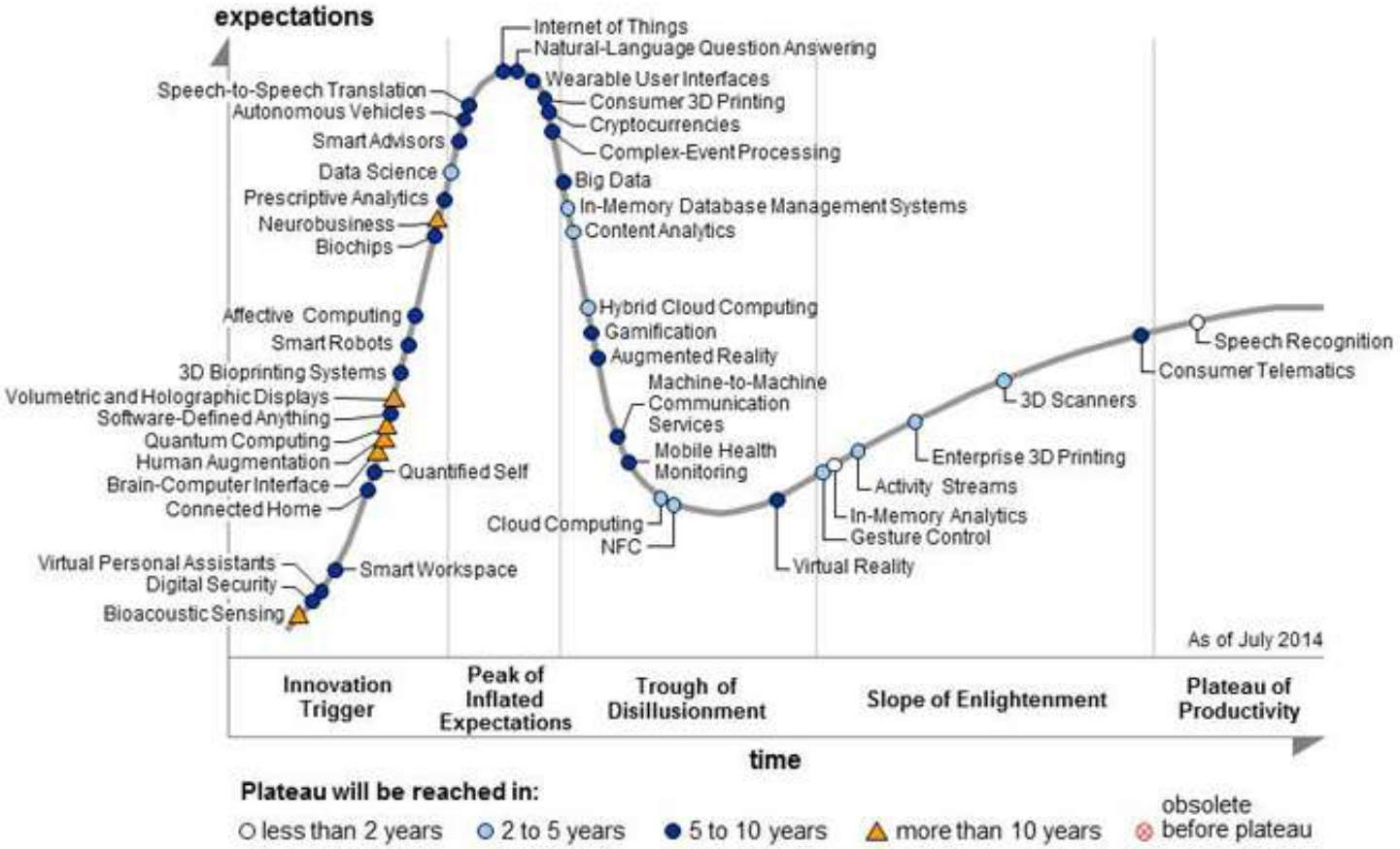
PROFICLOUD

Lutz Herrmann

Hype Cycle – Cloud Computing



Quelle: Gartner 2014

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INSPIRING INNOVATIONS

PROFICLOUD

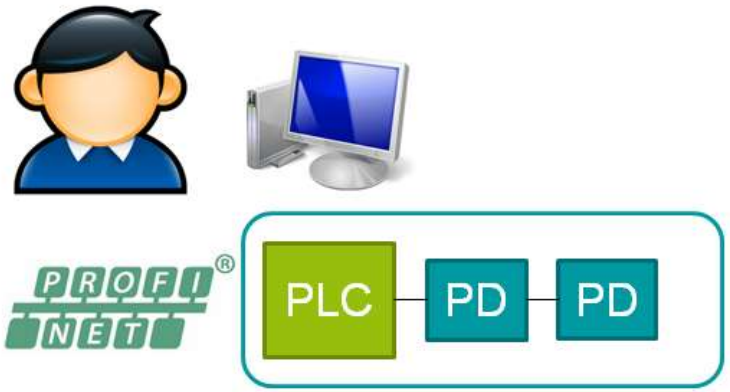
PROFINET- Network

- PROFINET
  Open Industrial Ethernet standard of PROFIBUS & PROFINET International (PI) for automation
- Technology
  Profinet uses TCP / IP and IT standards
- Real-Time-Ethernet
  Real-Time (RT) and Isochronous-Real-Time (IRT)
- Not for routing
  Local limitation of the network

PROFICLOUD

PROFINET-Local

- PROFINET- Controller
  PLC with PROFINET controller functionality
- PROFINET-DEVICES
  Local PROFINET devices (PLC, BC, frequency converters,…)
- Engineering
  The engineering of the PROFINET network takes place at the PROFINET controller



PROFICLOUD

PROFINET- Extended

- PROFINET-DEVICES

  The local PROFINET network has to be extended to distributed PROFINET nodes.

  In this example PROFINET devices should be connected at the sites Blomberg, Lemgo and Bad Pyrmont through the Internet with the PROFINET controller.

PROFICLOUD

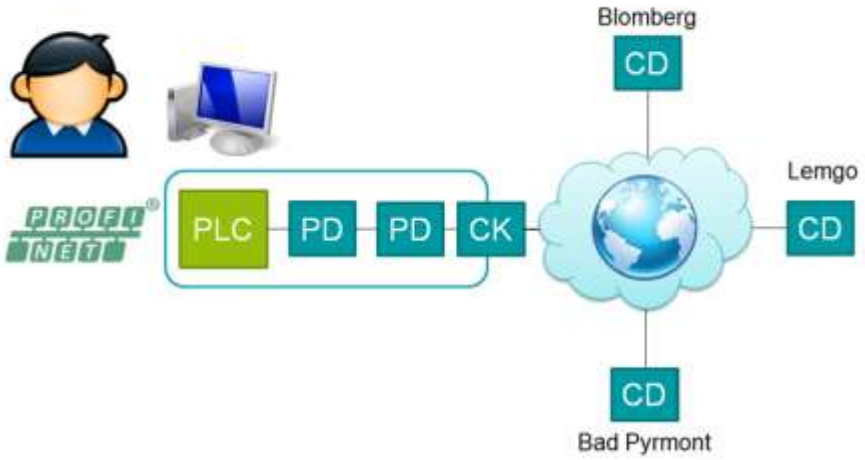
PROFICLOUD- Network

- PROFICLOUD-Coupler

  Connects the local PROFINET to the PROFICLOUD

- PROFICLOUD-Device

  Instead of PROFINET devices PROFICLOUD devices are installed in the distributed systems, which are connect over the Internet with the PROFICLOUD

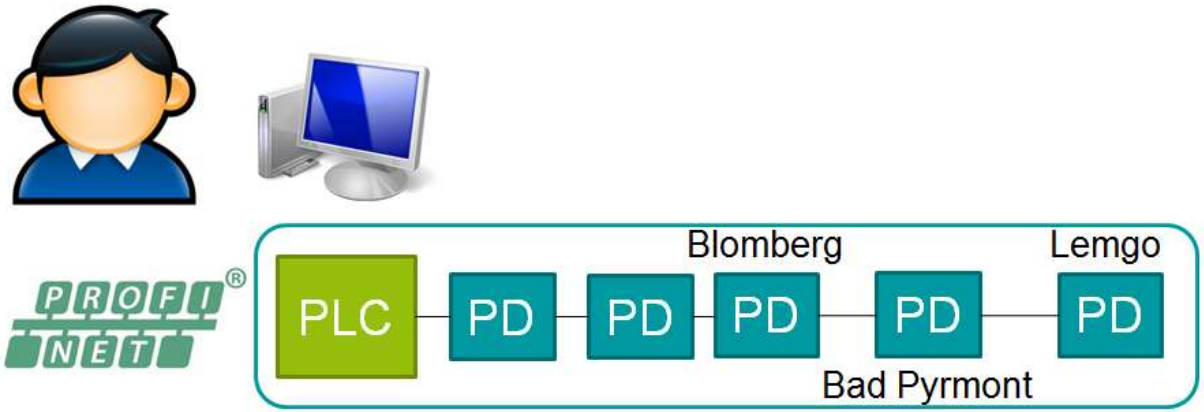


PROFICLOUD

PROFICLOUD- Network

- PROFICLOUD-Devices

  The devices of the PROFI CLOUD are displayed on the PROFINET as local devices. The programming of the PROFINET does not change and is here as usual.



PROFICLOUD

PROFICLOUD- Virtual devices

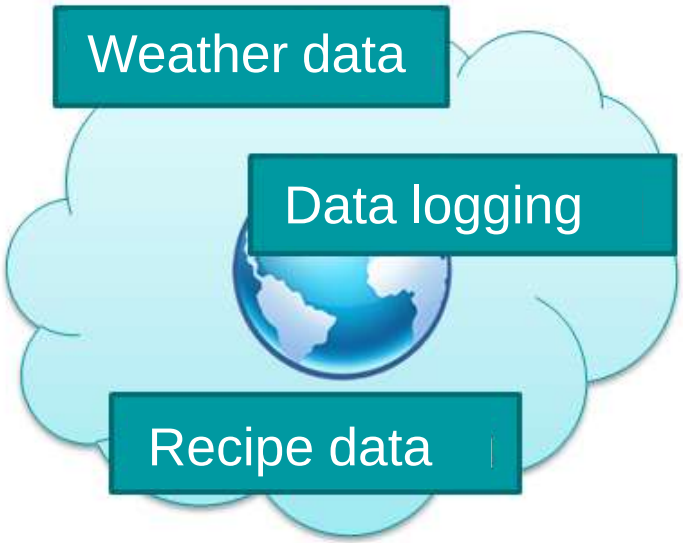
- New possibilities

  With the PROFICLOUD it is not only possible to process I/O signals, but also to integrate services from the Internet in the PROFINET system. Examples are:

  – Weather data

  – Data logging

  – Recipe data



Almost unlimited possibilities

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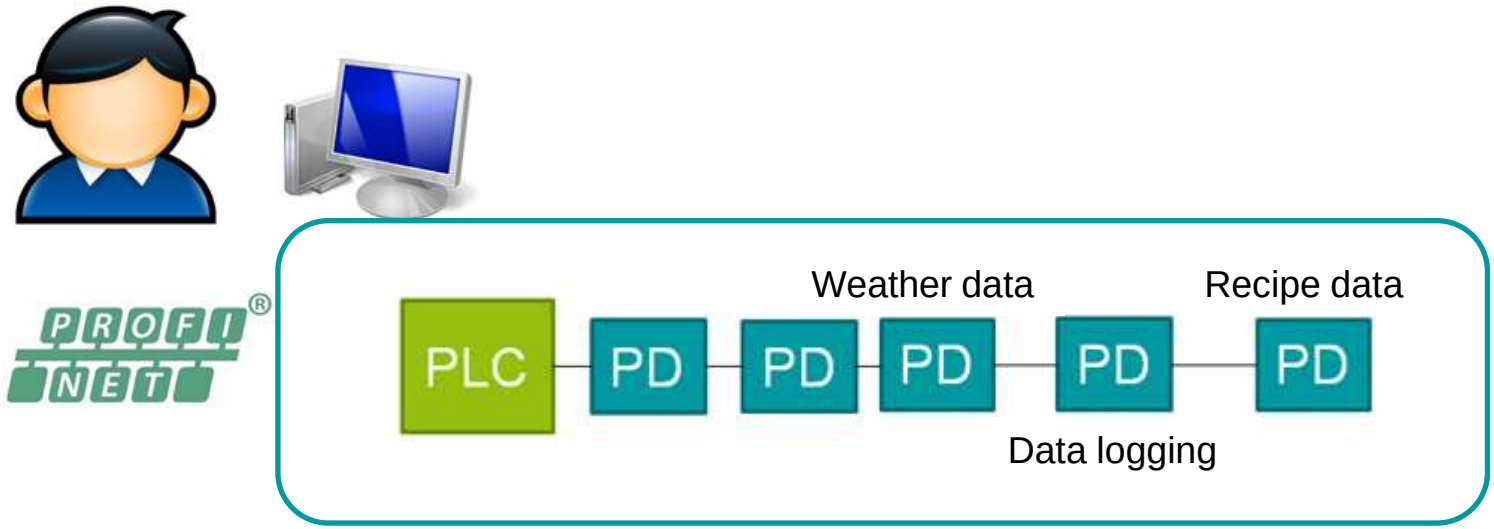
PROFICLOUD

PROFICLOUD- Network

- Virtual PROFICLOUD-Devices

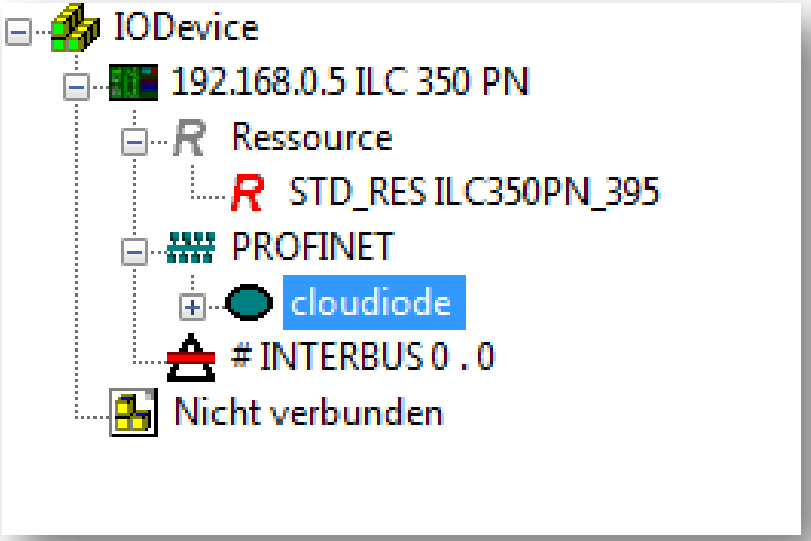
  The virtual devices of the PROFICLOUD are displayed on the PROFINET as local devices, and are engineered as standard PROFINET devices.



PROFICLOUD | Engineering

PROFINET

- PROFINET Engineering as usual
- The complete engineering in PCWORX is the same



„Never change a running system!“

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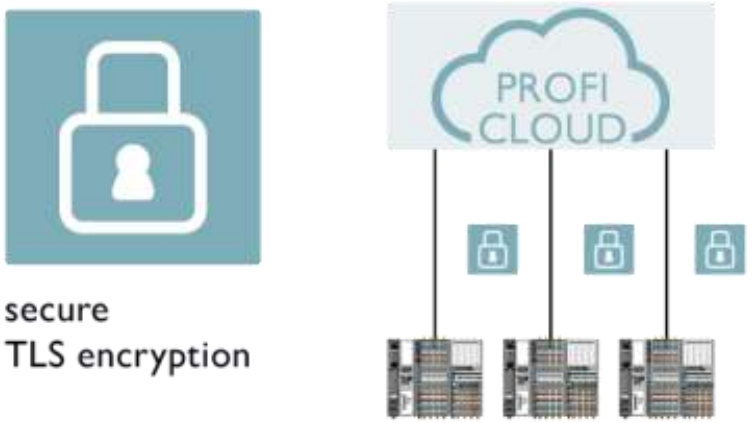
PROFICLOUD

Safe and easy communication

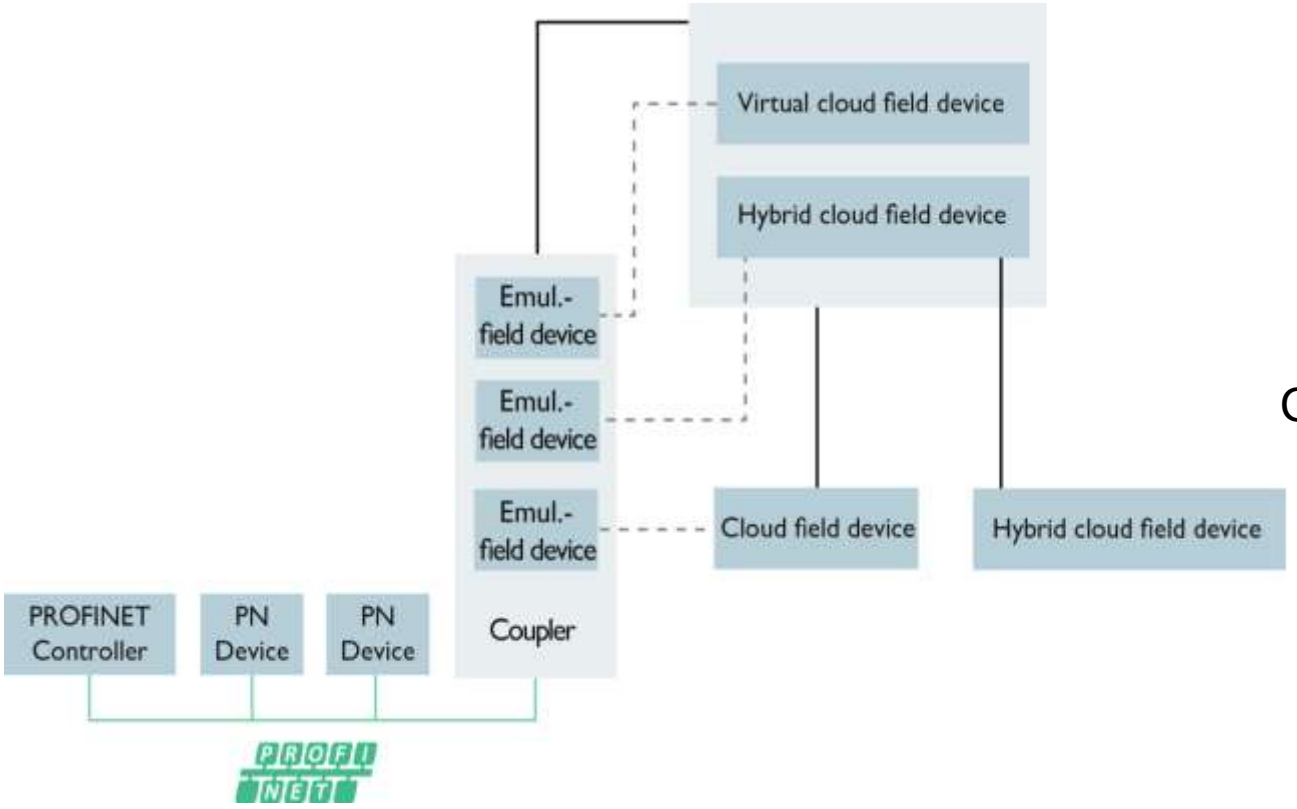
- All distributed PROFICLOUD-devices transmit the data to the cloud via Internet access
- Transmission as if it were a PROFINET device – and of course, this data is TLS-encrypted



*Transport Layer Security

PROFICLOUD

System Architecture



Cloud Devices

Cloud Coupler

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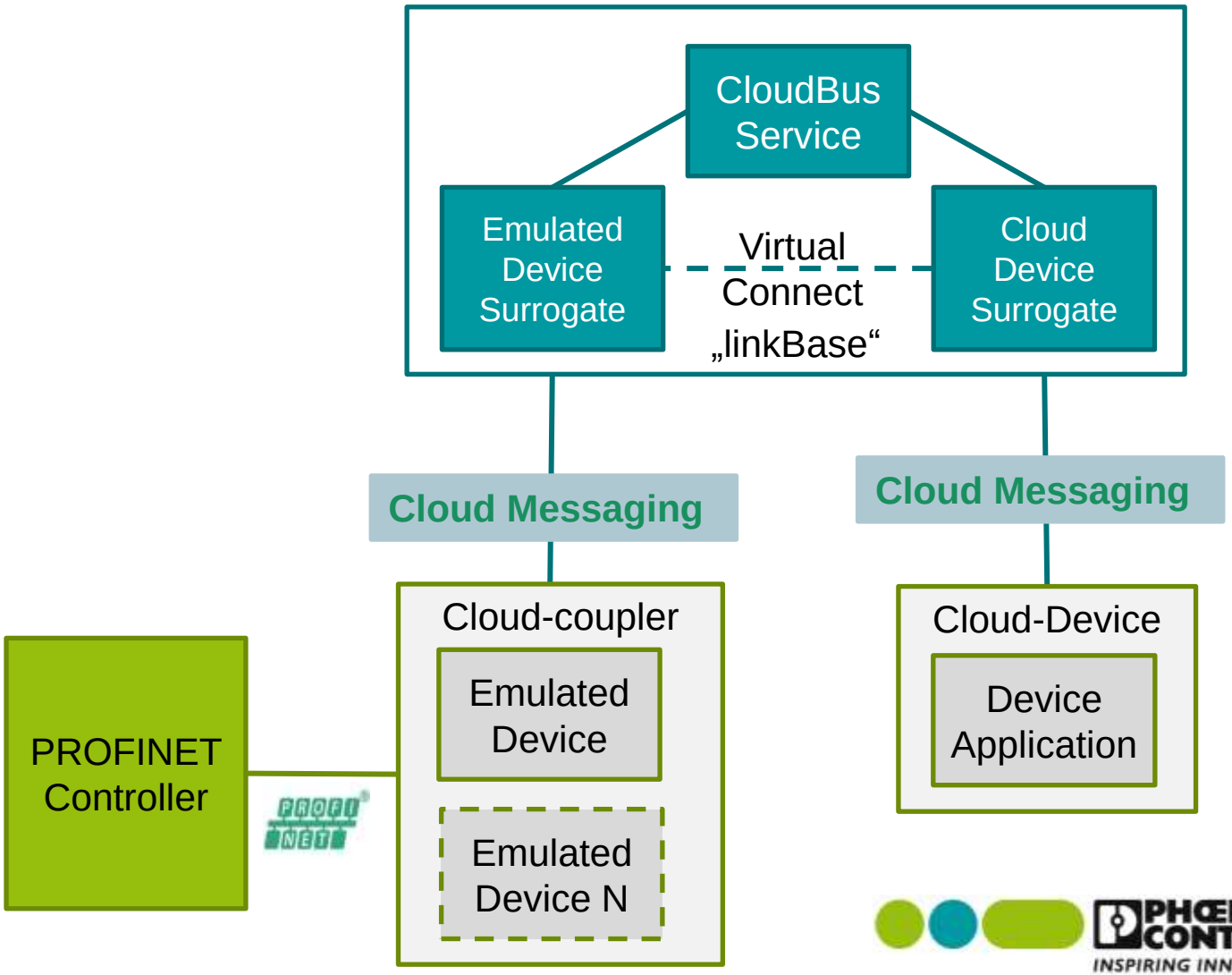
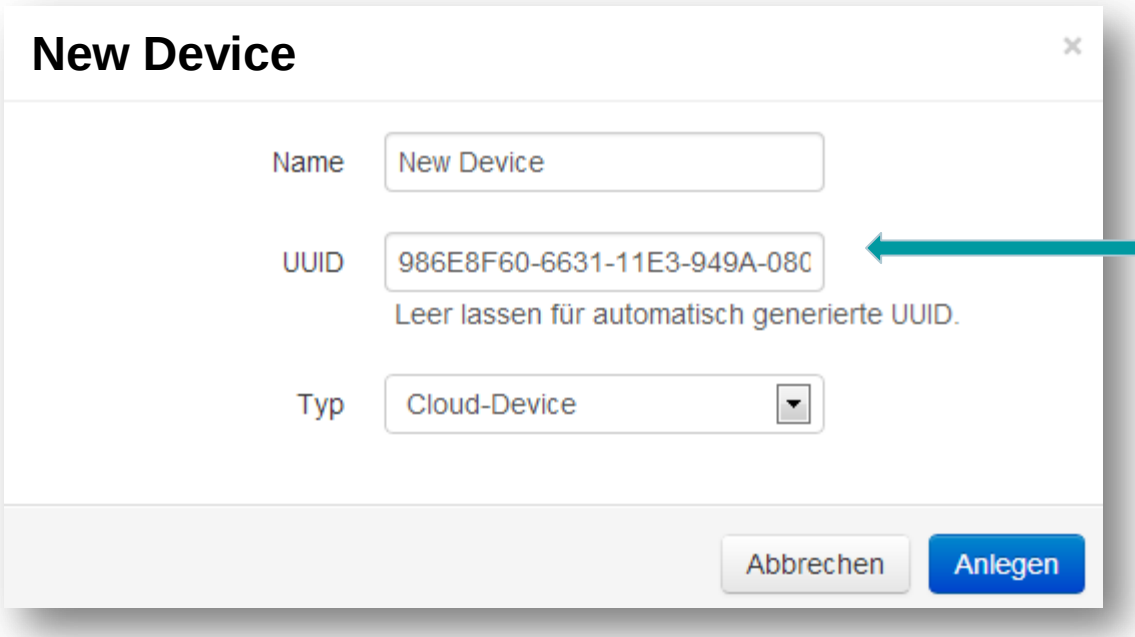

CloudBus Service
Emulated Device Surrogate
Virtual Connect „linkBase“
Cloud Device Surrogate
Cloud Messaging
Cloud Messaging
Cloud-coupler
Emulated Device
Emulated Device N
Cloud-Device
Device Application
PROFINET Controller

PROFICLOUD | Engineering

Add Device(s)/Coupler



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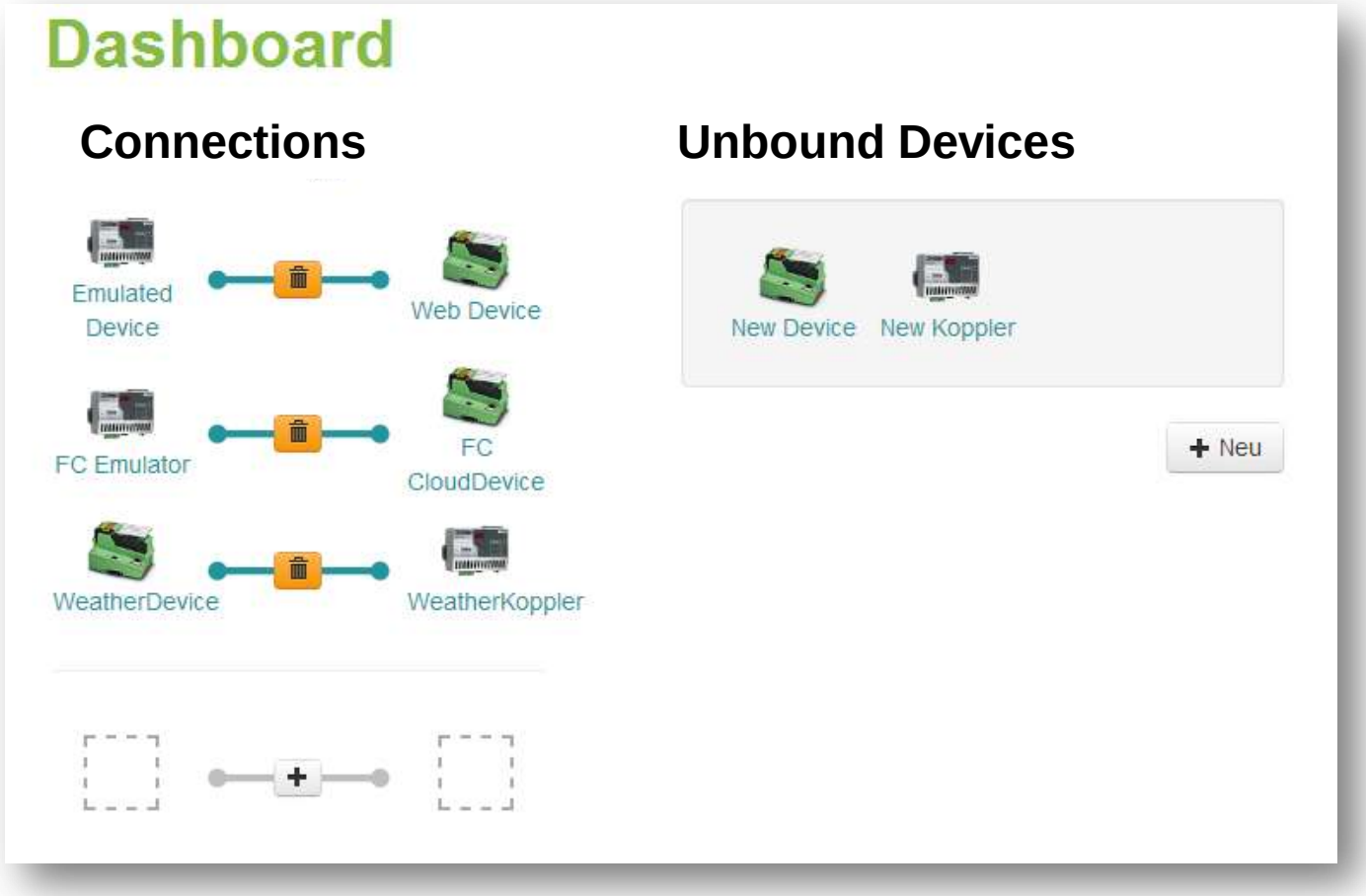
PROFICLOUD | Engineering

Connect Devices/Coupler



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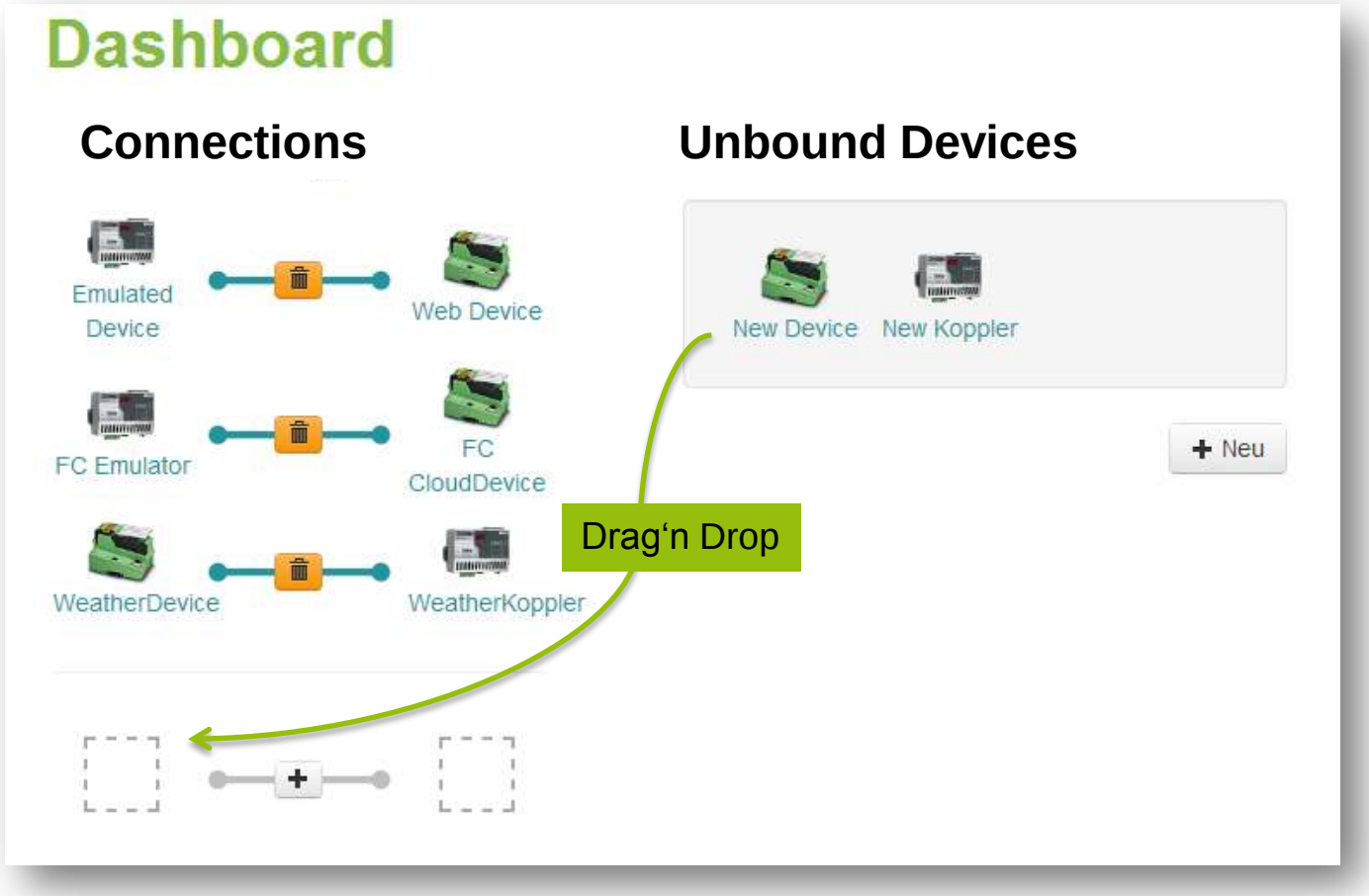
Connect Devices/Coupler



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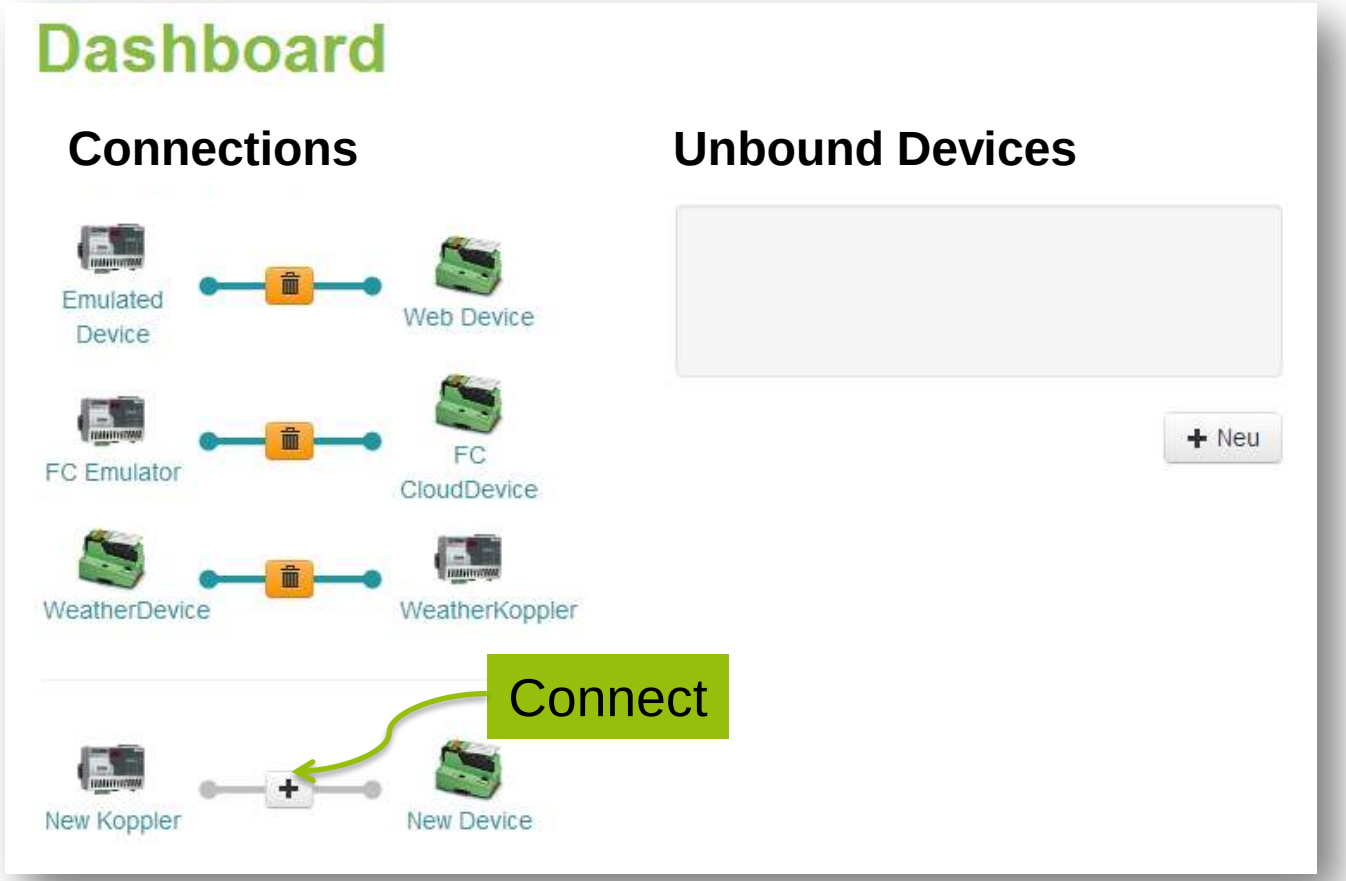
PROFICLOUD | Engineering

Connect Devices/Coupler



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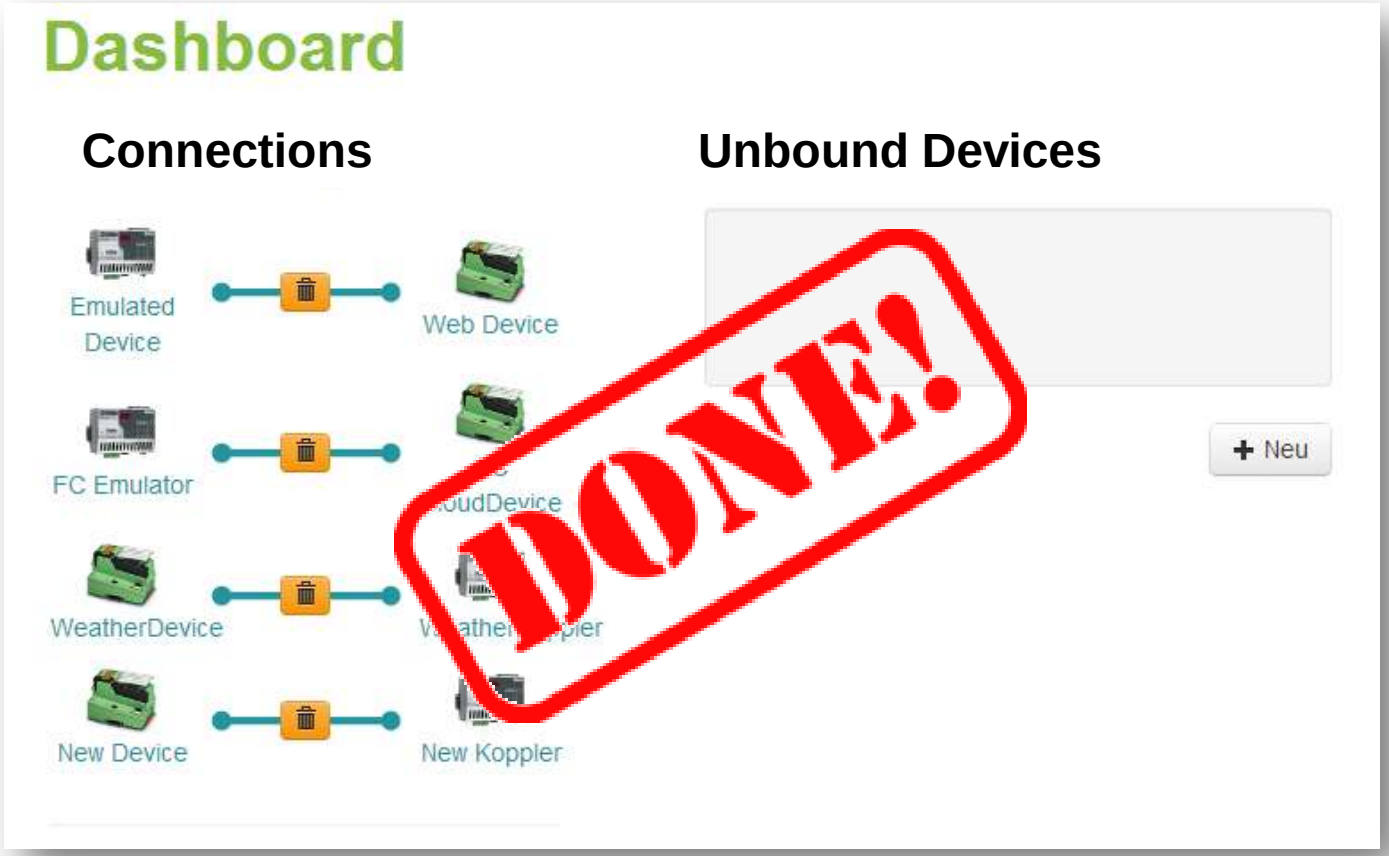
PROFICLOUD | Engineering

Connect Devices/Coupler



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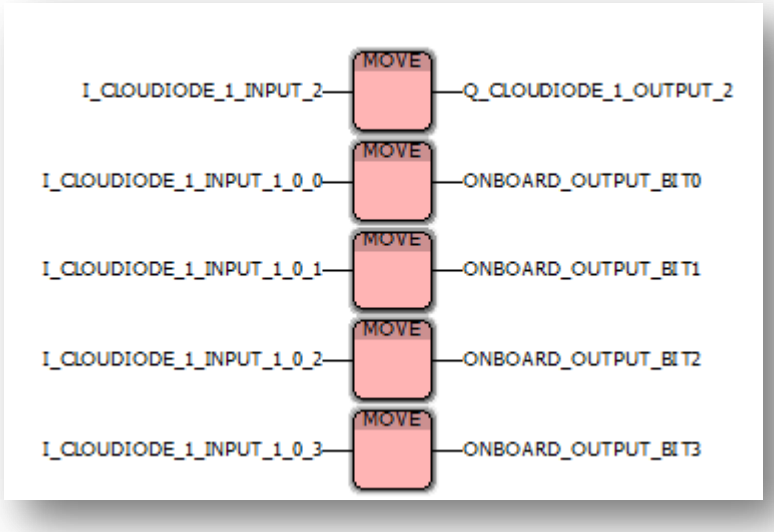
PROFICLOUD | Engineering

PC WORX



Use them as easily as local devices!

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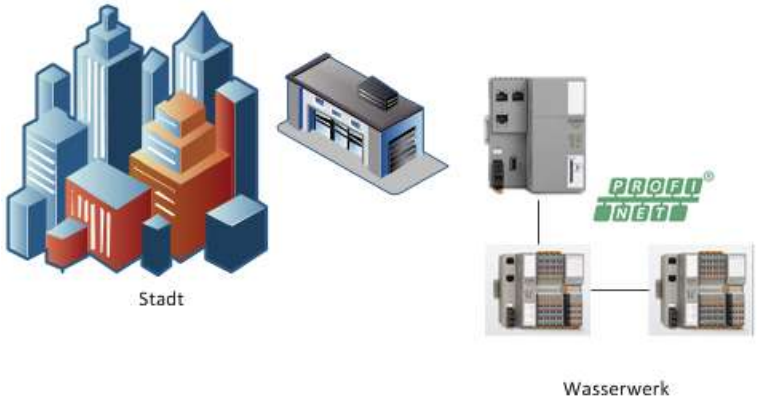
PROFICLOUD | Application example

WATERWORKS

Task

- The WATERWORKS has to control and monitor decentralized pump- stations



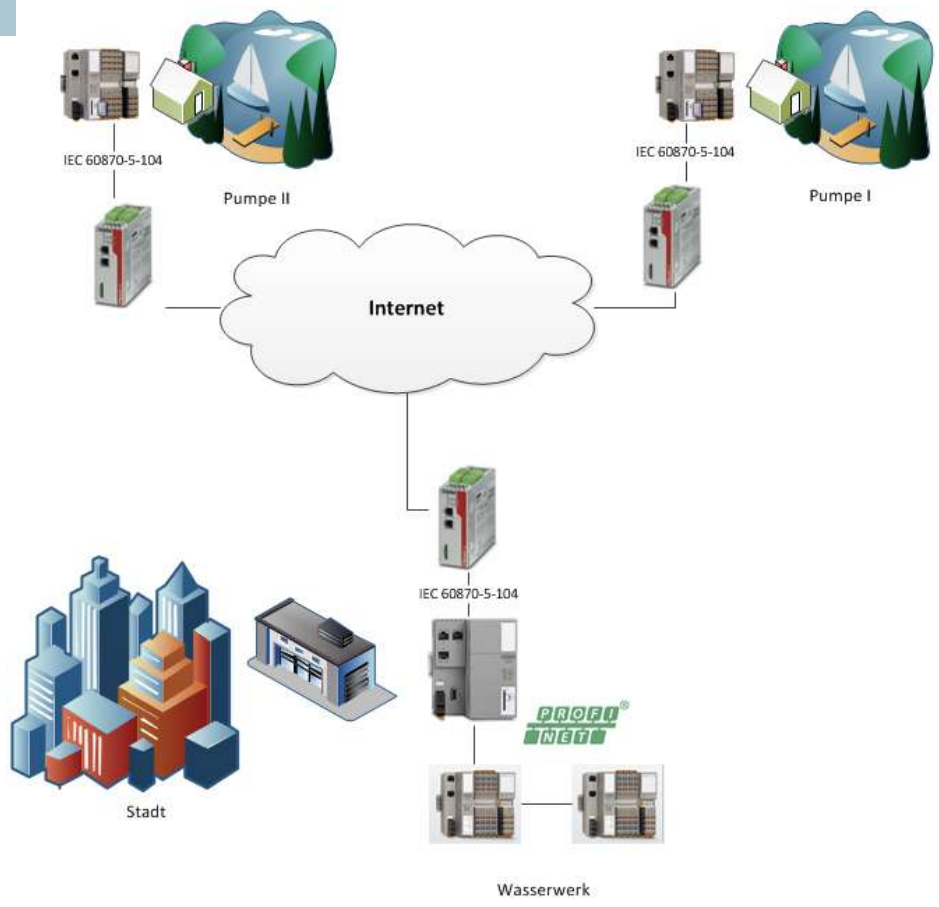
PROFICLOUD | Application example

WATERWORKS (traditionally)

VPN Server with DynDNS service register (if no fixed IP available)

- Create the certificates for VPN client / server
- VPN Client and Server configuration (connection data, etc.)
- Load telecontrol protocol to control
- Link telecontrol protocol with the respective process data

→ **Do everything three times!**



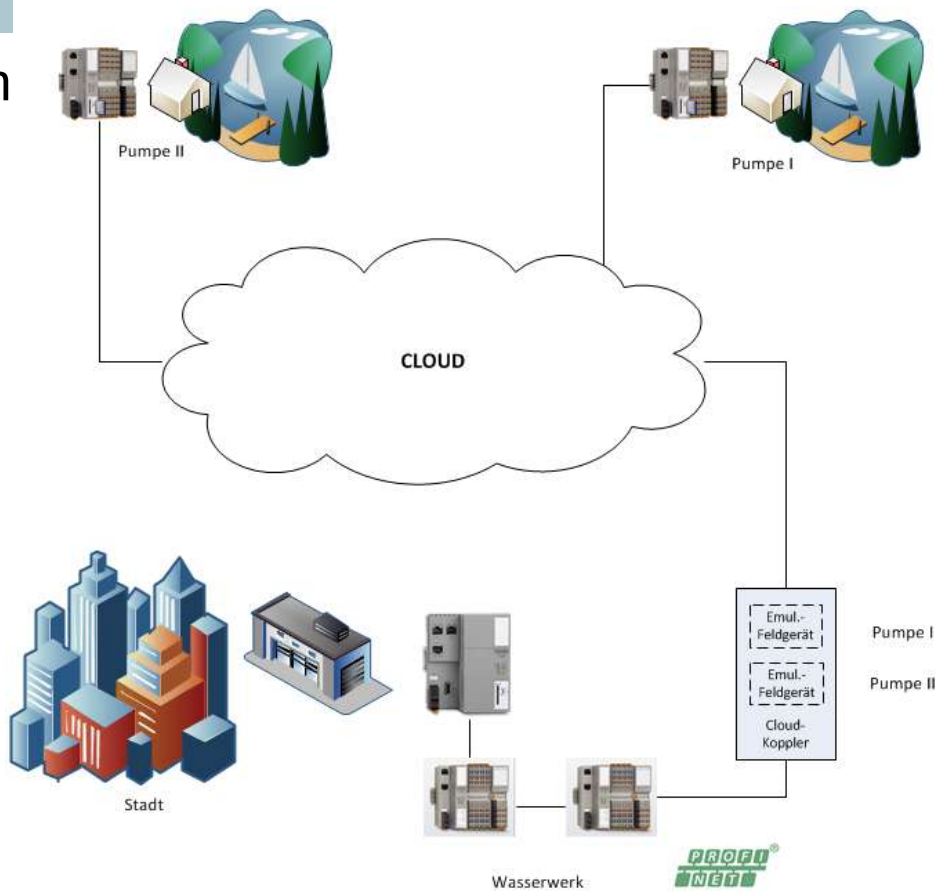
PROFICLOUD | Application example

WATERWORKS - PROFICLOUD

- Registering coupler and Devices in the Cloud

➔**Do only this three times!**

- Connecting coupler and device in the cloud
- Embed the coupler into the existing infrastructure of the PROFINET



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PROFICLOUD

Automate across borders with a PROFINET network

- Internet as a network
  Almost unlimited network
- Noticeably easier engineering
  Distributed PROFINET devices appear as devices in the local PROFINET network
- Reduced hardware costs
  Only an Internet connection to the distributed devices is required to set up the network
- Maximum freedom and efficient automation
  thanks to cloud services, as information such as weather data is easily integrated and can be used cost-effectively

PROFICLOUD

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