



Nieuwe methoden om inzicht te krijgen in uw procesdata

Sebastiaan Koning – Beijer Electronics

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FHI  INDUSTRIËLE
AUTOMATISERING

Onderwerpen

- ▶ Markt trends OT
- ▶ Inzicht in data – Waarom?
- ▶ Technologische ontwikkelingen OT & IIoT
- ▶ Wat hebben wij nodig
- ▶ Cybersecurity
- ▶ Applicatie voorbeelden




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Markt trends OT

- ▶ Digitalisering
- ▶ Inzicht in data
- ▶ Koppeling met IT & Cloud
- ▶ Condition Monitoring
- ▶ Data analytics
- ▶ Cybersecurity
- ▶ Industry 5.0



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Wie heeft al OT systemen aan de “Cloud” gekoppeld?



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Inzicht in data – Waarom?

- ▶ Efficiënter produceren
- ▶ Duurzaamheid
 - Energiebesparing
 - Productieverlies beperken
- ▶ Voorspelbaar onderhoud
- ▶ Processen dynamisch bijsturen
- ▶ Continu optimalisatie

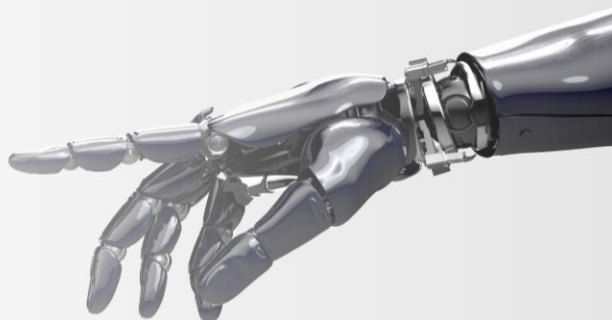


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Technologische ontwikkelingen OT & IIoT

- ▶ Cloud Computing
- ▶ Edge Computing
- ▶ OPC-UA
- ▶ MQTT
- ▶ Docker
- ▶ Web based HMI
- ▶ AI & machine learning



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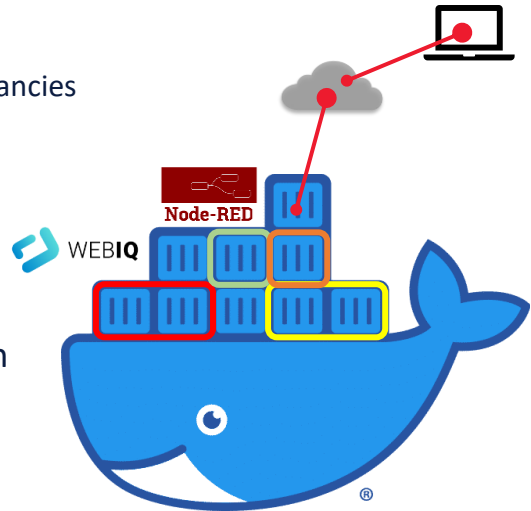
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Docker

Lichtgewicht virtual machines

- Eén pakket van applicaties en dependancies
- ▶ Verrijking van lokale toepassingen
 - Web server
 - Node-RED
 - Secure remote access
 - Functionele blokken
- ▶ Eenvoudig en dynamisch te beheren
- ▶ **Vergt inhoudelijke expertise**



Web based HMI

- ▶ Schaalbaar
- ▶ Verschillende architecturen mogelijk
 - Lokale verwerking en weergave
 - Centrale verwerking, lokale weergave
- ▶ Grafisch sterke content
 - Weer te geven op verschillende apparaten
- ▶ SCADA vaker gebaseerd op HTML5
- ▶ Directe interactie met andere centrale systemen



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Wat hebben we nodig?

- ▶ Edge controller
- ▶ HMI met edge functionaliteit
- ▶ Een ontvanger
 - SCADA
 - Cloud based dienst

The diagram illustrates a central HMI tablet (Human-Machine Interface) connected to various components. At the top left, there is a SCADA icon with a network symbol and a database cylinder. At the top right, there is a cloud-based service icon with a server rack and a database cylinder. Below the tablet, there are three edge controller units, each with a database cylinder. Bidirectional arrows connect the central tablet to each of these four components, indicating data flow and control.

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Cybersecurity

The background of the slide features a glowing blue circuit board with binary code (0s and 1s) overlaid on it, symbolizing digital technology and cybersecurity.

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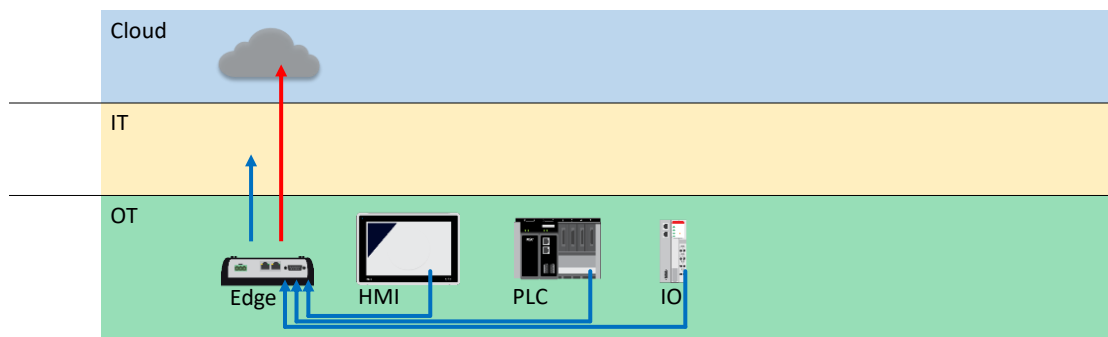
Cybersecurity

- ▶ Houd controle over datastromen
- ▶ Alleen strikt noodzakelijke communicatie
- ▶ Segmentering
- ▶ Wie heeft er inzicht in de data?
 - Gebruikersbeheer
- ▶ Alleen weergave, of ook besturing?
- ▶ Pas encryptie toe
 - Certificaatafhandeling



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OT Data acquisitie via Edge



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Directe OT data acquisitie

Cloud

IT

OT

Edge HMI PLC IO

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Verbinding van Cloud naar OT

Cloud

IT

OT

Edge HMI PLC IO

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Secure Edge

The diagram illustrates a secure edge architecture with four horizontal layers: Cloud (blue), IT (yellow), DMZ (orange), and OT (green). In the DMZ layer, an 'Edge' device is shown with a police officer icon and two fire icons. Red boxes highlight the DMZ layer and the connections between the Edge device and the OT layer. Blue arrows show data flow from HMI, PLC, and IO in the OT layer to the Edge device, and from the Edge device to the IT layer and the Cloud. A red arrow points upwards from the Edge device towards the Cloud.

Cloud
IT
DMZ
OT

HMI PLC IO

Edge

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Applicatie voorbeelden

The image shows a man in a plaid shirt working at a computer. Overlaid on the scene is a network diagram with a central red circle labeled 'ERP'. Red lines connect this central node to several other nodes representing industrial protocols and brands: Allen Bradley, EtherCAT, Profibus, Mitsubishi Electric, Siemens, and Modbus RTU.

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Productiedata analyseren in de Cloud

- ▶ Edge devices op verschillende sites
- ▶ Data verzameling in Cloud
- ▶ Presentatie
- ▶ Analyse

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Legacy sites koppelen met MQTT

- ▶ Gebouwbeheer
 - Oudere installaties
 - Nieuwe installaties
- ▶ Remote statusuitlezing én aansturing
- ▶ HMI, PLC, IO
- ▶ Uniforme communicatie met centraal management platform

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Legacy sites koppelen met MQTT

Central site

- Management platform
- MQTT broker

Remote site

- 4G router
- Network
- Protocol converter
- PLC
- HMI
- Other

Uitlezing (Reading) and Aansturing (Control) are indicated by blue dashed arrows.

MQTT communication is shown between the central site and the remote site's 4G router.

Modbus, OPC-UA, Profinet, etc. are shown as protocols connected to the Protocol converter.

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FHI INDUSTRIËLE AUTOMATISERING

Legacy sites koppelen met MQTT - Secure

Central site

- Management platform
- MQTT broker
- VPN server/ concentrator

Remote site

- 4G router
- Network
- Protocol converter
- PLC
- HMI
- Other

Uitlezing (Reading) and Aansturing (Control) are indicated by blue dashed arrows.

MQTT communication is shown between the central site and the remote site's 4G router.

Modbus, OPC-UA, Profinet, etc. are shown as protocols connected to the Protocol converter.

Secure VPN tunnel OpenVPN/IPsec is highlighted in a red dashed box.

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Cloud logging met remote access

The diagram illustrates a network architecture with three layers: Cloud (top), DMZ (middle), and OT (bottom). In the IT layer, a laptop icon is shown with a red fire icon, indicating a security risk. In the DMZ layer, an 'Edge' device is shown with a security guard icon and a red fire icon. In the OT layer, HMI, PLC, and IO devices are shown. Red arrows indicate direct connections from the IT layer through the DMZ to the Edge device and then to the Cloud. Blue arrows show data flow from OT devices to the Edge device and from the Edge device to the Cloud.

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Cloud logging met remote access

This diagram shows a more secure network architecture. In the IT layer, a laptop icon is shown with a red fire icon. In the DMZ layer, a 'Secure Cloud Gateway' device is shown with a security guard icon and a red fire icon, and a 'Jump station' device is shown. In the OT layer, an 'Edge' device, HMI, PLC, and IO devices are shown. A blue arrow shows a 'Remote' laptop (in a separate purple box) connecting to the Secure Cloud Gateway in the DMZ. From there, a blue arrow goes to the Cloud. Another blue arrow goes from the Edge device in the OT layer to the Secure Cloud Gateway. Red arrows indicate blocked direct paths from the IT layer to the Edge device and from the Edge device to the Cloud. Blue arrows show data flow from OT devices to the Edge device and from the Edge device to the Secure Cloud Gateway, and from the Secure Cloud Gateway to the Cloud.

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Vragen



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**Company introduction**

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Our vision

Beijer Electronics is a multinational, cross-industry innovator that connects people and technologies to optimize processes for business-critical applications.

As experts in user-friendly software, hardware and services for the Industrial Internet of Things, we empower you to meet your challenges through leading-edge solutions.

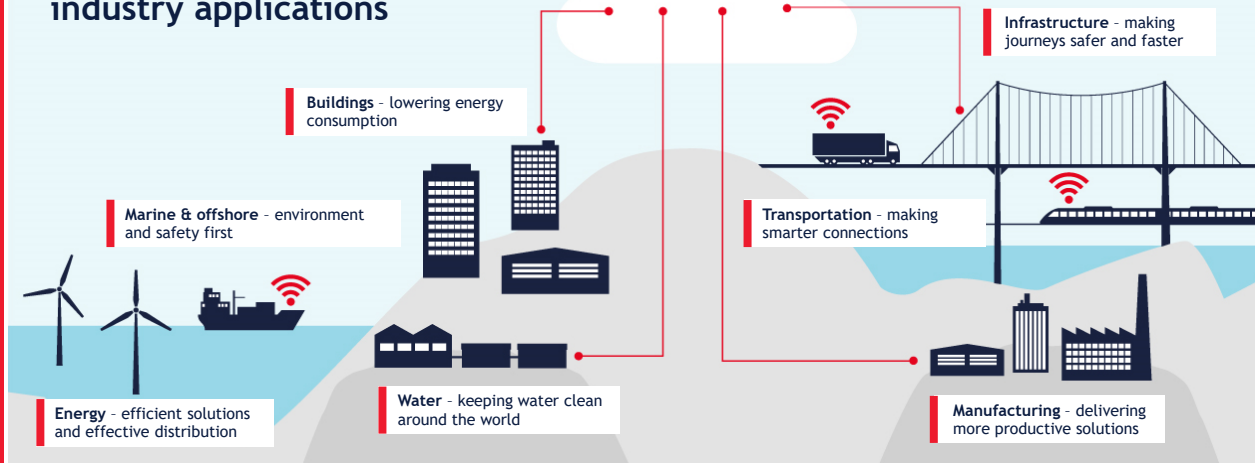
People & Technology. Connected.

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Innovative solutions for cross industry applications




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Five powerful complementary areas




Operator communication

Create leading, interactive, user-experiences for any environment enabled by strong, stylish, smart HMIs and open software.




Automation solutions

Accomplish advanced automation challenges through smart open, industry solutions and concepts to reduce complexity and engineering time.




Digitalization

Accelerate automation solutions with digitalization via smart cloud and web based solutions, services and easy-to-use tools.




Display solutions

Match your electrical and mechanical challenges with customized LCD display modules, for a fully integrated and flexible solution.




Support

Beat the obstacles with help from our global support and FAE teams. From sales support, through technical support to after-sales service.


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Building blocks for smart automation solutions




BCS Tools
development platform




iX HMI software




HTML5 web HMI & SCADA software




Smart engineering




Communication




X2 with CODESYS control




Distributed control




Modular PLCs




Compact controllers




General purpose inverters




Dedicated HVAC inverters




High performance inverters




BFI Tools




Distributed IO




Servo drives




Servo motors



Protocol converters, IIoT gateways & edge controllers



Data communication

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