Industrial communication

Industrial Communication Protocols

OPC UA = Open Platform Communications Unified Architecture.

It is defined by the OPC Foundation (not tied to any specific manufacturer).

Features:

1- encryption, authentication

2- Scalability

3- supports IIoT

Industrial Communication Protocols

SIEMENS

- S7comm is the Siemens native protocol.
- It operates over TCP/IP (usually port 102).
- Non-Siemens (third-party) devices can interface with it using drives and libraries.

Example:

Snap7 Library for C/C++ / Python and node-red-contrib-s7 for Node-RED.

This enables direct communication with Siemens S7 PLCs and allows you to read/write data blocks, inputs, outputs, and memory bits from PLCs.

Industrial Communication Protocols

SIEMENS

Features:

1- lightweight

2- the lowest latency access to S7-1200 data

3- simple to set up

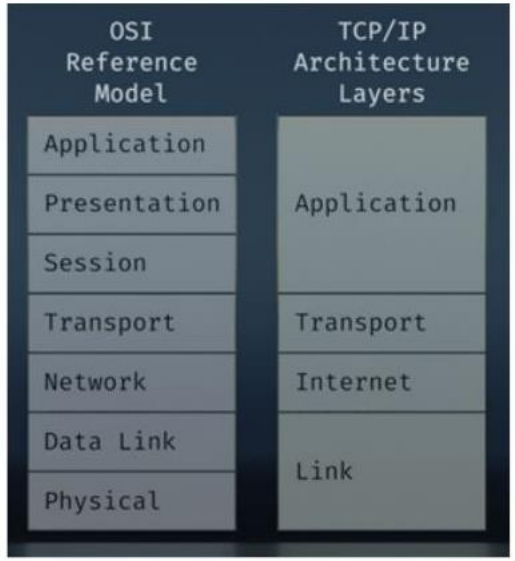
4- simply access variables by block number and offset

Disadvantages:

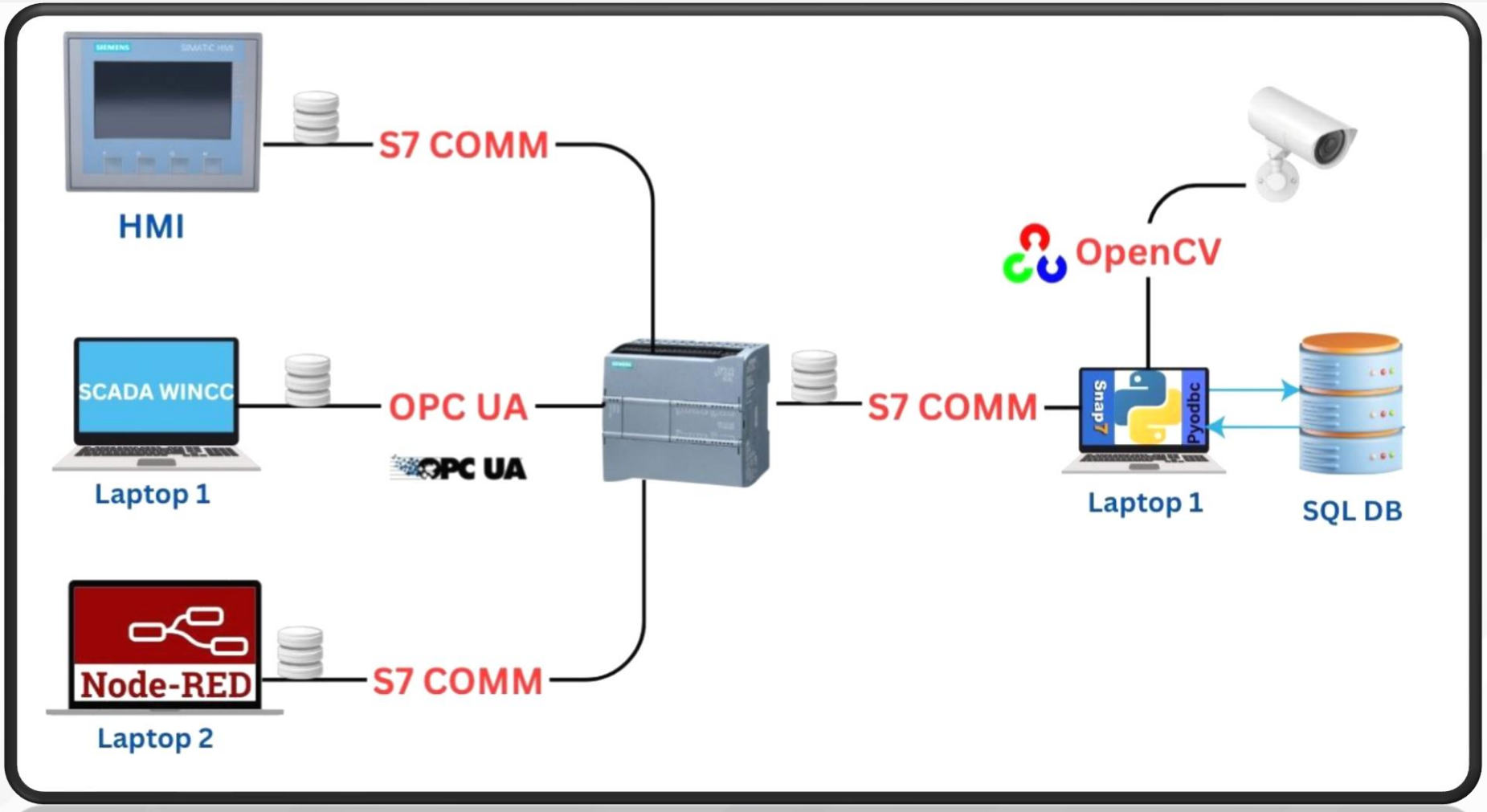
1- not scale to large distributed networks

2- no encryption

3- The limits of interoperability



Data Flow


HMI
S7 COMM
SCADA WINCC
Laptop 1
OPC UA
OPC UA
Node-RED
Laptop 2
S7 COMM
S7 COMM
OpenCV
Snap7
Pyodbc
Laptop 1
SQL DB

System Network