# IoT-Concept Schema

**Edge Device e.g. IPC**

## Security VM (headless Linux)

Acts as gate keeper, firewall and security instance. Performs authentication- and authorization checking and granting.

## Applikation VM (headless Linux)
Only necessary if hypervisor has no native Container Support

### Container Environment e.g. Docker

- Visualization App - Container
- SCADA App - Container
- Database App - Container
- Control-Logic

...

MQTT | HTTP | OPC-UA | TSDB

*(Modbus as backup if PLC dies)*

## Hypervisor-Web-Control-Panel (if existent)

## SoftPLC VM (Windows Server)

Contains only rudimentary logic for singal routing via onboard OPC-UA Server and minimal program logic for emergency operation and safe shutdown.

OPC-UA | Modbus

**Hypervisor Type 1 or 2 e.g. Linux with KVM idally with native Container Support**

**Bare Metal / Hardwareplattform**

HTTPS | HTTP

## LEGEND

| | |
|---|---|
| Modbus (TCP/IP) | ——— |
| Backend Datanetwork (TCP/IP) | ——— |
| Backend Applicationnetwork (TCP/IP) | ——— |
| WWW-facing Applicationnetwork (TCP/IP) | ——— |

*Primary protocol*

*(fallback connection for emergency)*

## I/O BUS-Controller (e.g. ET200SP)

Other BUS-Actuators e.g. FC, Valves, ...

BUS-Controler

I/O | I/O | I/O ...

Modbus | Modbus | 4...20 mA | +24 V

## Open WWW

21.07.2020

Router

Multiple | HTTPS

NAS or USB-Storage (can also be Cloud)

e.g. NFS

Other „black box" systems

OPC-UA

SWITCH (managed)

Sensor e.g. PT100

Actuators e.g. Solenoid-Valve