

# End-to-end secure IIoT made easy

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**Hms**

**D&E  
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Hardware



Software



Test & Measurement



Engineering



Research & Development

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# HMSat a glance



**+9,000,000**

devices connected

**+400,000**

machines connected  
to cloud systems

Our field:

**Industrial ICT**

(Information and  
Communication  
Technology)

**5G** Wireless  
Smart Grid  
**AI IoT**

Head office in  
**Halmstad, Sweden**



**750**  
employees  
worldwide



Offices in  
**17** countries

Partners in over **50**



2022 sales

**2,506 MSEK**

[225 M EUR, 245 M USD]

**2025**



**±0**

Net positive in  
CO<sub>2</sub> emissions



**+30%**

Staff NPS  
Customer NPS

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# OPC UA



## IIoT Trends

# THE INDUSTRY IS CONNECTED

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# AND IT'S EVOLVING



# INDUSTRIAL CONNECTIVITY EXPECTATIONS ARE INCREASING



Real-time communication



IIoT



Uptime



More bandwidth



Cyber security



Sustainability

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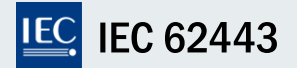
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# Industrial data communication is constantly evolving

Companies are looking at realizing IIoT benefits



Cyber security has become a necessity



Digitalization is driving the need for more bandwidth



Need for support for safety protocols



Communication at the sensor level





# Status of CyberSecurity in Manufacturing

It's not looking bright...



# Status of Cyber Security



## Attacks to manufactures

### France's Renault hit in worldwide 'ransomware' cyber attack

Issued on 12/05/2017 - 11:31 Modified: 14/05/2017 - 15:20



Hydro became victim of an extensive cyber-attack in the early hours of Tuesday, March 19, 2019, impacting operations in several of the company's business areas.



### Honda factory forced to close due to WannaCry virus

Posted on 23 Jun 2017 by Michael Cruickshank



February 17th, 2023

### Semiconductor industry giant says ransomware attack on supplier will cost it \$250 million

### Toyota to resume plant operations from Wednesday, following system failure at a domestic supplier

MARCH 01, 2022



### Ransomware attack temporarily shuts down Dole production, disrupts food supplies

FEBRUARY 23, 2022



### German Autoparts Specialist, the Bilstein Group, Confirms Cyberattack

June 28, 2023

### Cyberattack at SAF-Holland Causes Three Month Production Backlog

June 28, 2023

Source: NCC Group 07-2023

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# Status of Cyber Security

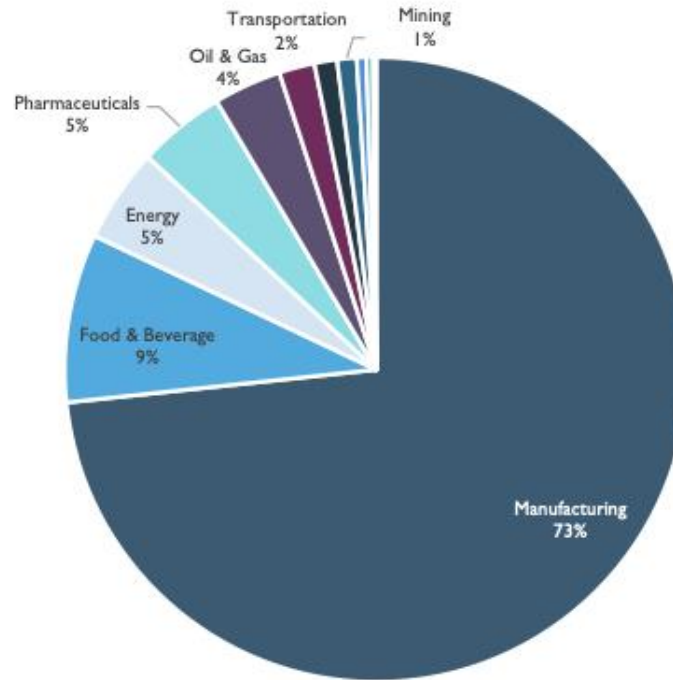
Ransomware is the biggest problem....



**73% Manufacturing**



**Downtime costs big €€€**



Source: DRAGOS

## IT versus OT - Pitfalls

### IT - Secure oriented



- Confidentiality / Integrity
- Credentials mandatory
- Security scanning & updates (patches)

### OT - Process oriented



- Operating Running / Low down-time
- Credentials for protecting IP / User roles
- Firmware only to solve defined issues



# Cyber-security

Get protected



## Journey through Industrial Cybersecurity landscape



Consultancy & Training



AV/EDR/XDR solutions



OT/IT Separation firewalls



Remote Access Solutions



Asset Discovery & Vulnerability Management



Secure Authentication Solutions



Industrial Firewalls



Configuration Backup & Version Control



Threat Detection / Monitoring



SIEM / SOC / SOAR & Governance tools



USB scanning & management



Intrusion Protection Systems



Micro Segmentation / ZTNA / SDN



Data Diodes



Deception / Honeypots

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# Security

## Type hackers



**Toevallige gebeurtenis**



**Cybercrime**



**Hackersgroepen / Terroristen**



**Land / Staat**

**IT**

**OT**



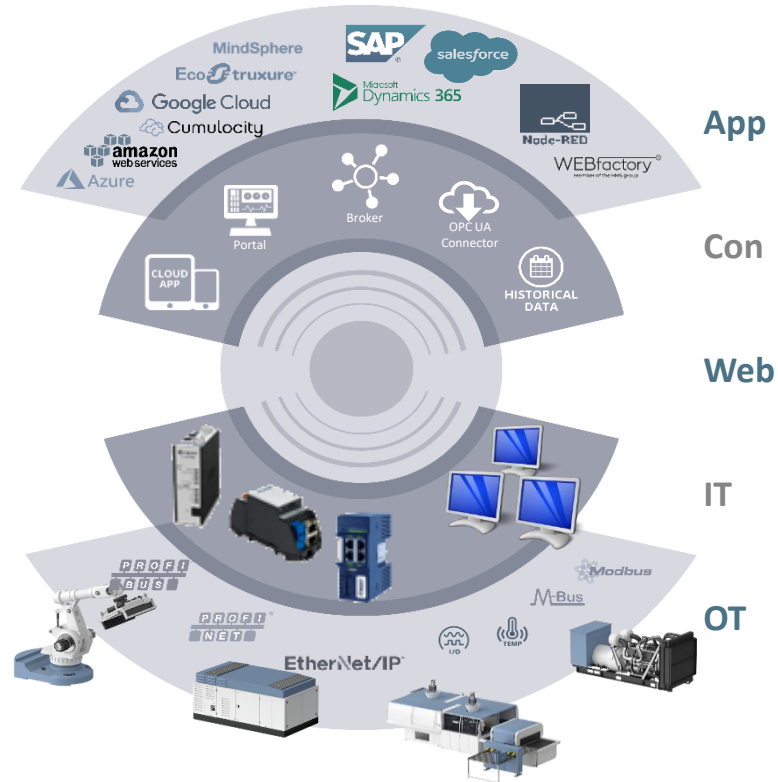
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# Security

## IIoT Data Journey

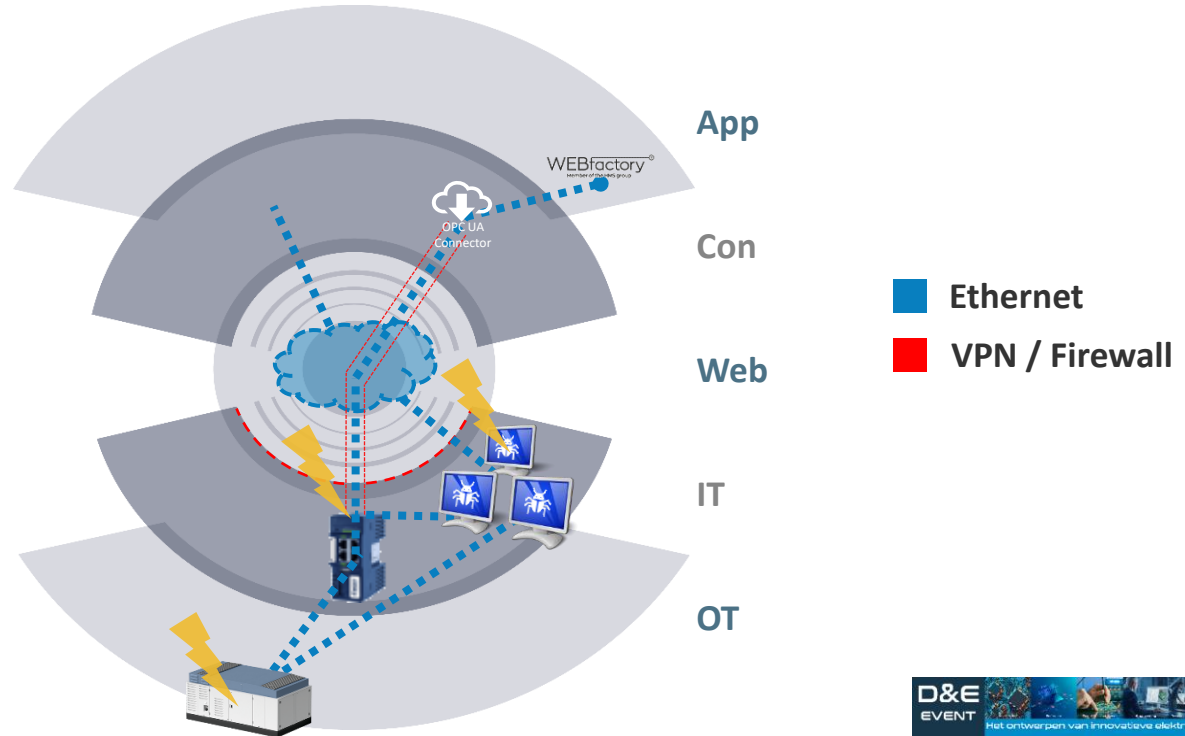


# Security

## IloT Data Journey

### Reminders

- No 1-op-1 connection
- OT connected with IT
- Vulnerability in IT
- Via IT towards OT



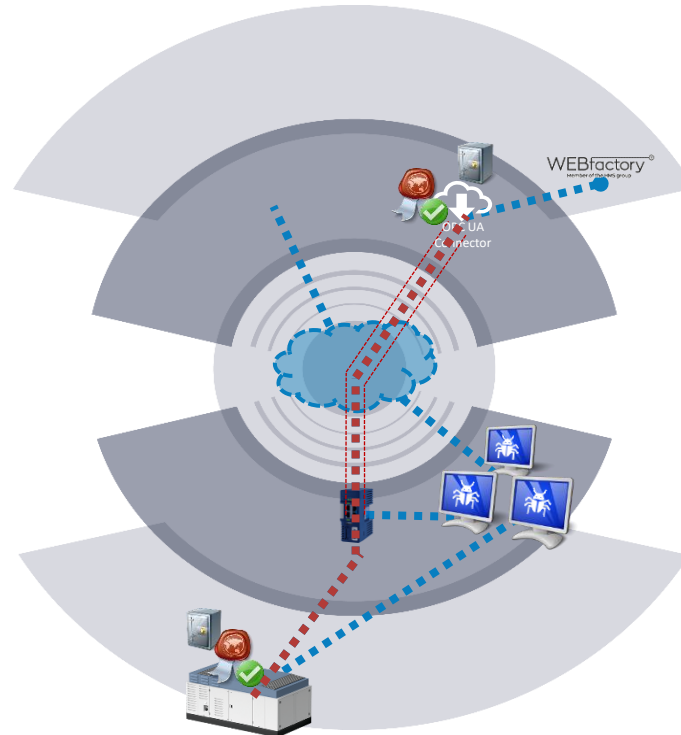


# Security

## End-to-end encryption

### Step-by-step approach

- Nodes trust each other
- By exchanging certificates
- Stored in secure 'safe'



- Ethernet
- VPN
- Versleuteld

# Cyber Security

## Node Building blocks

### Certificate Management



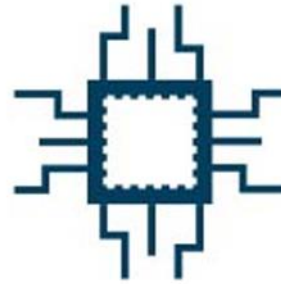
Trusted parties

### Encryption



Secure channels

### Security Device



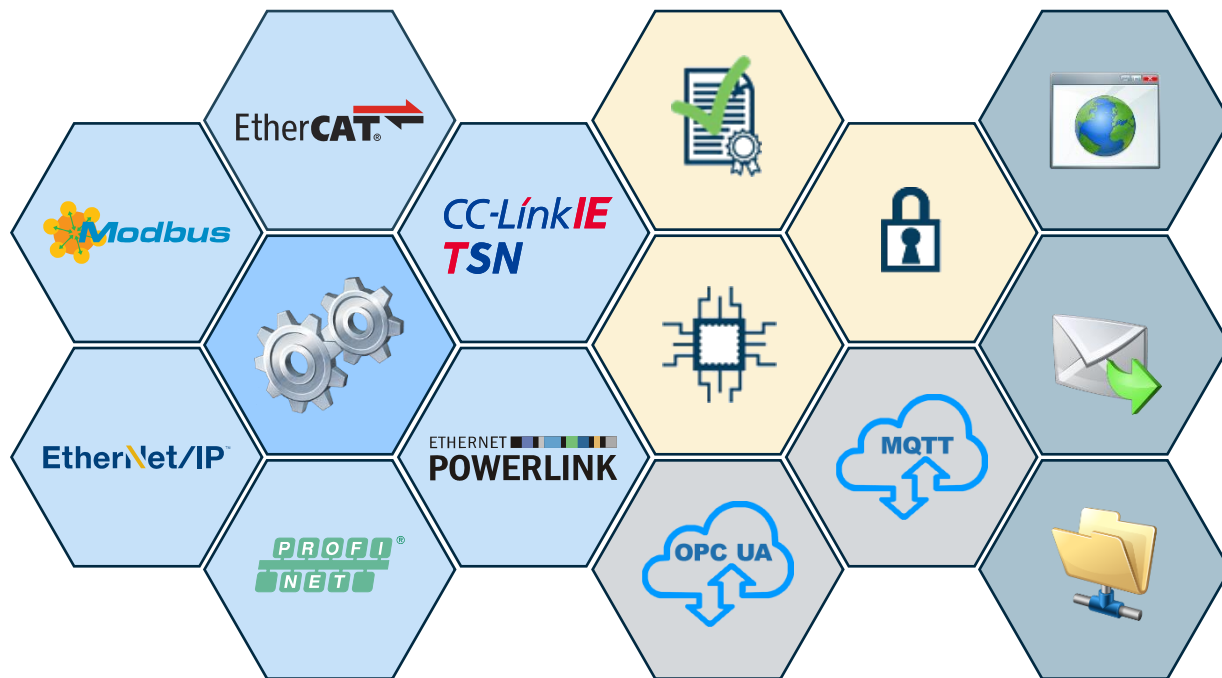
Store secret data

### Secure Boot



Trusted firmware

## Multiple-protocol - Software stacks



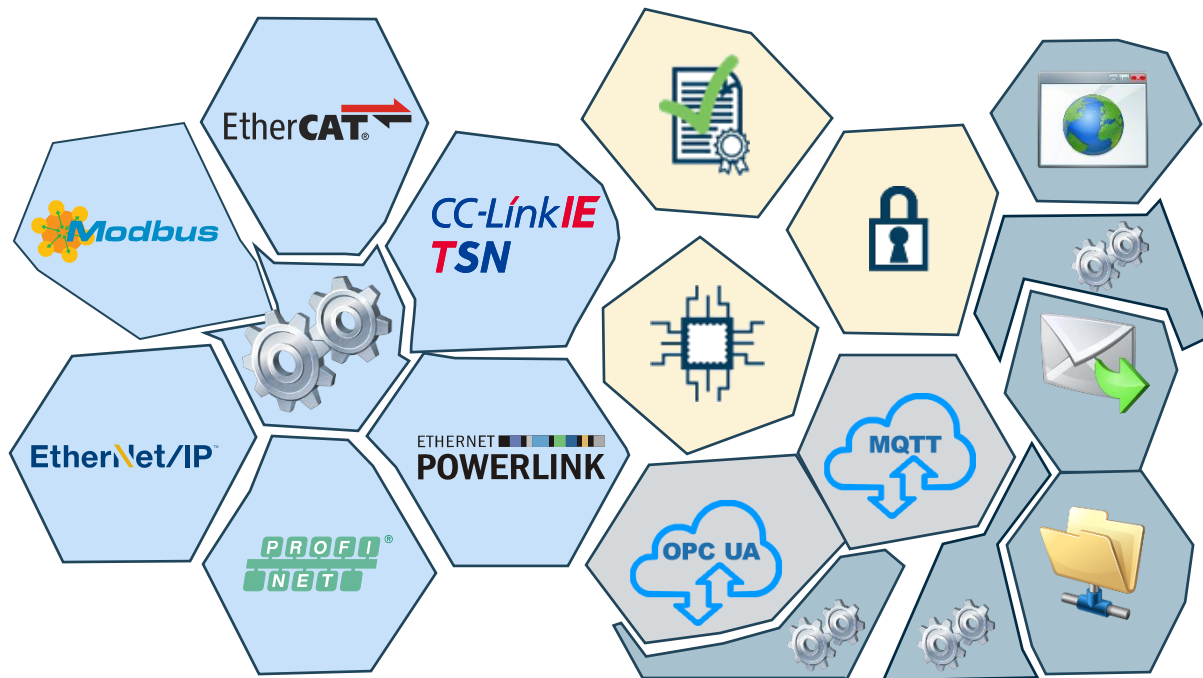
### Software is not standardized

- Different vendors
- Different structures
- Different interfaces
- Different drivers
- Different releases

### Special attention

- Non-TCP/IP protocols
- Real-time priority
- Software interference

## Multiple-protocol - Software stacks



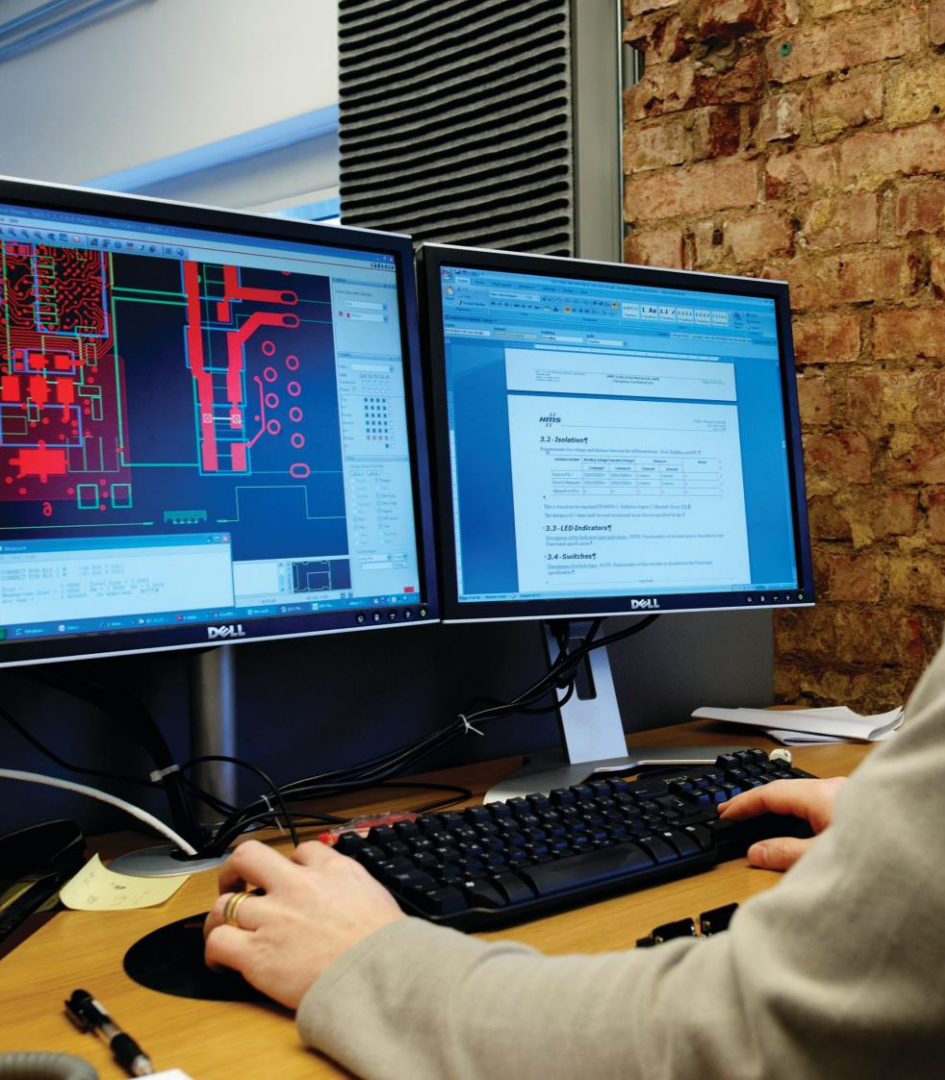
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- Different vendors
- Different structures
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### Special attention

- Non-TCP/IP protocols
- Real-time priority
- Software interference

**Multi-protocol software-development is a complex task!**







# Design-in

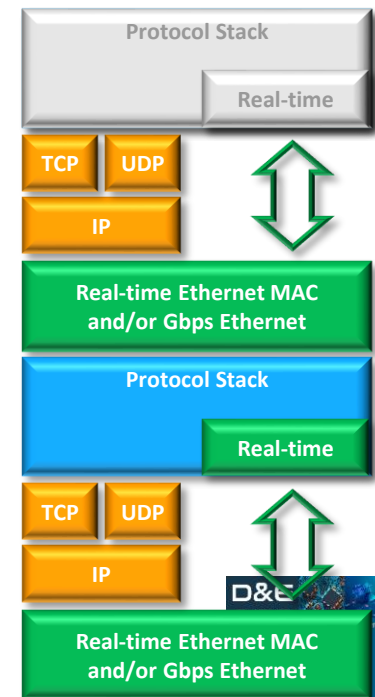
Security in industrial  
embedded applications

# Embedded Communication



## Principle system solution





	Type	Example	Network
	ASIC	Beckhoff ET1100	Fixed 1
	Protocol MCU	TI Sitara AM3357	Fixed 5
	MCU with FPGA	Xilinx Zynq	Flex ±10
	Module	ABCC B40-series	Flex ±20



# Embedded Communication



## Principle system solution

	Type	Example	Network	Stacks	Certified	Business
						Initial Cost pu
	ASIC	Beckhoff ET1100	Fixed 1	No	No	○○○○○ ●
	Protocol MCU	TI Sitara AM3357	Fixed 5	No	No	○○○○○ ●
	MCU with FPGA	Xilinx Zynq	Flex ±10	No	No	○○○○○ ○○
	Module	ABCC 40-series	Flex ±20	Build-in	Pre	○ ○○○

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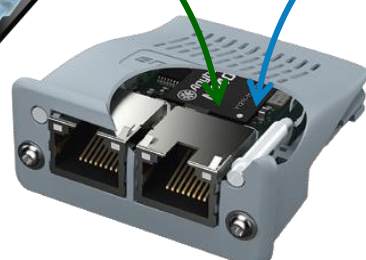
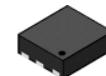
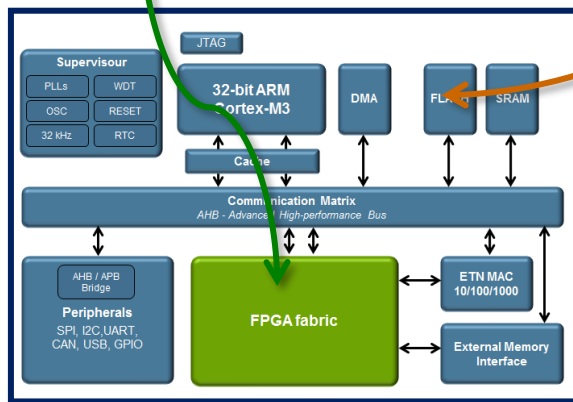
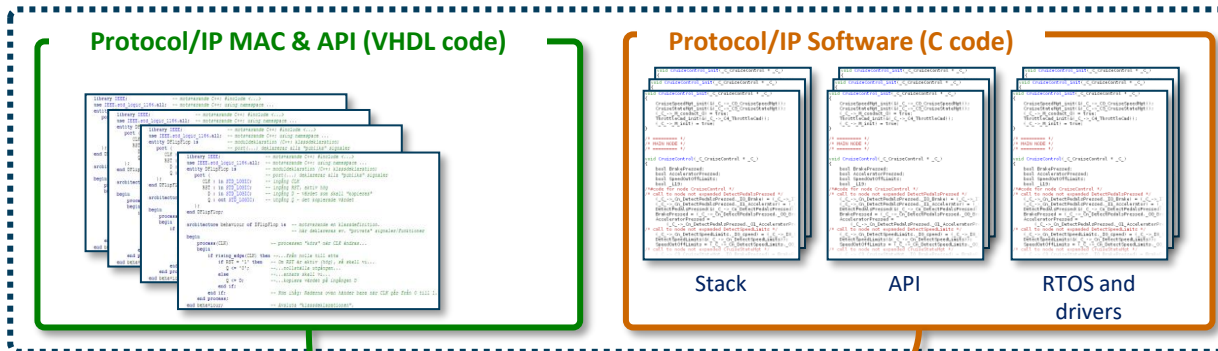
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# Embedded Communication



## Programmable hard- & software



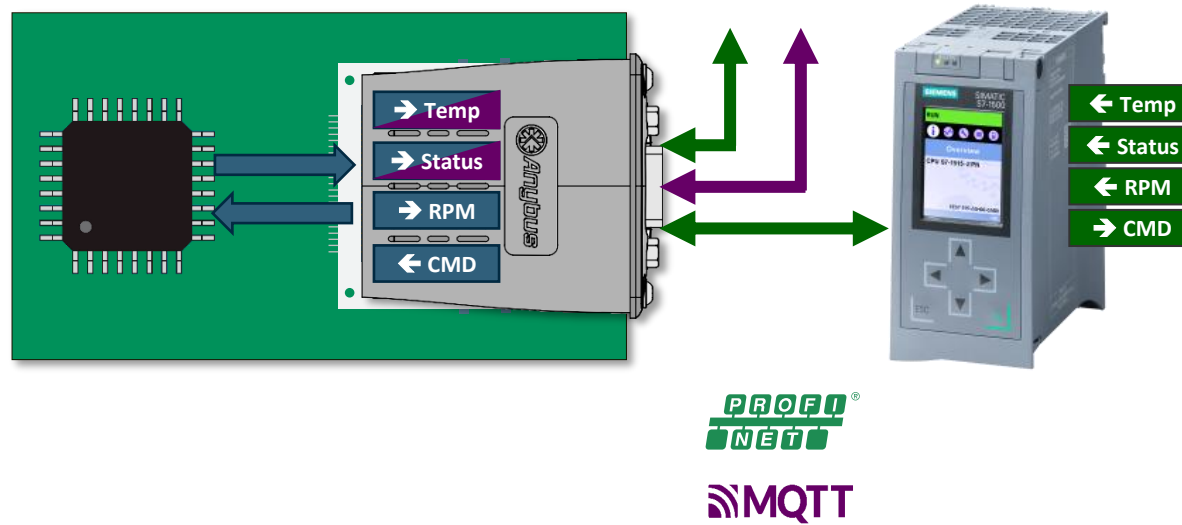
Secure Element Chip





# Embedded Communication

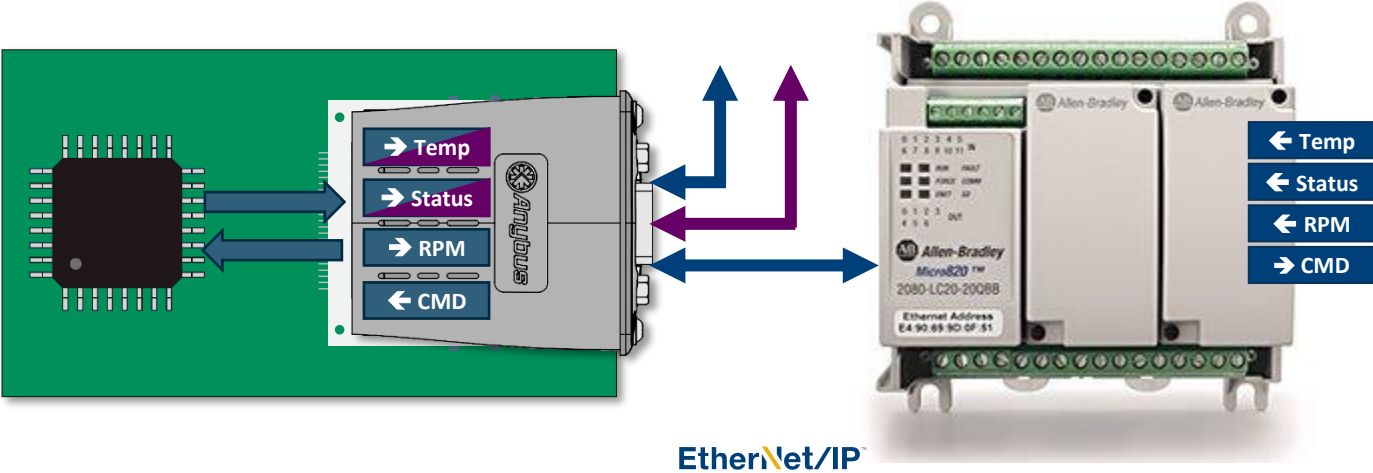
Host & Master principle: PROFINET or Ethernet/IP & MQTT

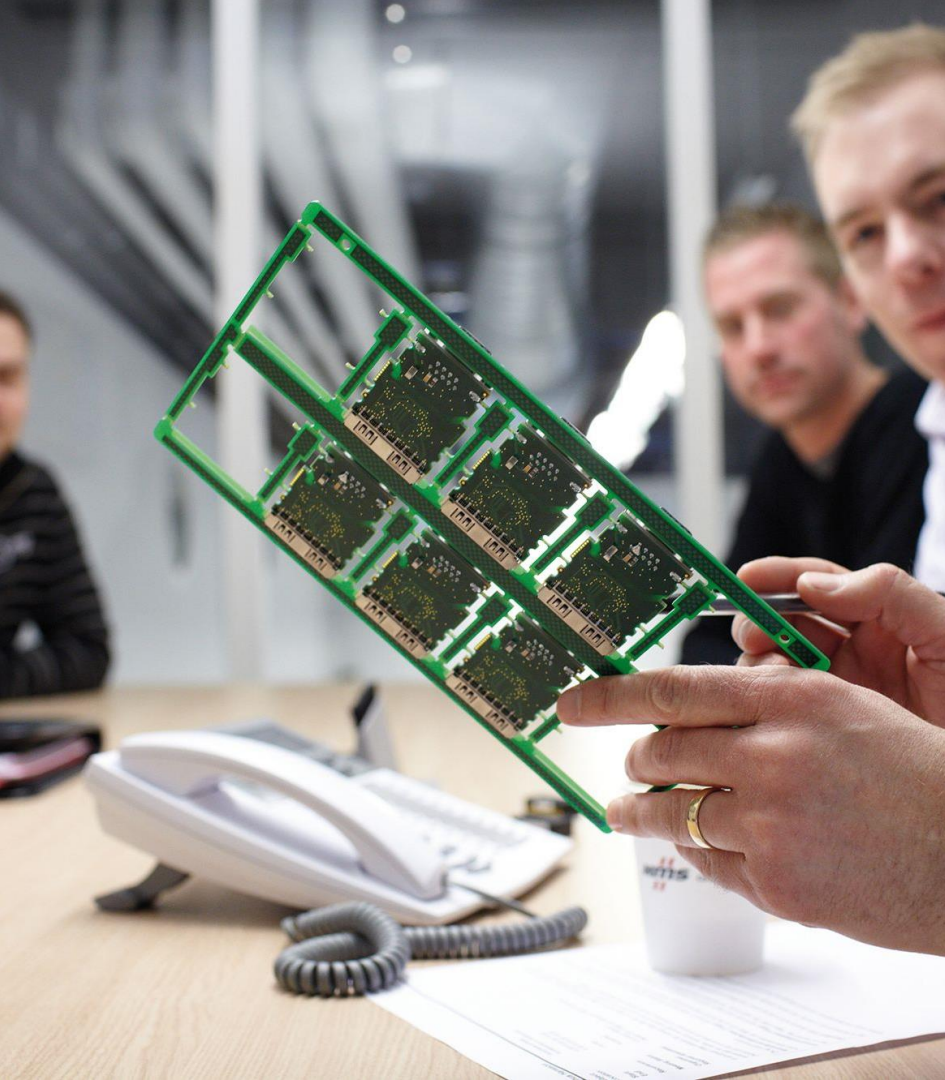


# Embedded Communication



Host & Master principle: PROFINET or Ethernet/IP & MQTT





# Project Benefits

Rapid development with low investments

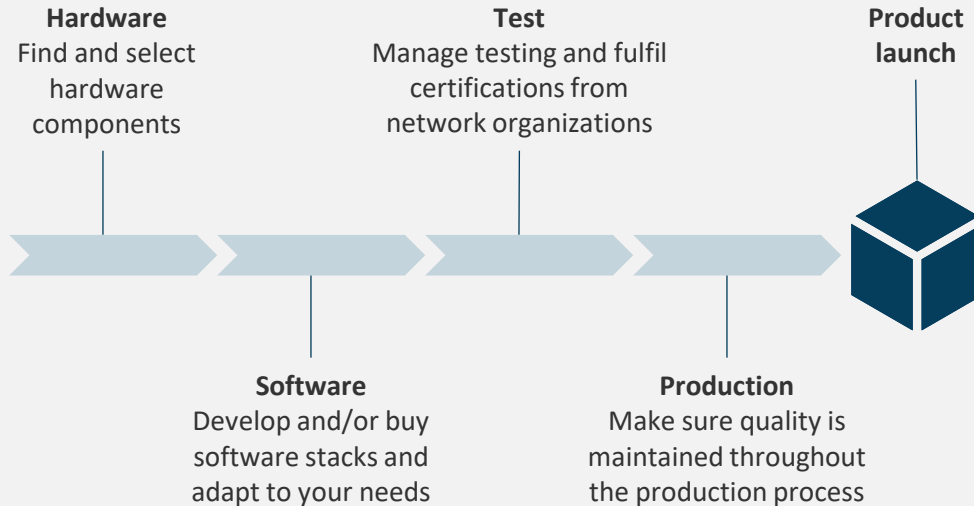
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# Main steps in designing a communication interface

## Development phase (One time per product)



## Maintenance phase

(Throughout the entire life-time of the product)

**Support**  
Provide technical support when customers have network issues



**Lifecycle**  
Manage software, network and security updates, and hardware redesigns

# Project considerations

## The total cost for in-house design

**Component price**



### **Hidden costs include:**

Extended time to market  
Maintenance & updates  
New functionality  
Support & fixes  
Expertise  
Failure  
Re-design

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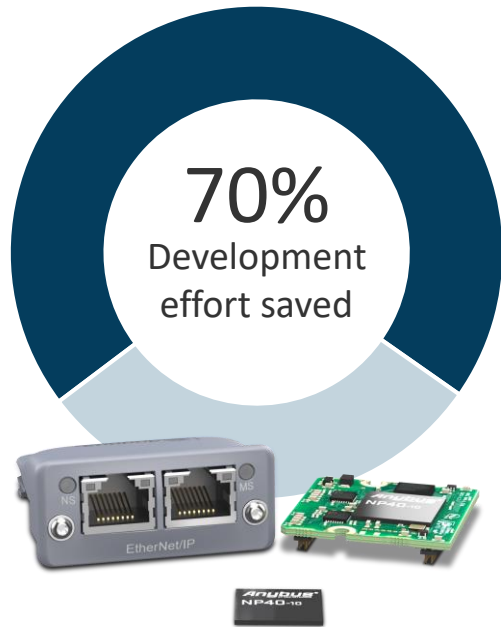


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# The fast and easy way to connectivity

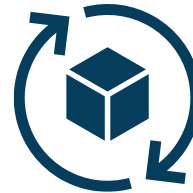
## Implement Anybus CompactCom once and get:



Reduced time to  
market



Expand quickly to  
more markets



Updates for future  
technologies

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# Hardware Meets Software™ with HMS products



**Anybus®** BY HMS NETWORKS    **Ewon®** BY HMS NETWORKS    **Intesis®** BY HMS NETWORKS    **Ixxat®** BY HMS NETWORKS

You are invited to our booth #12

Demo Anybus CompactCom on Raspberry Pi





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Hardware



Software



Test & Measurement



Engineering



Research & Development

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