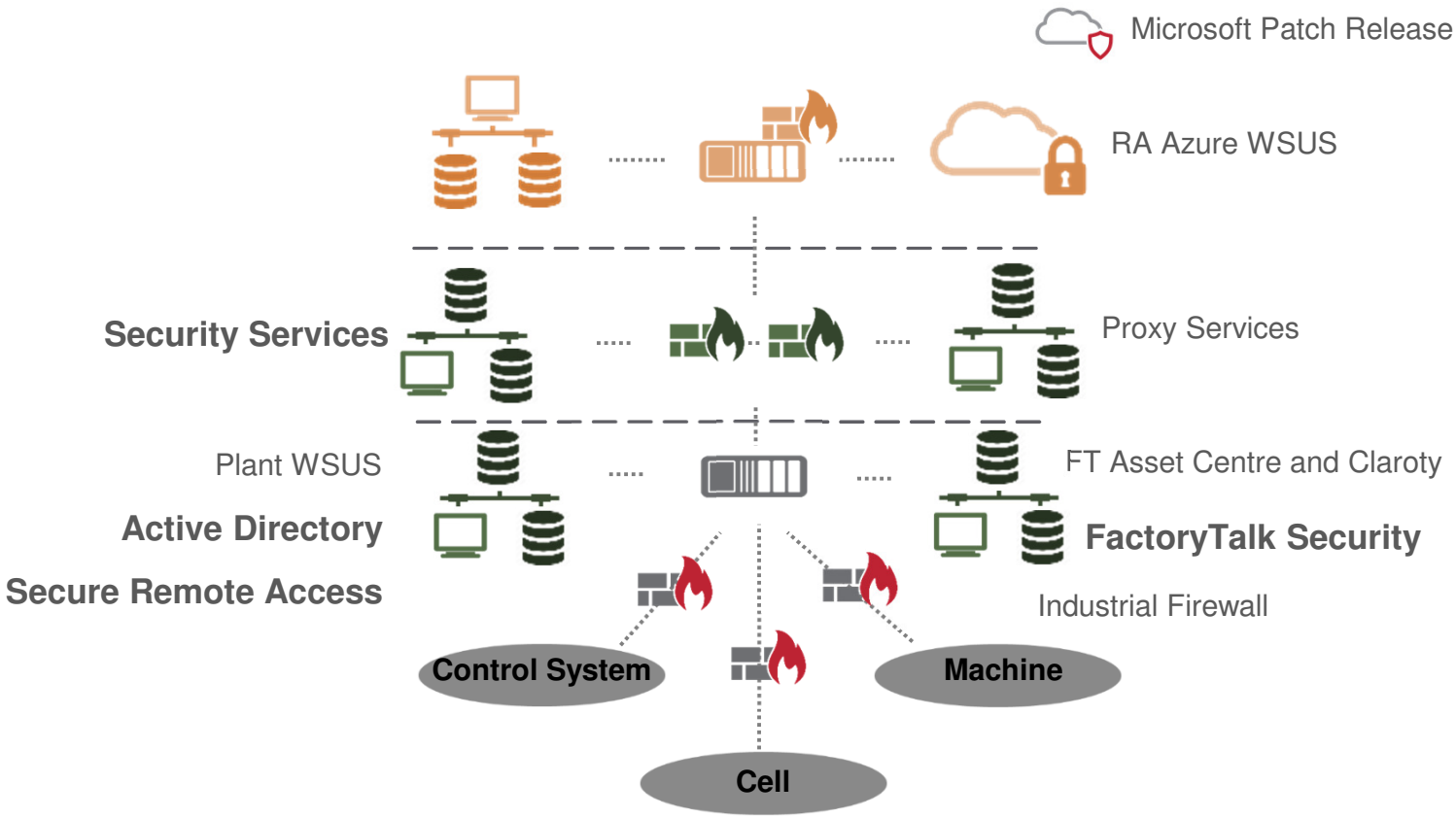
Authentication and Authorization



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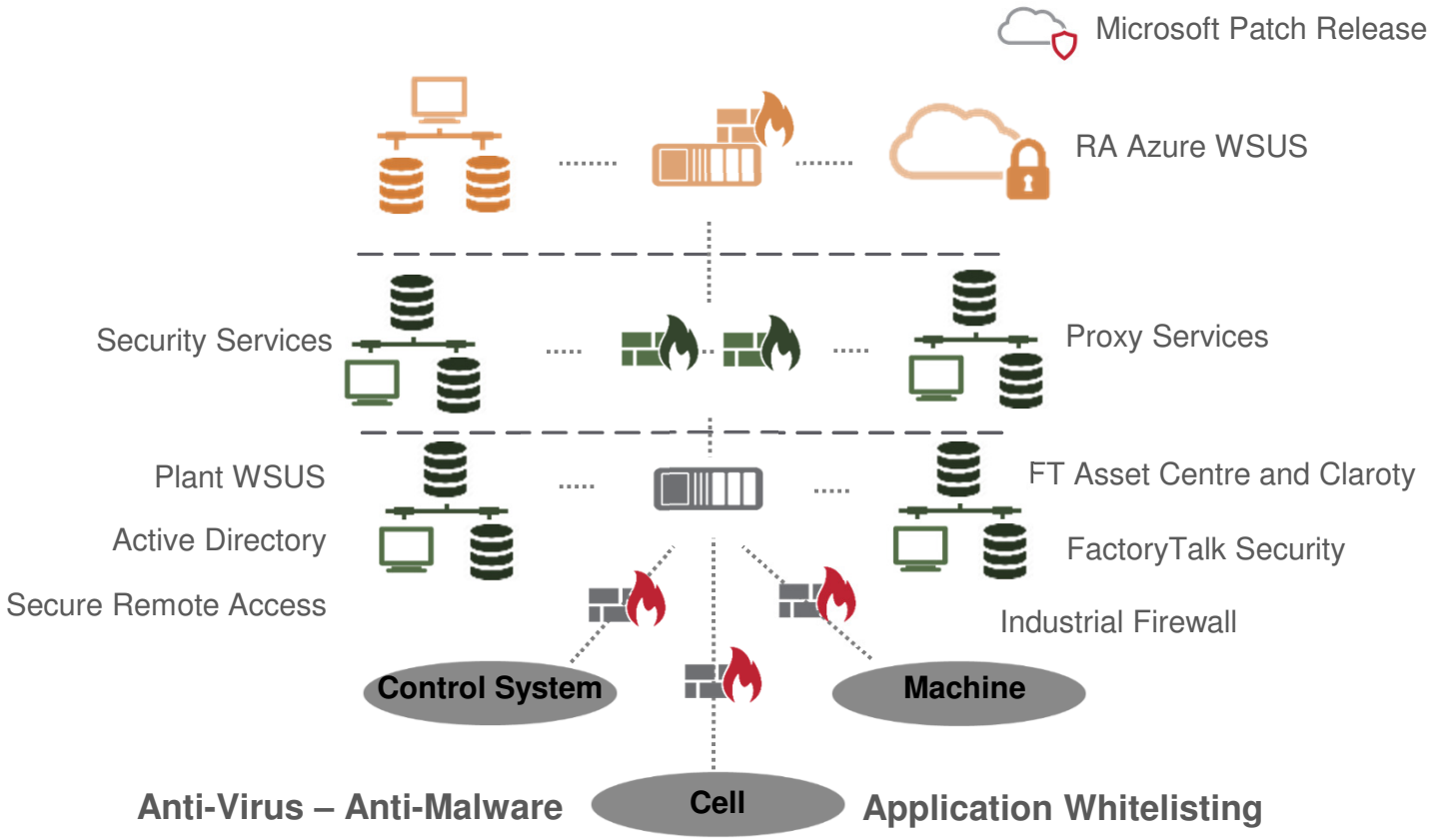
Computer and Endpoint Protection



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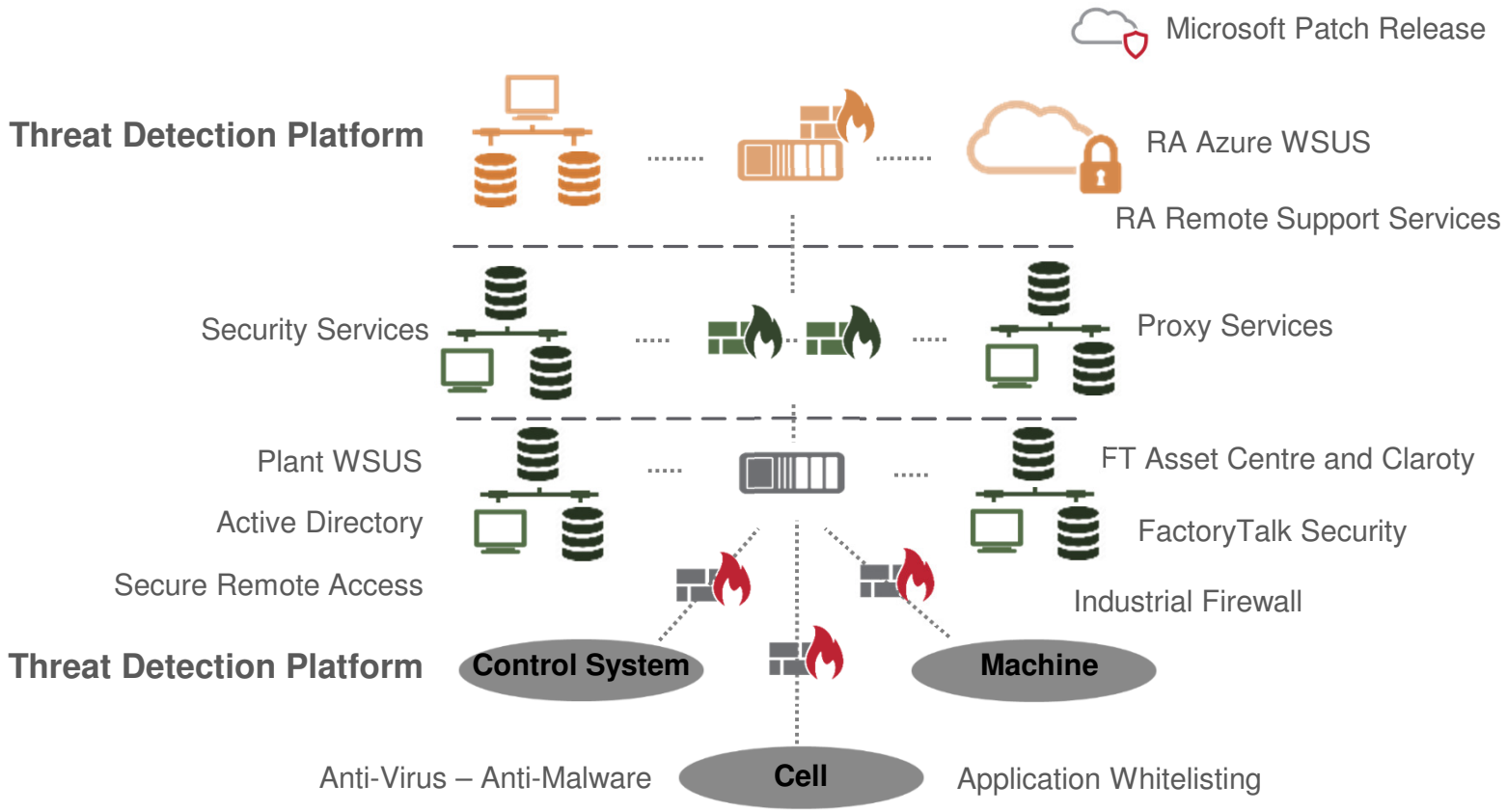
Threat Detection Services



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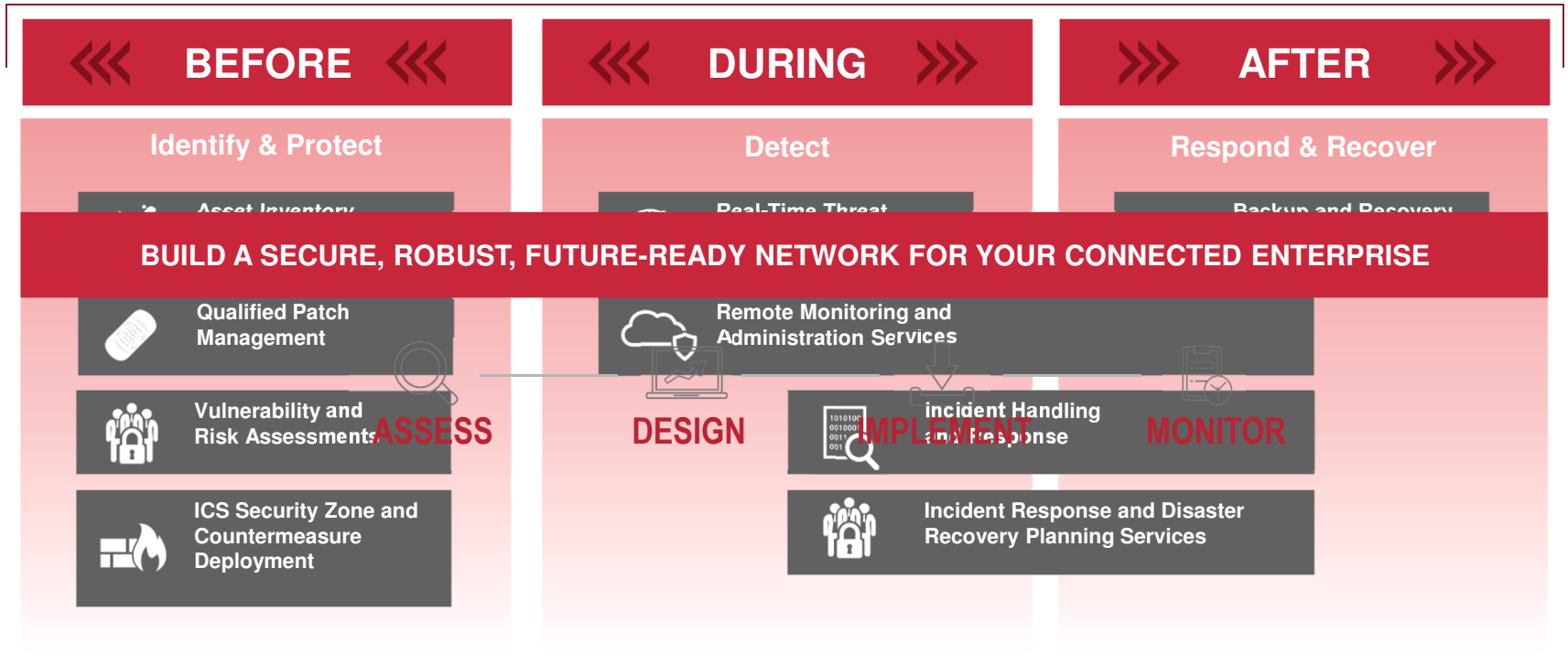
A PROACTIVE APPROACH TO INDUSTRIAL NETWORK & CYBER SECURITY

NIST Attack Continuum



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