# IoT (internet of things) sikkerhet i henhold til IEC 62443

## Hvordan IoT implementering påvirker sikkerheten

**Thomas Christiansen**

Product Manager Automation infrastructure
Phoenix Contact AS

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# Agenda

- Litt historie
- Begreper
- Typisk nettverksoppsett
- Risikovurdere

- Komponent
- System
- Leverandør

- Sertifikater
- IEC62443
- Zero trust
- Praktiske råd


admin:password



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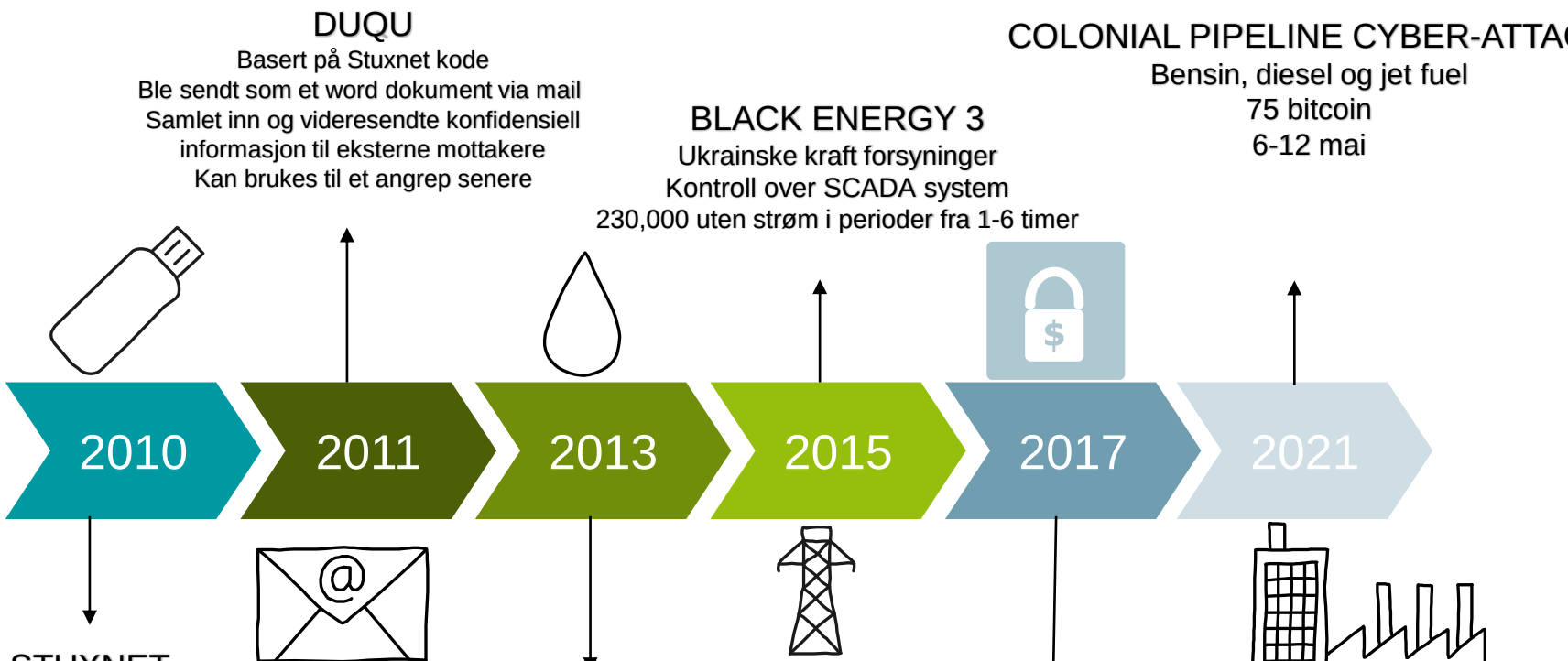
# STORE KJENTE CYBER ANGREP I HISTORIEN




**STUXNET**
Første angrep med fysiske skader
Siemens Step 7 programvare
Gass sentrifuger

Iransk atomkraftverk
Under bakkenivå

**DUQU**
Basert på Stuxnet kode
Ble sendt som et word dokument via mail
Samlet inn og videresendte konfidensiell informasjon til eksterne mottakere
Kan brukes til et angrep senere

**NEW YORK DEMNINGEN**
Kom inn i SCADA system via remote access.
Prøvde å åpne demning men, mislyktes grunnet at slusene var stengt manuelt ved service

**BLACK ENERGY 3**
Ukrainske kraft forsyninger
Kontroll over SCADA system
230,000 uten strøm i perioder fra 1-6 timer

**Wannacry**
200,000 PC'er
150 forskjellige land
Windows Patch
5% eldre versjoner

**COLONIAL PIPELINE CYBER-ATTACK**
Bensin, diesel og jet fuel
75 bitcoin
6-12 mai



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# “Men dette skjer jo bare med andre, det skjer ikke oss”

Dagbladet avslører:

## Advarer mot elektroniske angrep på vannforsyningen

Publisert 17. januar 2023 av Runar Daler • Sist endret 19. januar 2023 Tagger: Norsk Vann, P

Vann
tilgje
Nasjo
som
Vann

ep vannsystemet

mmen

me

(VG Nett)
tatt kontr

Av INGAR JOHN
Oppdatert 10. s

## NRK: Hackerne som har angrepet Hydro har stilt krav om løsepenger

Hackerne som har angrepet Hydro har stilt krav om løsepenger for å «låse opp» datasystemet deres, melder NRK.

# Begreper

## Operasjonsteknologi

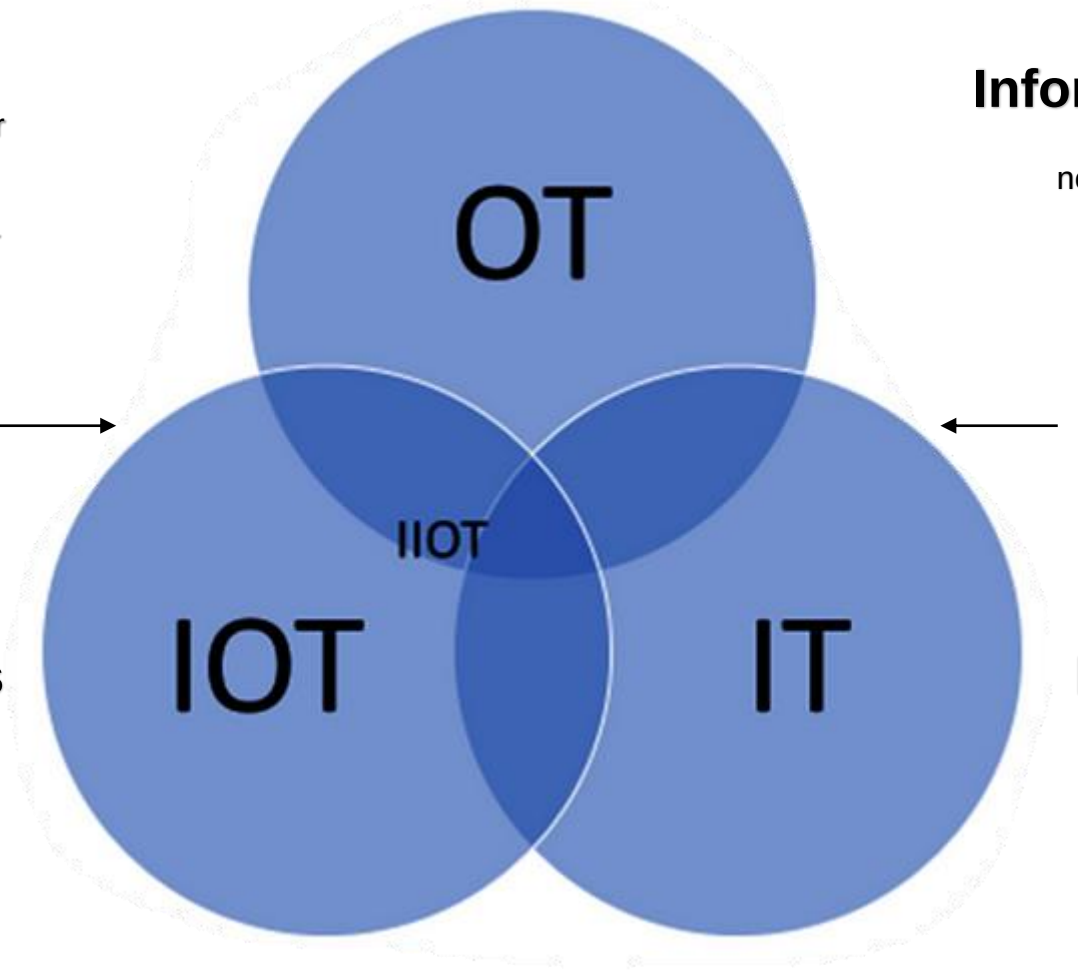
Kontroll systemer - Industrielle kontroller
(PLC, DCS & SCADA)

Alarm og fasilitets overvåkingssystemer
Fabrikk informasjon

## Informasjonsteknologi

PC, servere, printere
nettsider, applikasjoner, data
Email
TCP nettverk
Engineering systemer

**Industri** → ← **Business**



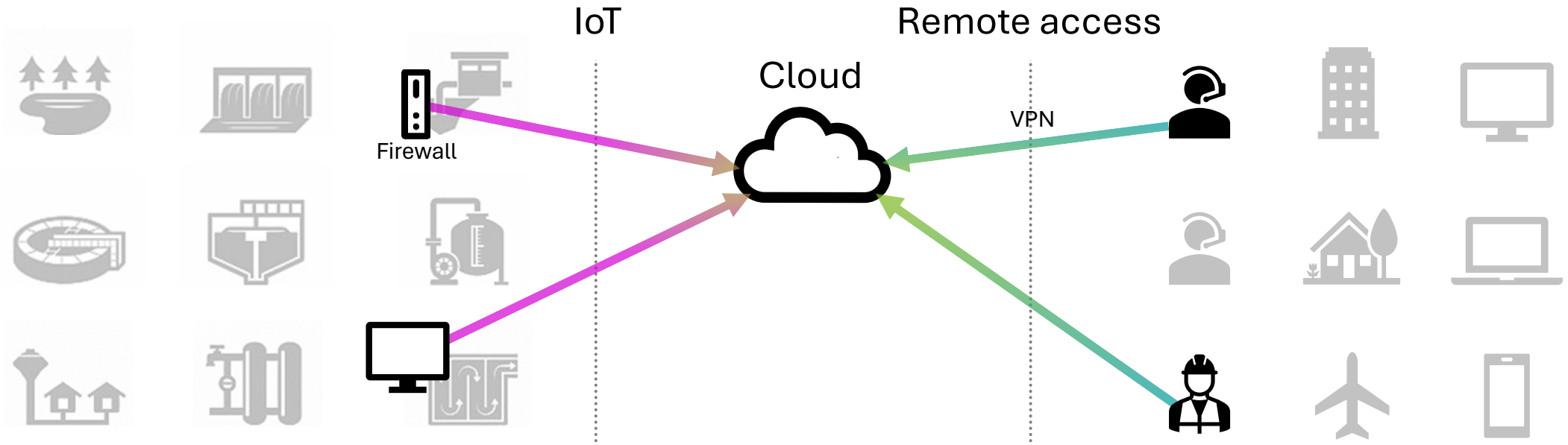

## Industrial internet of things

Sensorer – trykk, temperatur, flow
aktuatorer
Smart maskin / maskin læring

## Internet of things

Tablets
Smart telefoner
Smarte kjøretøy
Connected factory

# Typisk oppsett




Komponent – System - Leverandør

**Er du sikker på at du er sikker?**



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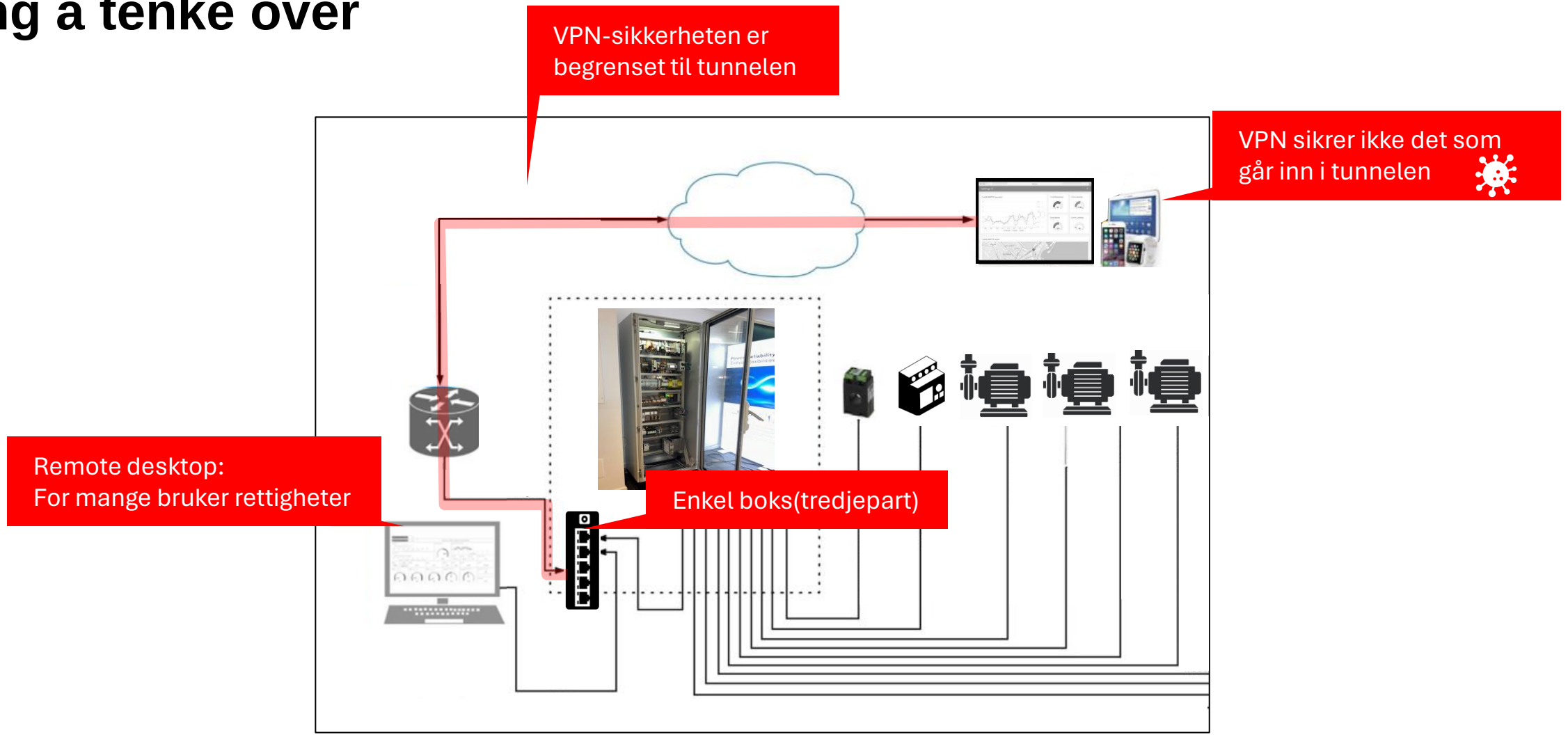
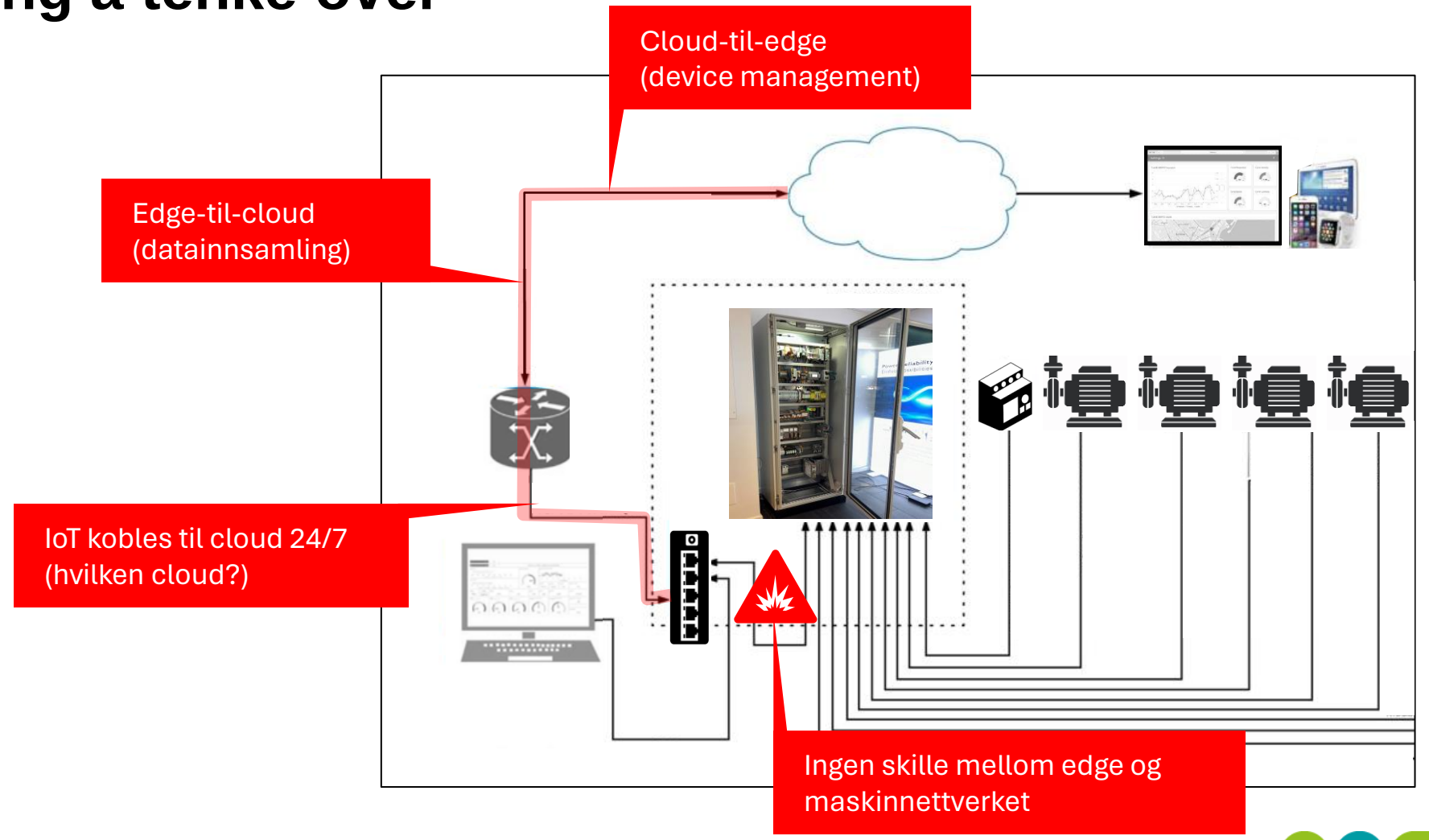
# Ting å tenke over

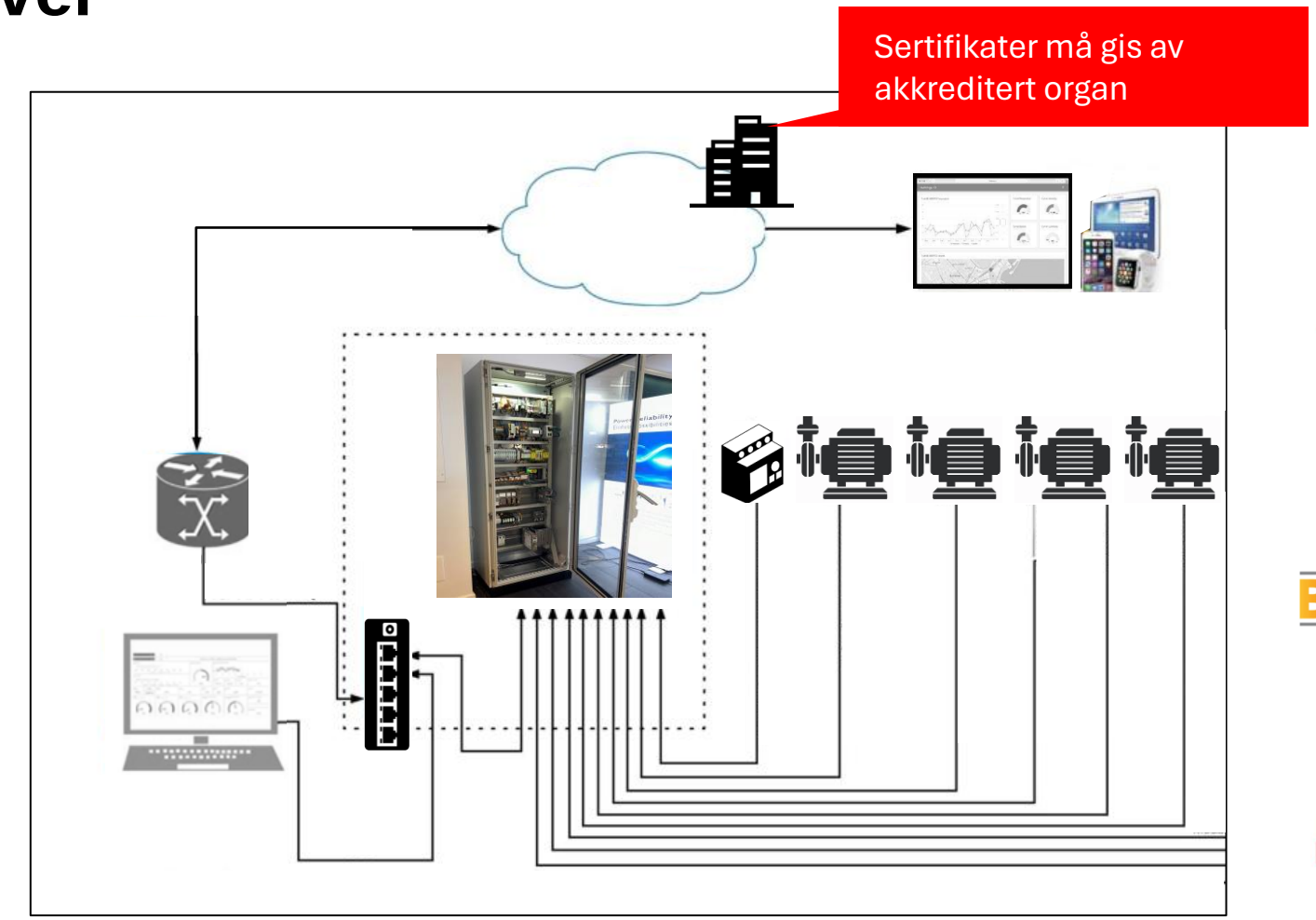


# Ting å tenke over



Leverandør

# Ting å tenke over



# IEC62443 sertifisert av akkreditert organ

CERTIFICATE
No. Q4B 029429 0007 Rev. 00

Holder of Certificate: PHOENIX CONTACT GmbH & Co. KG
Flachsmarktstr. 8
32825 Blomberg
GERMANY

Factory(ies): PHOENIX CONTACT Electronics GmbH
Industry Management and Automation
Business Unit Control Systems
Dringenauer Strasse 30, 31812 Bad Pyrmont, GERMANY

PHOENIX CONTACT Software GmbH
Langenbruch 6, 32657 Lemgo, GERMANY

Certification Mark:

Scope of Certificate: Secure Product Development Lifecycle

Applied Standard(s): IEC 62443-4-1:2018
PPP 15002A:2018 *(IEC 62443-4-1 Full Process Profile)*

The Certification Body of TÜV SÜD Product Service GmbH certifies that the company mentioned above has established and is maintaining a management system which meets the requirements of the listed standards. The results are documented in a report. See also notes overleaf.

Report No.: 18CR01S007

Valid until: 2021-07-29

Date, 2018-08-01 ( Andreas Barwald )

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**IEC62443-4-1** Sertifisert produktutviklingsprosess

CERTIFICATE
No. IITS2 029429 0027 Rev. 00

Holder of Certificate: PHOENIX CONTACT GmbH & Co. KG
Flachsmarktstr. 8
32825 Blomberg
GERMANY

Certification Mark:

Product: IACS components

Model(s): PLCnext Control
(Configuration: Security Profil active)
AXC F 1152, AXC F 2152, AXC F 3152

Tested according to: IEC 62443-4-1:2018
IEC 62443-4-2:2019
PPP 15003B:2021 (IEC 62443-4-1: Full ML3 Process Profile)

The secure development lifecycle and the resulting product(s) were assessed on a voluntary basis and complies with the essential requirements. The certification mark shown above can be affixed on the product. It is not permitted to alter the certification mark in any way. In addition, the certification holder must not transfer the certificate to third parties. See http://www.tuvsud.com/ps-cert for details.

Test report no.: 21CR03S047
Valid until: 2024-10-20

Date, 2021-11-19 ( Nadia Patricia Stefan )

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**IEC62443-4-2** Sertifiserte produkter

CERTIFICATE
No. IITS2 029429 0012 Rev. 00

Holder of Certificate: PHOENIX CONTACT GmbH & Co. KG
Flachsmarktstr. 8
32825 Blomberg
GERMANY

Site(s): 106448, 103658, 103854

Certification Mark:

Product Type: Industrial IT Security

Model(s): Blueprint Remote Monitoring and Control

Tested according to: IEC 62443-2-4:2015/AMD1:2017
IEC 62443-3-3:2013/COR1:2014
PPP 15011A:2018 (IEC 62443-2-4: Full Profile for a Control System)

The product was tested on a voluntary basis and complies with the essential requirements. The certification mark shown above can be affixed on the product. It is not permitted to alter the certification mark in any way. In addition the certification holder must not transfer the certificate to third parties. See also notes overleaf.

Test report no.: 19CR12S016 version 2.0

Valid until: 2022-12-10

Date, 2019-12-12 ( Christian Dirmeier )

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**IEC62443-3-3** Sertifisert for fjernmonitorering og kontroll

CERTIFICATE
No. Q4B 029429 0008 Rev. 00

Holder of Certificate: PHOENIX CONTACT GmbH & Co. KG
Flachsmarktstr. 8
32825 Blomberg
GERMANY

Certification Mark:

Scope of Certificate: ICS Security Service Provider

The Certification Body of TÜV SÜD Product Service GmbH certifies that the company mentioned above has established and is maintaining a management system which meets the requirements of the listed standards. The results are documented in a report. See also notes overleaf.

Report No.: 19CR11S007

Valid until: 2022-03-17

Date, 2019-03-18 ( Andreas Barwald )

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**IEC62443-2-4** Sertifisert som leverandør av sikkerhetstjenester



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# The New IEC62443-4-3

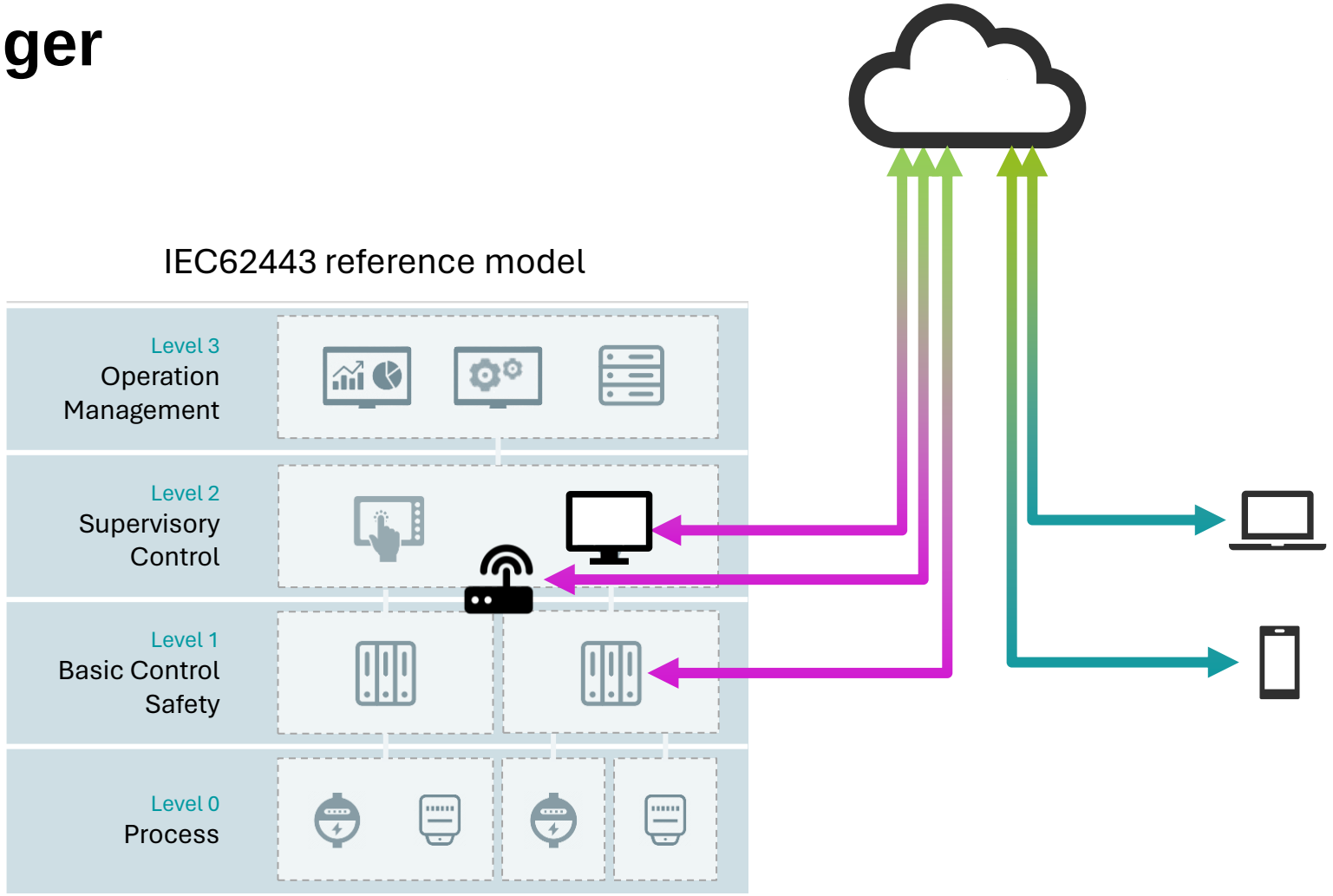
| General | Policies & Procedures | System | Component |
|---|---|---|---|
| 1-1 Technology, concepts, and models | 2-1 Establishing an industrial automation and control system security program | 3-1 Security technologies for industrial automation and control systems | 4-1 Secure product development lifecycle requirements |
| 1-2 Master glossary of terms and abbreviations | 2-2 Master glossary of terms and abbreviations | 3-2 Security risk assessment for system design | 4-2 Technical security requirements for IACS components |
| 1-3 System security compliance metrics | 2-3 Patch management in the IACS environment | 3-3 System security requirements and security levels | 4-3 Application of the 62443 standards to industrial IoT |
| 1-4 System security lifecycle and use case | 2-4 Security program requirements for IACS service providers | | |
| 1-5 Rules for IEC62443 profiles | 2-5 Implementation guidance for IACS asset owners | | |

- IoT-sikkerhetsutfordringer
- Anbefalinger for anleggseier maskinbyggere, systemintegratorer og produktleverandører

IEC62443-4-3

# IoT Security utfordringer

- Bryter IEC62443 referansemodell; kobler til internett; bakdør
- Ingen skille mellom IoT og automatiseringskontrollsystemet



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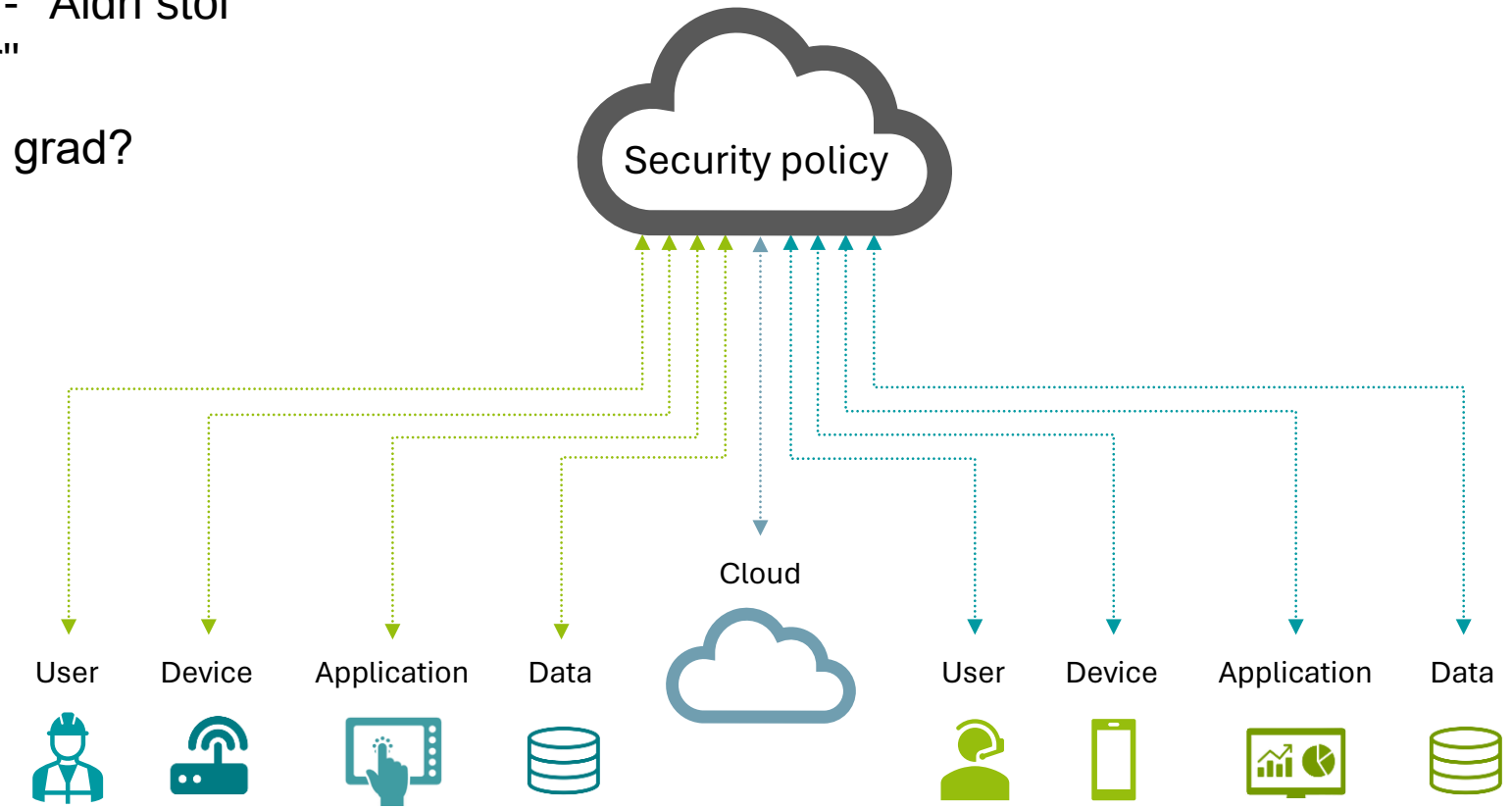
IEC62443-4-3

# Zero trust arkitektur

- Sikkerhetspolicy - "Aldri stol på, alltid verifiser"
- Null? … i hvilken grad?



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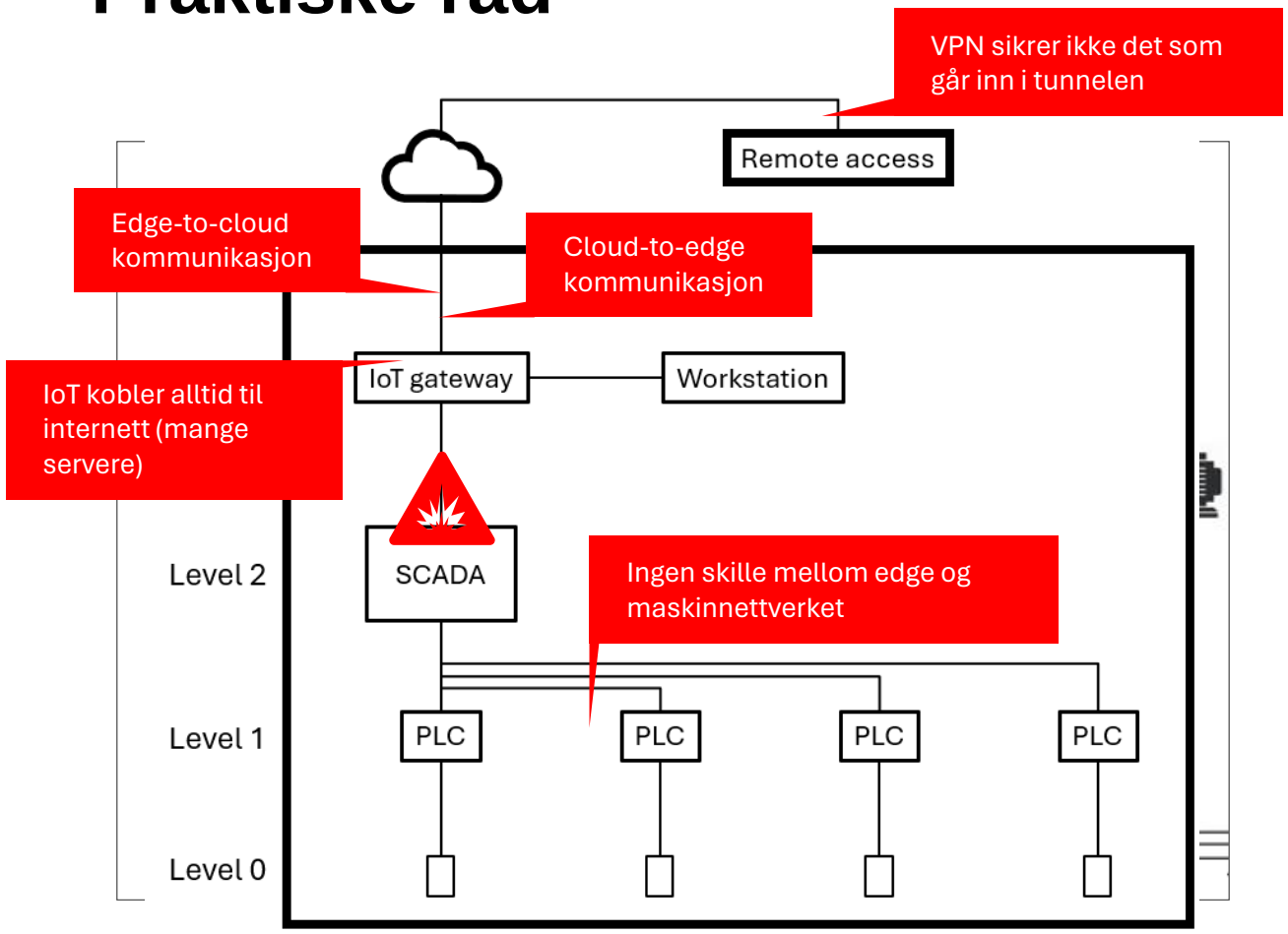
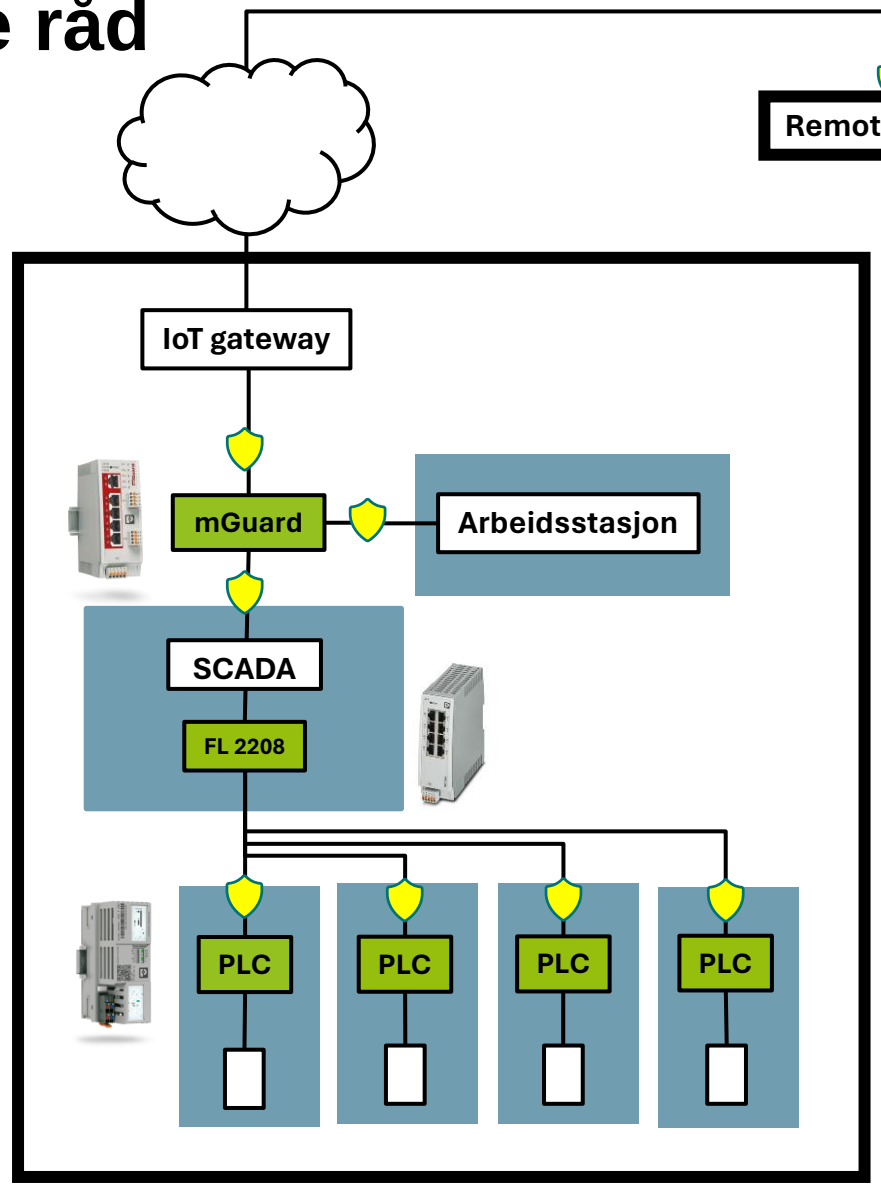
# Praktiske råd




1. 4-øyne prinsipp: Gjennomgå og revider
2. Tegn diagrammet på nytt i henhold til IEC62443-referansemodellen
3. Risikovurdering av cybersikkerhet

# Praktiske råd




4. Finn den optimale arkitekturen for å bygge dine IEC62443 - soner og grupperinger

5. Ekstra lag med beskyttelse mellom IoT/cloud/remote/drift/automasjon/sikkerhet/...

6. Kombinasjon av IEC62443-referansemodell og zero trust-konsept til en viss grad

7. Zero trust komponenter

# Har du spørsmål om sikkerheten din?

Ikke nøl med å ta kontakt!

# Kontaktinformasjon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Product Manager

tchristiansen@phoenixcontact.com




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