Securing the Future: Addressing Cybersecurity Challenges in Data Centers

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Shifting the operational paradigm

Traditional building

Automated building

Smart building

Autonomous building

From … → **To …**

- Complex integration of new technologies
- On-site management solutions
- Siloed control of building services
- Reactive on-site maintenance
- Predictive & prescriptive maintenance
- as-a-Service models
- AI-enabled remote operations
- Simple & easy integration of new tech

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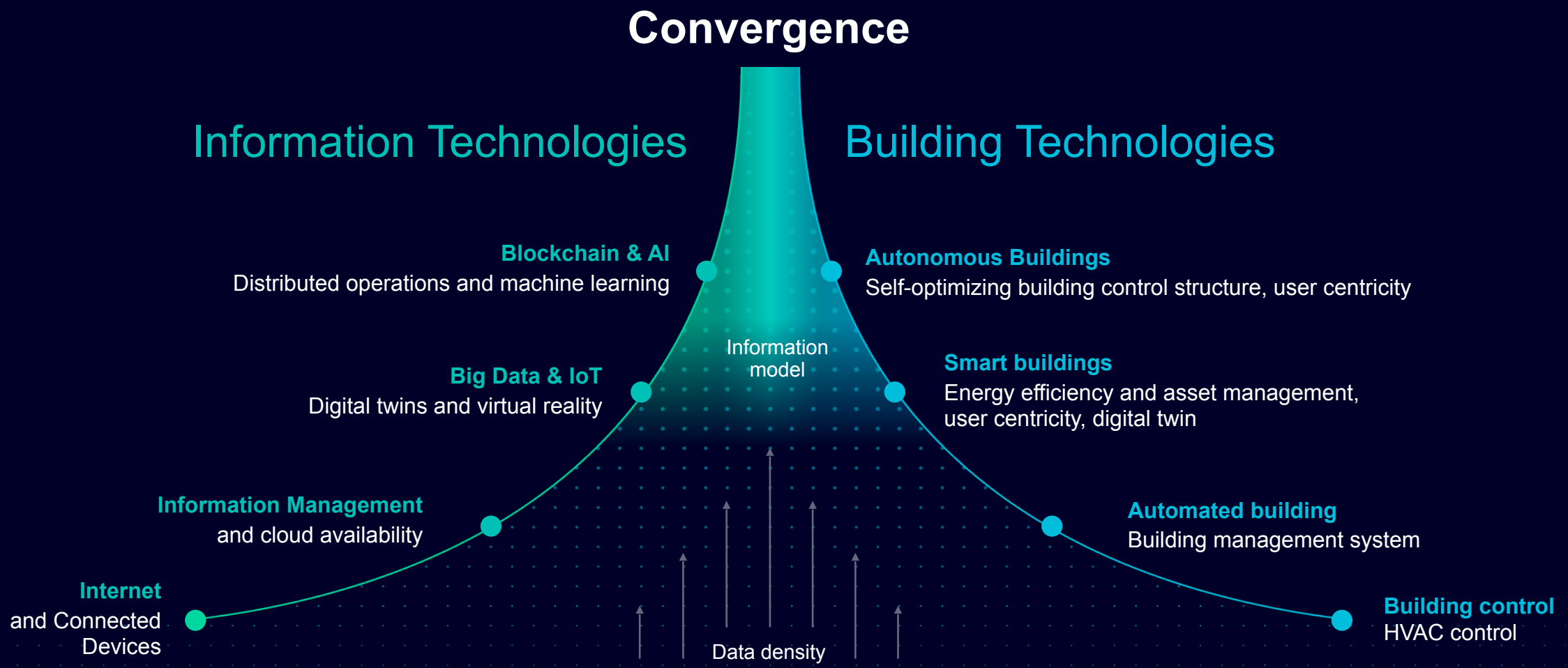
It is all about data …



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The world is changing- Hybrid threats are emerging

WORLD | EUROPE

Finland Seizes Tanker Linked to Russia After More Undersea Baltic Cables Cut

Finnish leaders urge further NATO protection against alleged sabotage of critical infrastructure by Moscow

'Security through obscurity': the Swedish cabin on the frontline of a possible hybrid war

Amid claims of sabotage of undersea cables, a small wooden structure houses a key cog in Europe's digital connectivity

WORLD NEWS

Germany and Finland investigate a severed data cable through the Baltic Sea

Fortum Faces Daily Cyberattacks in Finland and Sweden

Ransomware encryption devastates CloudNordic, customer data lost

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Charter of Trust

1. OWNERSHIP FOR CYBER & IT SECURITY
2. RESPONSIBILITY THROUGHOUT THE DIGITAL SUPPLY CHAIN
3. SECURITY BY DEFAULT
4. USER-CENTRICITY
5. INNOVATION & CO-CREATION
6. EDUCATION
7. CYBER-RESILIENCE THROUGH CONFORMITY & CERTIFICATION
8. TRANSPARENCY & RESPONSE
9. REGULATORY FRAMEWORK
10. JOINT INITIATIVES

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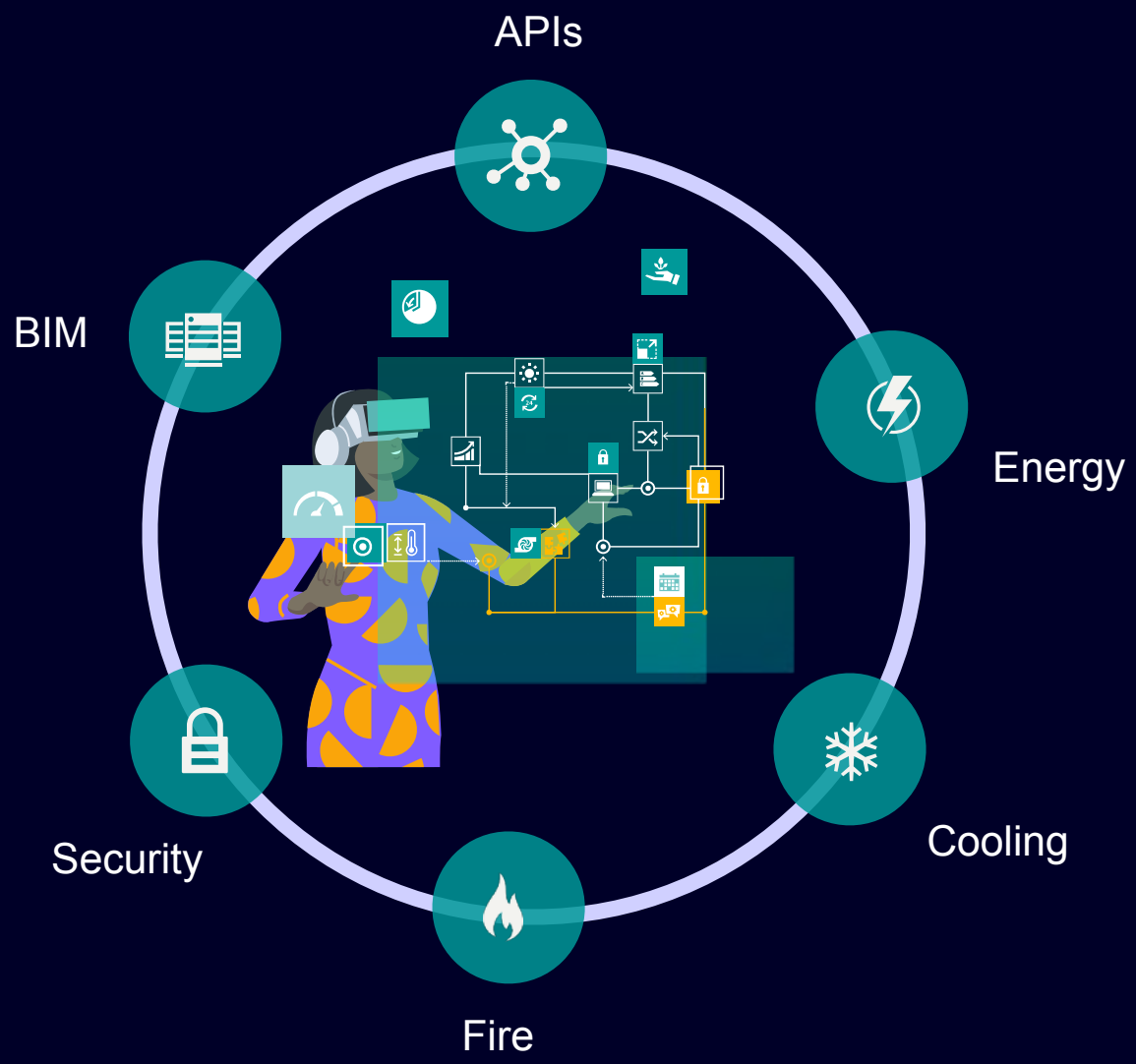
Transform your operations of data centers with Building X



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Macro Challenges

Technology

Business

Sustainability target & stricter regulatory landscape and lack of transparency, comparison and tracking

High operational and maintenance costs managing distributed sites across globe

Vendor lock-in and adaptability for further use cases integration with IT systems

Increasing complexity and data silos in heterogeneous OT systems

Increasing security & cyberthreats

Shortage of skilled workforce and high turnover rate

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The Ramifications of Low Digitalization

Operational Disruptions

UP TO $700k Per Incident Average total cost per downtime incident (86 min)

UP TO $9k Per Minute Average cost of data center downtime

uptime INSTITUTE

ISO 27001 Certified

Compliance Challenges
Lowered trust and market perception, SLA breaches, financial penalties and loss of revenue

Sustainability Non-Compliance

GREENHOUSE GAS PROTOCOL · GRESB · GRI · ASHRAE · CRREM

Tax penalties and fines

UP TO 30 % Increase in operational costs

UP TO 20 % Higher Insurance Premiums

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Real estate owner’s reality

No total picture of asset history

Multiple systems to access data

No connectivity between OT and IT

FM don’t know BIM modelling

Information is siloed and inaccessible

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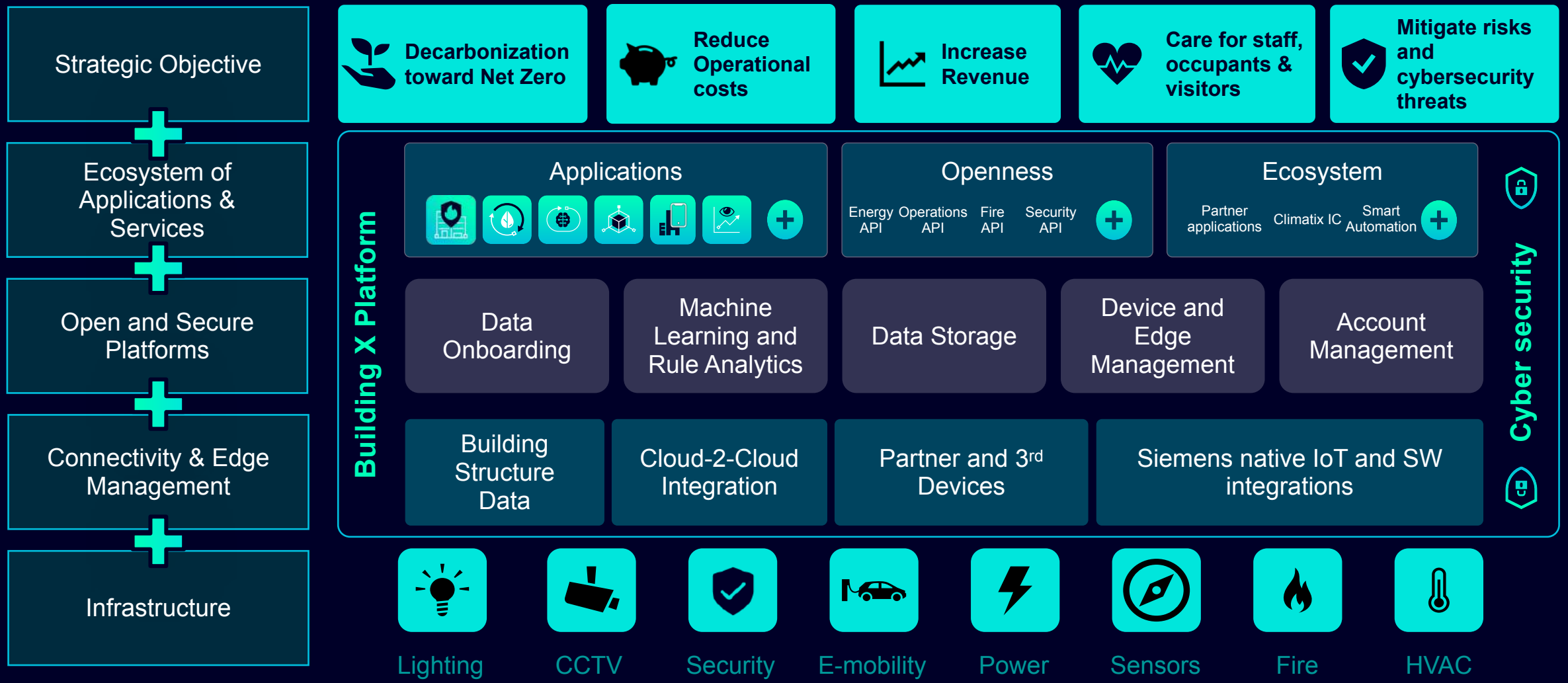
Connected Systems Collaborating:
System Architecture with Building X Enables Smarter Buildings



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Hybrid security risks and challenges in data centers

Unauthorized access

- Tailgating and other malicious and unauthorized movements inside the facility
- Misguided employees might enter restricted parts of the building causing unintended harm
- Identity theft & social engineering can lead to unauthorized access

Regulatory compliance

- CER Directive: Critical infrastructure resilience at EU-level
- GDPR and other privacy regulations
- CRA: Cyber resilience act
- NIS2 Directive: new rules on cybersecurity of network and information systems
- Data center standards: ANSI/ TIA-942, ISO/IEC 27001, SAAE 16, PCI DSS, NIST 800-53, FISMA, HIPAA

Avoid downtime

- Tampering with the power supply due to unauthorized access can lead to unwanted downtimes
- Unsupervised facilities can exacerbate insider threats
- Slow reaction to incidents may lead to unintended downtimes or escalations of security threats
- Without redundancy and backup systems, equipment can be compromised by both accidental and deliberate attacks

Cybersecurity threats

- Unmaintained security systems compromise cybersecurity
- Insecure integration of IP addressable OT hardware can lead to potential vulnerabilities
- Without regular audits and logs of all access to the data center potential vulnerabilities and breaches might not be detected

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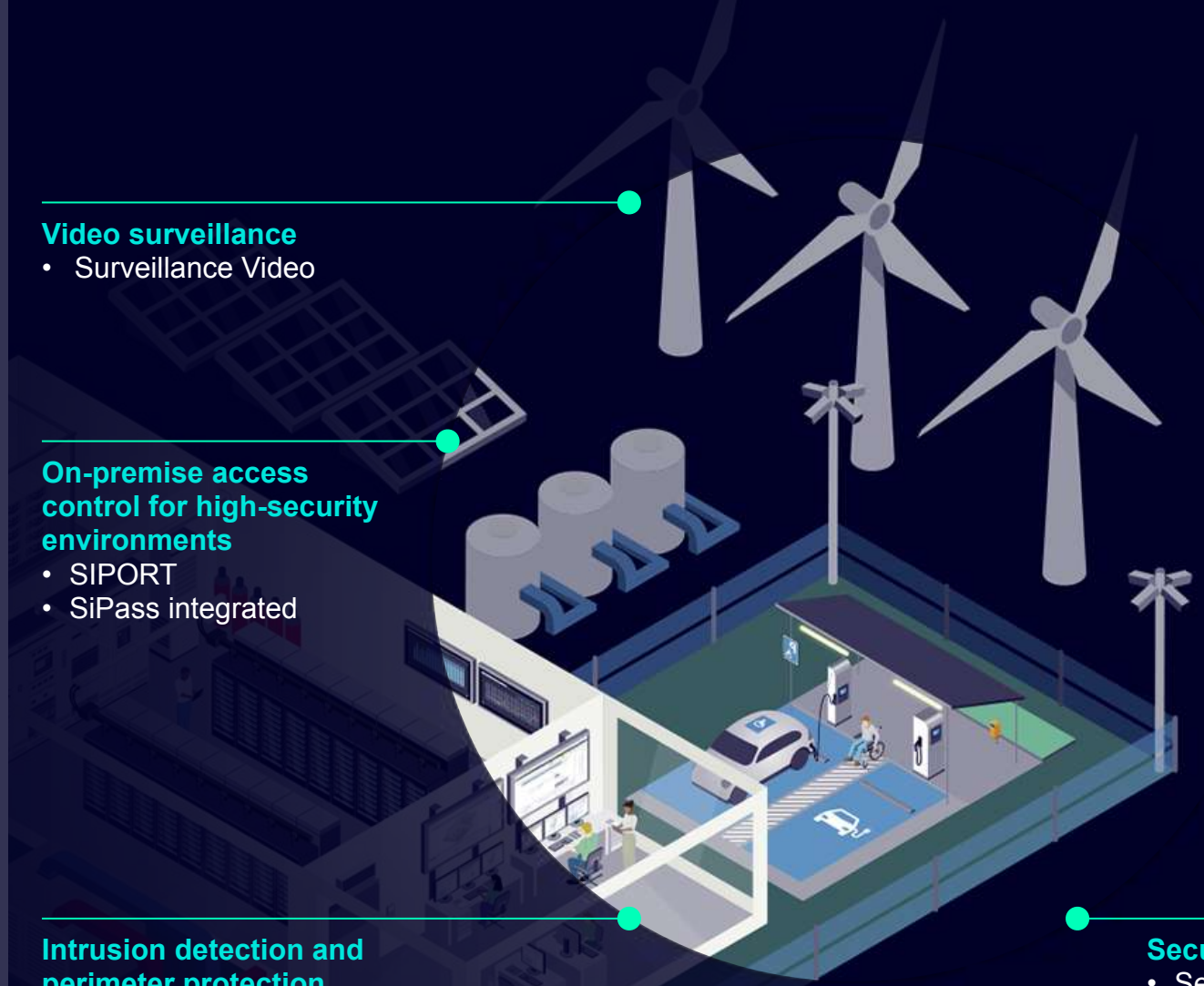
A hybrid security strategy is key

Physical security is the first line of defense in a data center. Siemens provides a multi-layered approach with advanced video surveillance, high-security access control (on-premise or cloud-based), intrusion detection, and centralized security management Siveillance and Building X security portfolio.

With Security as a Service and Physical Security Information Management (PSIM), we enable real-time monitoring, rapid threat response, and seamless integration across all security layers – protecting your data, infrastructure, and operations.



Video surveillance
- Surveillance Video

On-premise access control for high-security environments
- SIPORT
- SiPass integrated

Intrusion detection and perimeter protection
- Siveillance Intrusion
- Siveillance Perimeter

Physical Security Information Mgmt. (PSIM)
- Siveillance Control
- Siveillance Control Pro
- Desigo CC

Security operations app
- Building X Security Manager
- Building X Access mobile app

Security Services
- Security as a Service
- Security Predictive and Manage
- Access rights review
- False alarm detection & diagnosis

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Defense in depth
Hybrid security strategy

- A Site perimeter
- B Building
- C Computer room
- D Racks and customer cages

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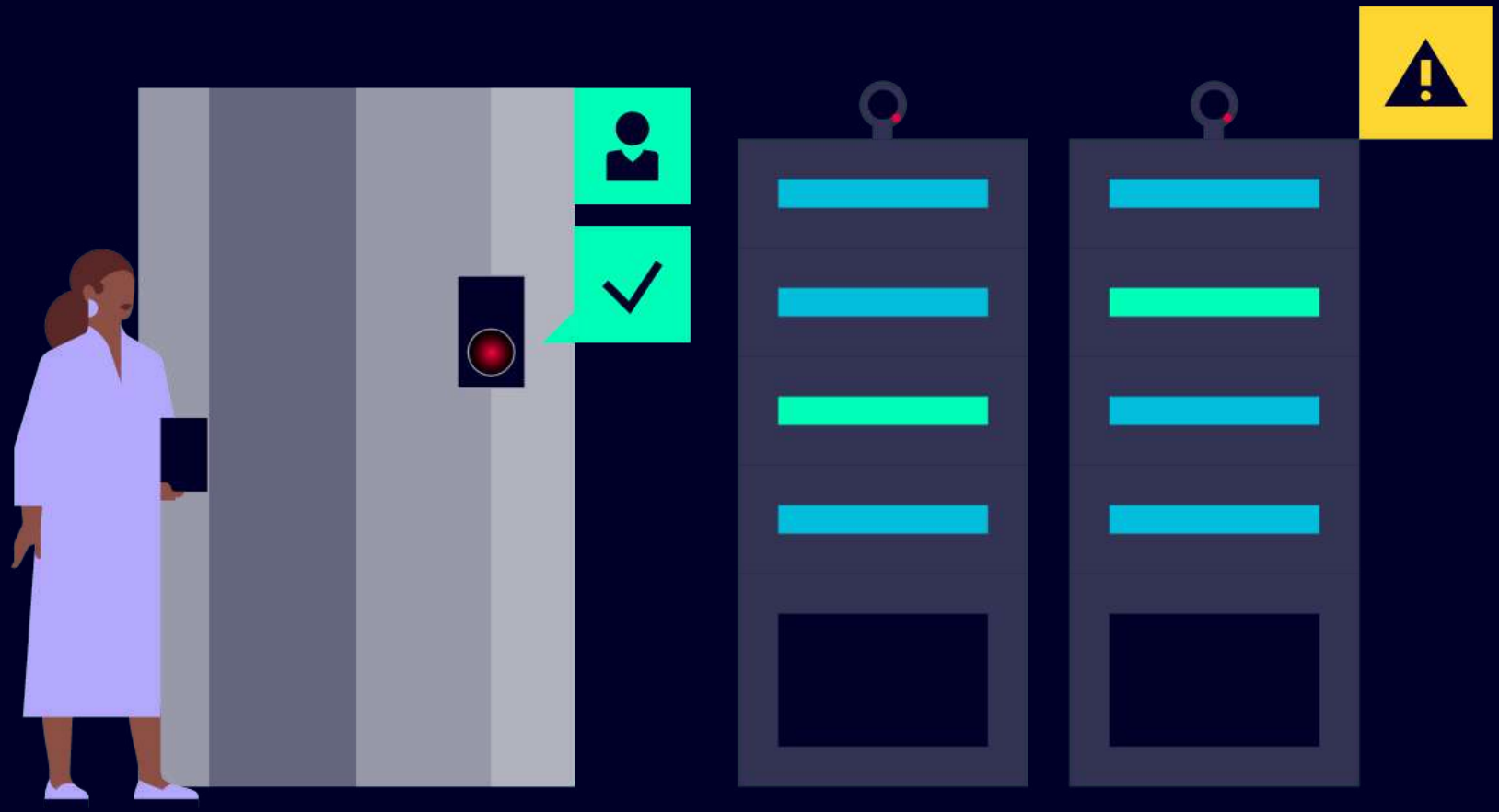
C: Server room layer
Use case: Entering the white space

A QR code is required at the entry point to the server room, followed by facial recognition. If successful, the employee or visitor is granted access.

Should a server rack door be left open, an alarm is triggered to notify data center personnel.

Access across multiple systems is managed via Active directory integration.



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D: Server rack layer
Use case: Access to grey spaces

Enter credentials (e.g. RFID card, mobile phone, biometrics, keypads) to access any rack.
Users can request access for a limited time period based on a need to have principle.

An alarm is triggered to indicate that a server rack door is left open, and it must be closed before accessing another rack

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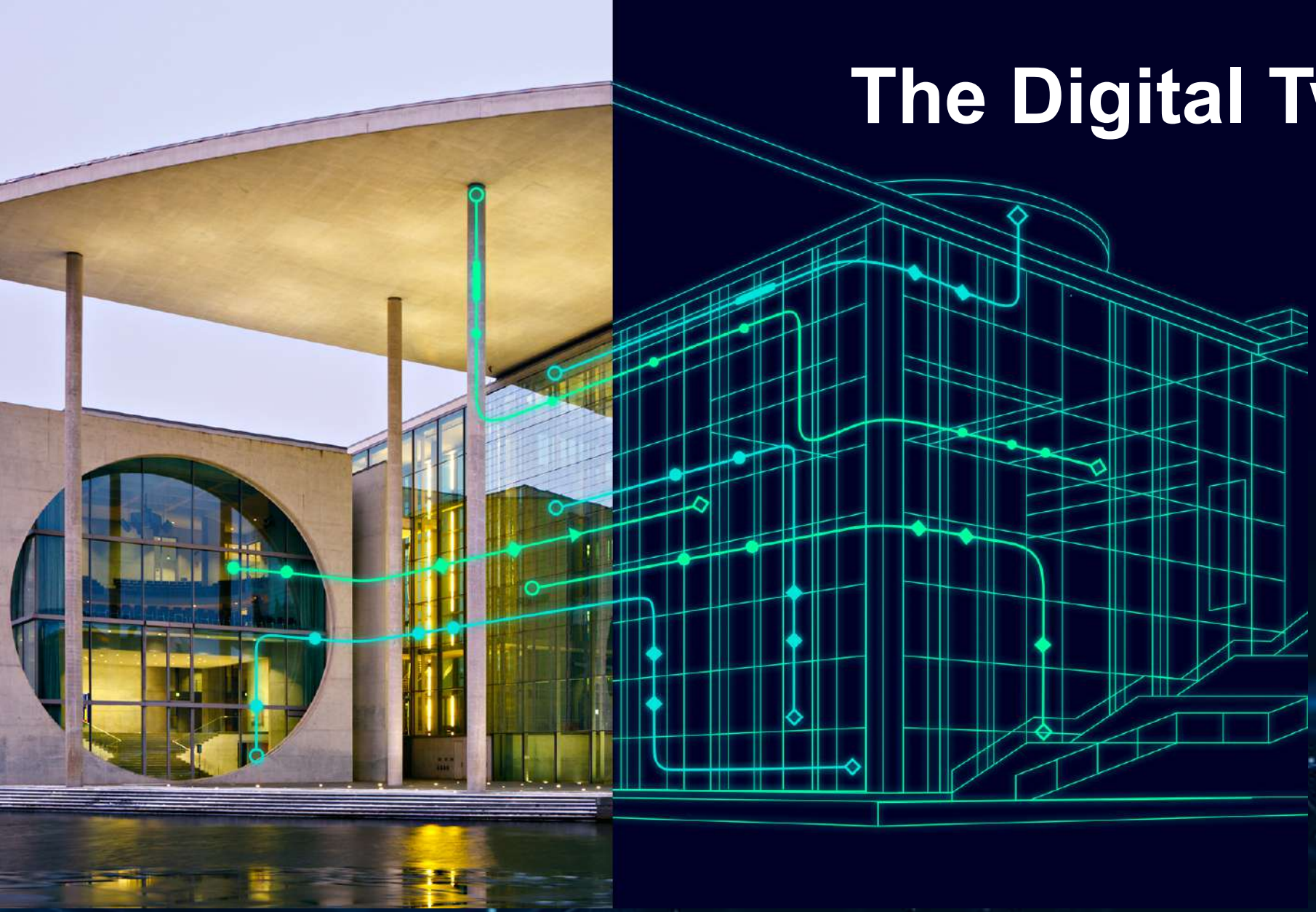
The Digital Twin



As-Built Information

Performance Data

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BIM Models as a foundation

Rooms

Name	Description	Created	Building	Floor	Net area
1	Loading Dock	7/17/2023 11:44 AM	Siemens Datacenter ...	Ground	170.59
10	Data Hall 1	7/17/2023 11:44 AM	Siemens Datacenter ...	Ground	960.09
11	Reception	7/17/2023 11:44 AM	Siemens Datacenter ...	Ground	74.25
12	AV Room	7/17/2023 11:44 AM	Siemens Datacenter ...	Ground	4.92
13	Plant Room	7/17/2023 11:44 AM	Siemens Datacenter ...	Level 1	510.03
14	Assembly Workshop	7/17/2023 11:44 AM	Siemens Datacenter ...	Ground	122.36
2	Administration Office	7/17/2023 11:44 AM	Siemens Datacenter ...	Ground	124.13
3	Technical Lab	7/17/2023 11:44 AM	Siemens Datacenter ...	Ground	124.13
4	Operations Room	7/17/2023 11:44 AM	Siemens Datacenter ...	Ground	185.41
5	Meeting Room	7/17/2023 11:44 AM	Siemens Datacenter ...	Ground	28.78
6	Meeting Room	7/17/2023 11:44 AM	Siemens Datacenter ...	Ground	39.44

Assets

Name	Description	Type	Category	Serial number	Bar code	Location	Installation date	Warranty start date
RACK-01-01	Server Rack	Data Rack R...	Electrical Equipment	543000231115	SIE100142	10 - Data Hall 1	1/1/2023 11:00 AM	1/1/2023 11:00 AM
RACK-01-02	Server Rack	Data Rack R...	Electrical Equipment	543000231115	SIE100143	10 - Data Hall 1	1/1/2023 11:00 AM	1/1/2023 11:00 AM
RACK-01-03	Server Rack	Data Rack R...	Electrical Equipment	543000231115	SIE100144	10 - Data Hall 1	1/1/2023 11:00 AM	1/1/2023 11:00 AM
RACK-01-04	Server Rack	Data Rack R...	Electrical Equipment	543000231115	SIE100145	10 - Data Hall 1	1/1/2023 11:00 AM	1/1/2023 11:00 AM
RACK-01-05	Server Rack	Data Rack R...	Electrical Equipment	543000231115	SIE100146	10 - Data Hall 1	1/1/2023 11:00 AM	1/1/2023 11:00 AM
RACK-01-06	Server Rack	Data Rack R...	Electrical Equipment	543000231115	SIE100147	10 - Data Hall 1	1/1/2023 11:00 AM	1/1/2023 11:00 AM
RACK-01-07	Server Rack	Data Rack R...	Electrical Equipment	543000231115	SIE100148	10 - Data Hall 1	1/1/2023 11:00 AM	1/1/2023 11:00 AM
RACK-01-08	Server Rack	Data Rack R...	Electrical Equipment	543000231115	SIE100149	10 - Data Hall 1	1/1/2023 11:00 AM	1/1/2023 11:00 AM
RACK-01-09	Server Rack	Data Rack R...	Electrical Equipment	543000231115	SIE100150	10 - Data Hall 1	1/1/2023 11:00 AM	1/1/2023 11:00 AM
RACK-01-10	Server Rack	Data Rack R...	Electrical Equipment	543000231115	SIE100151	10 - Data Hall 1	1/1/2023 11:00 AM	1/1/2023 11:00 AM
RACK-01-100	Server Rack	Data Rack R...	Electrical Equipment	543000231115	SIE100241	10 - Data Hall 1	1/1/2023 11:00 AM	1/1/2023 11:00 AM
RACK-01-101	Server Rack	Data Rack R...	Electrical Equipment	543000231115	SIE100242	10 - Data Hall 1	1/1/2023 11:00 AM	1/1/2023 11:00 AM
RACK-01-102	Server Rack	Data Rack R...	Electrical Equipment	543000231115	SIE100243	10 - Data Hall 1	1/1/2023 11:00 AM	1/1/2023 11:00 AM
RACK-01-103	Server Rack	Data Rack R...	Electrical Equipment	543000231115	SIE100244	10 - Data Hall 1	1/1/2023 11:00 AM	1/1/2023 11:00 AM
RACK-01-104	Server Rack	Data Rack R...	Electrical Equipment	543000231115	SIE100245	10 - Data Hall 1	1/1/2023 11:00 AM	1/1/2023 11:00 AM
RACK-01-105	Server Rack	Data Rack R...	Electrical Equipment	543000231115	SIE100246	10 - Data Hall 1	1/1/2023 11:00 AM	1/1/2023 11:00 AM
RACK-01-106	Server Rack	Data Rack R...	Electrical Equipment	543000231115	SIE100247	10 - Data Hall 1	1/1/2023 11:00 AM	1/1/2023 11:00 AM
RACK-01-107	Server Rack	Data Rack R...	Electrical Equipment	543000231115	SIE100248	10 - Data Hall 1	1/1/2023 11:00 AM	1/1/2023 11:00 AM

Systems

Name	
Computer Room Air Conditioning	
LI Busduct	
LR Busduct	
Rack Circuits	1
UPS System	

Types

Name	Essential	Created by	Created
Computer Room Air Conditioning		Derek Del Nevo	7/25/2023 3:14 AM
Datacenter Rack		Derek Del Nevo	7/17/2023 11:44 AM
Frequency Converter		Derek Del Nevo	7/25/2023 3:13 AM
HVSB		Derek Del Nevo	7/25/2023 3:13 AM
Ring Main Unit		Derek Del Nevo	7/25/2023 3:13 AM
Tap Off Box		Derek Del Nevo	7/25/2023 3:13 AM
Transformer		Derek Del Nevo	7/25/2023 3:13 AM
UPS		Derek Del Nevo	7/25/2023 3:12 AM

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A single pane of glass intersects information siloes

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Think of the potential…

BIM Models

Asset and Maintenance information

Spatial

Documents

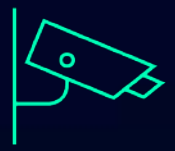
IoT and Sensors

Alarms and Alerts

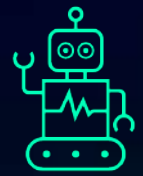
Forecasts and projections

Stock

Wayfinding


CCTV

VR and AR


AGVs and Robots

Carpark Mgmt

RTLS

Compliance

Building Control

Access Control

Energy Mgmt

Soft Services

Vertical specific systems

Laser Scans

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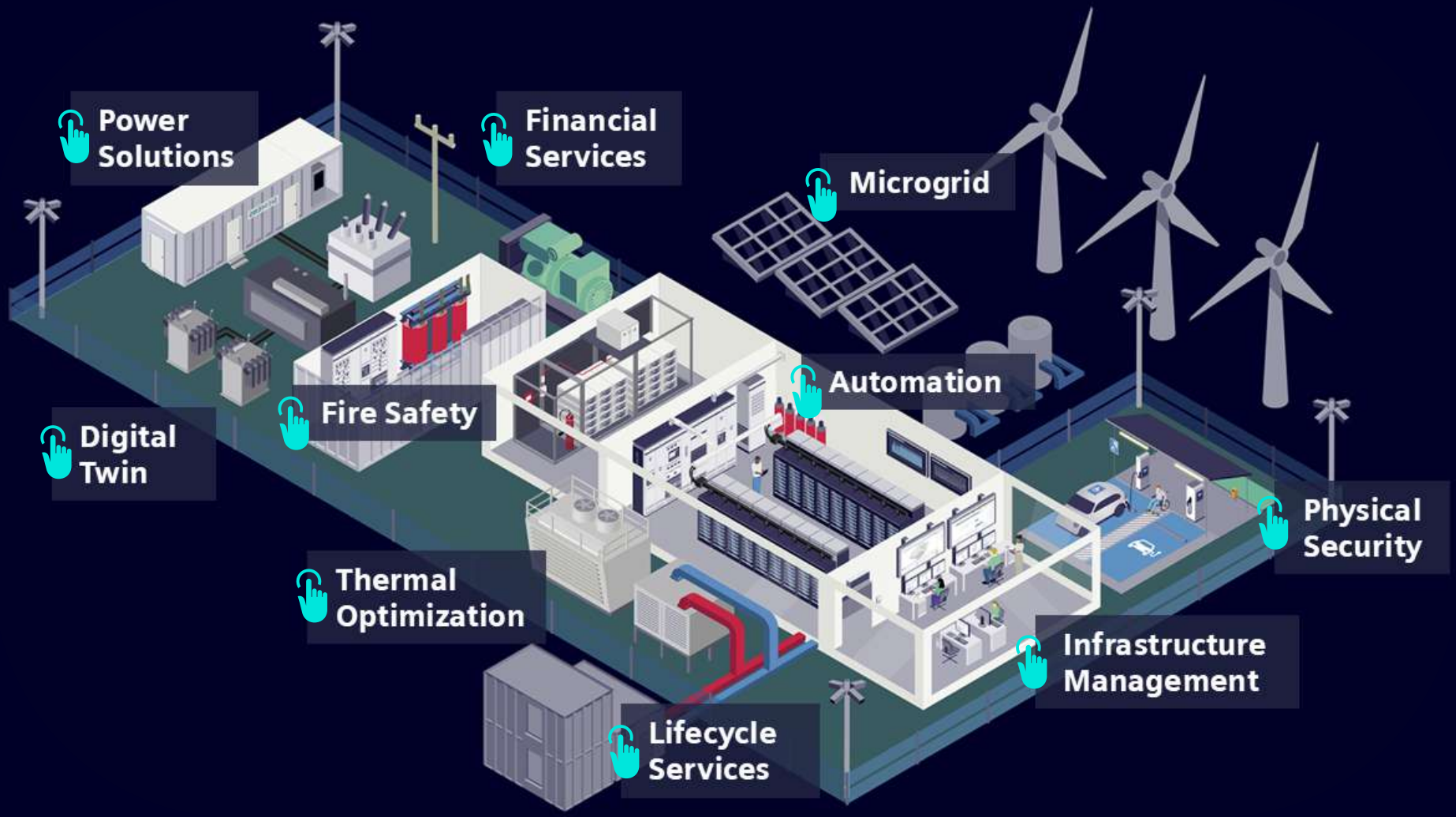
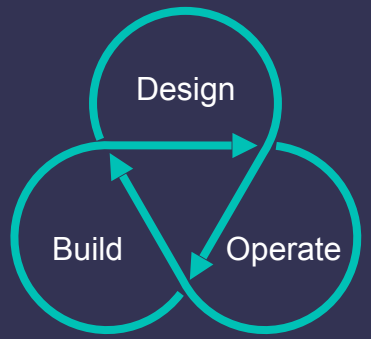
Transform data centers to become more efficient, resilient and sustainable.



Lower operating costs

Meet sustainability goals

Design resilient operations



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Siemens Xcelerator
Everything you need for digital transformation

Our **promise** …

Comprehensive, curated **portfolio**

Continuously growing powerful **ecosystem** of partners

Marketplace to explore, educate, exchange and transact

… and **how we get there** together.

We **cooperate** with and partners to build and scale together

We build **open, flexible, interoperable** and **as-a-service** solutions

We provide **modular** offerings

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