

OPC UA

Verleden, heden en toekomst

Overzicht

- Historie OPC UA
- Wat is OPC UA
- Toepassingen OPC UA

Historie OPC UA

Historie

Overzicht

| | | |
|--|--------------|---|
| Microsoft dominate the manufacturing application landscape (COM and DCOM). | 1990s | |
| First release of OPC DA. | 1995 | Automation vendors form a taskforce OPC. OLE for Process Control. OLE stands for Object Linking and Embedding is based on COM/DCOM. |
| | 1996 | |
| OPC Alarms & Events released | 1998 | OPC Foundation begins converting to webservices. |
| | 1999 | |
| OPC Complex Data, Data eXchange and XML-DA are released. | 2001 | OPC Historical Data Access, Batch and security are released. |
| | 2003 | |
| OPC UA version 1.0 released. | 2004 | OPC commands released. |
| | 2006 | |
| OPC UA version 1.01 released. | 2007 | OPC Certification Program and test labs |
| | 2009 | |
| IEC 62541 is released. | 2010 | Embedded OPC UA devices released |
| | 2012 | |
| | 2013 | OPC UA version 1.02 released |

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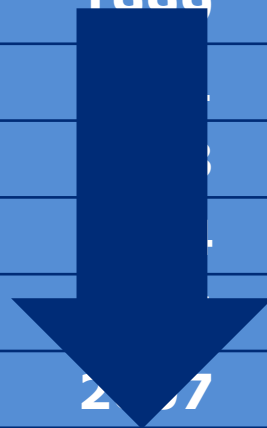
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Open Platform Communications

IEC 6

2013

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OT landschap

OT landschap

ERP

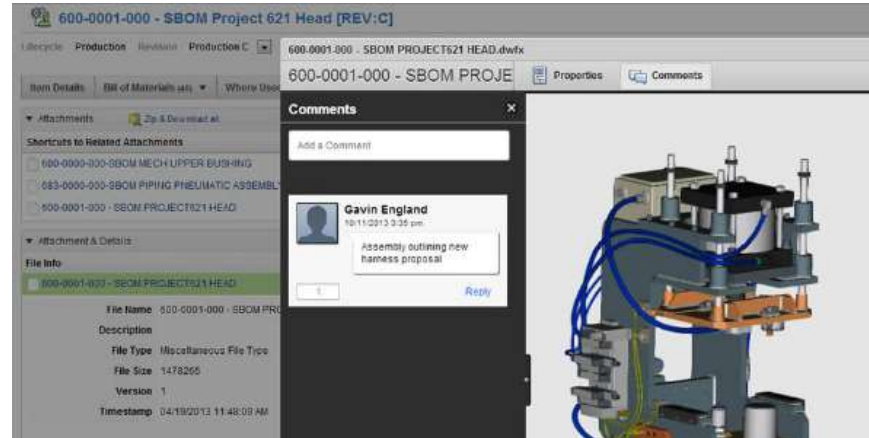
The screenshot displays the SAP ShipERP 'Create Shipment' screen. It includes a header with navigation options like 'Execute', 'Track Shipment', and 'Cancel Shipment'. The main area is divided into several sections: 'Address' (with fields for Name, Attention, Address 1, Address 2, City, State/Prov, Postal code, Country, Phone/Fax, and Customer #), 'Shipment' (with fields for Carrier, Service, and Ship Date), 'Payment' (with fields for Payment, Pre Paid, and IMCOLL fields), and 'Packaging' (with fields for Packaging and Weight). Below these sections is a 'Carrier Service Rates' table.

| Carrier Code | Carrier Name | Carrier Service ID | Carrier Service | Carl Rate | Currency | Transit Tm | Delivery Date | Priority |
|--------------|---------------|---------------------|---------------------|-----------|----------|------------|---------------|----------|
| FDGX | FedEx Ground | FEDEX_GROUND | FedEx Ground | 6.12 | USD | 5.00 | 11/16/2018 | 1 |
| FDXE | FedEx Express | FEDEX_EXPRESS_SAVER | FedEx Express Saver | 14.74 | USD | 3.00 | 11/16/2018 | 1 |
| FDXE | FedEx Express | FEDEX_1_DAY | FedEx 1 Day | 18.58 | USD | 2.00 | 11/17/2018 | 1 |
| FDXE | FedEx Express | PRIORITY_OVERNIGHT | Priority Overnight | 25.38 | USD | 1.00 | 11/16/2018 | 1 |
| FDXE | FedEx Express | STANDARD_OVERNIGHT | Standard Overnight | 43.08 | USD | 1.00 | 11/16/2018 | 1 |
| FDXE | FedEx Express | FIRST_OVERNIGHT | First Overnight | 75.60 | USD | 1.00 | 11/16/2018 | 1 |

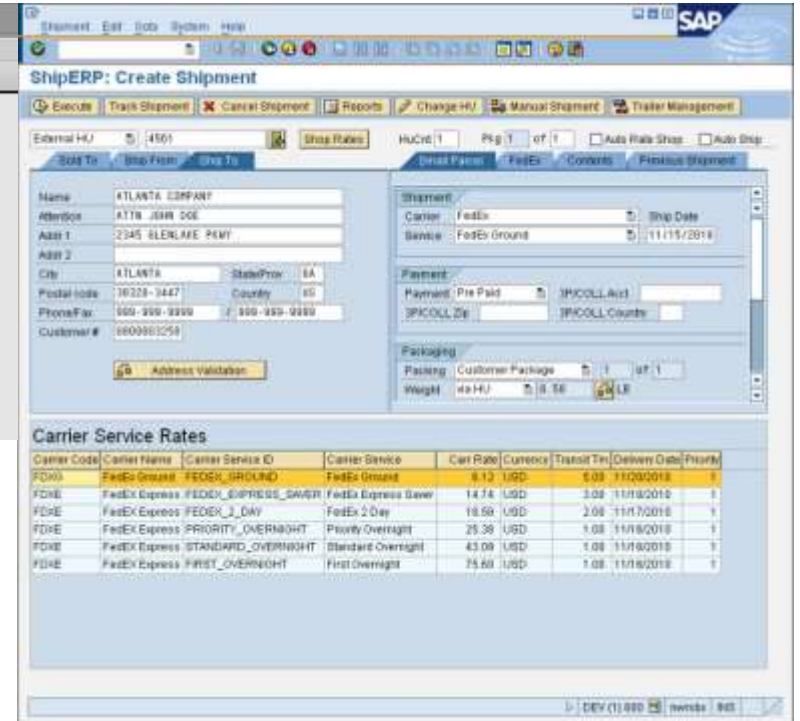


OT landschap

PLM

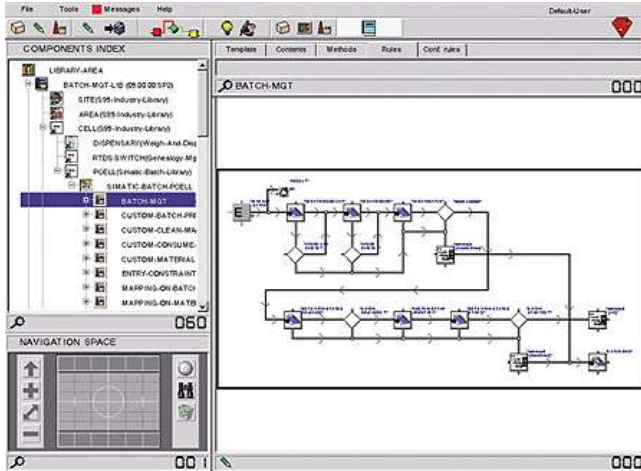


ERP

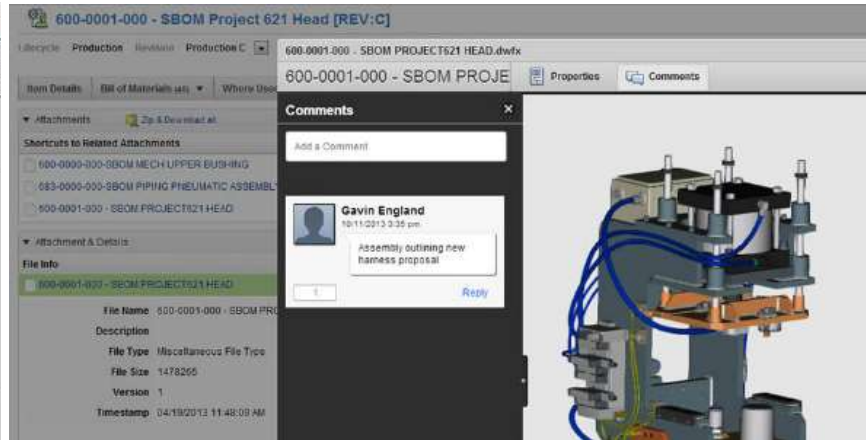


OT landschap

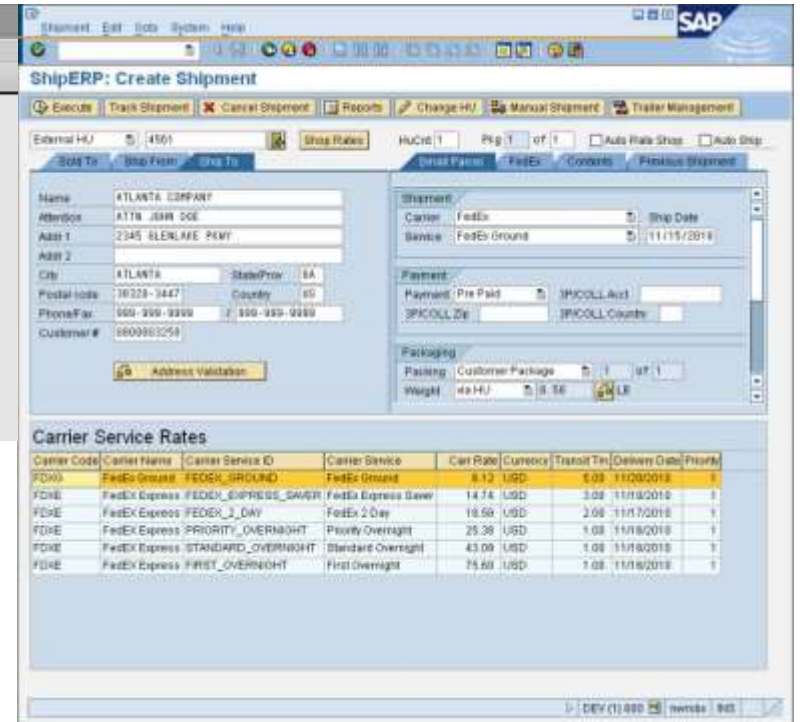
MES/MOM



PLM

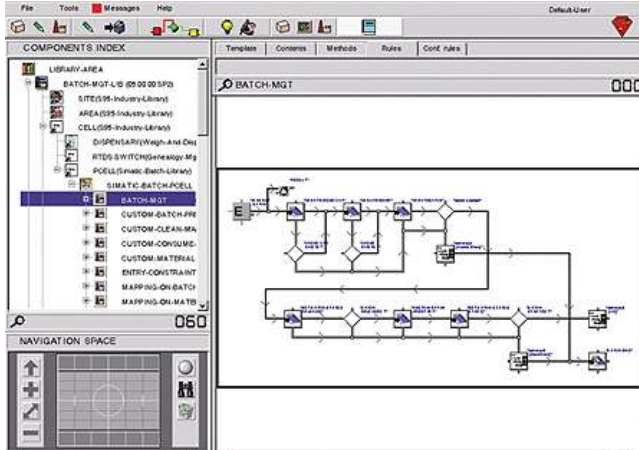


ERP

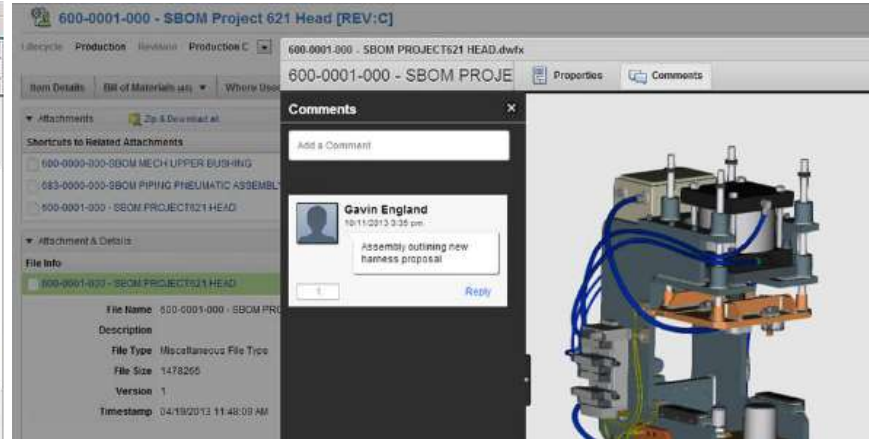


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PLM



ERP

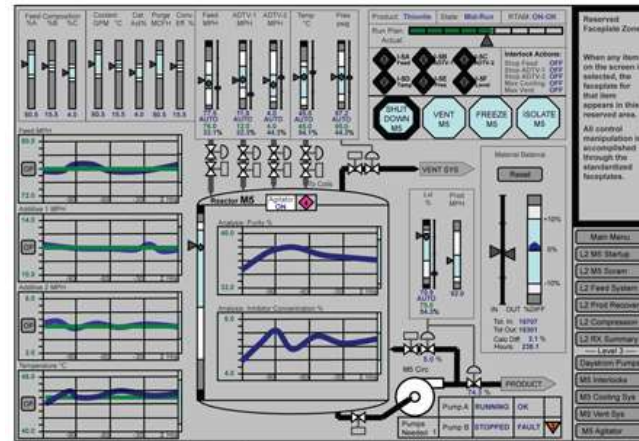
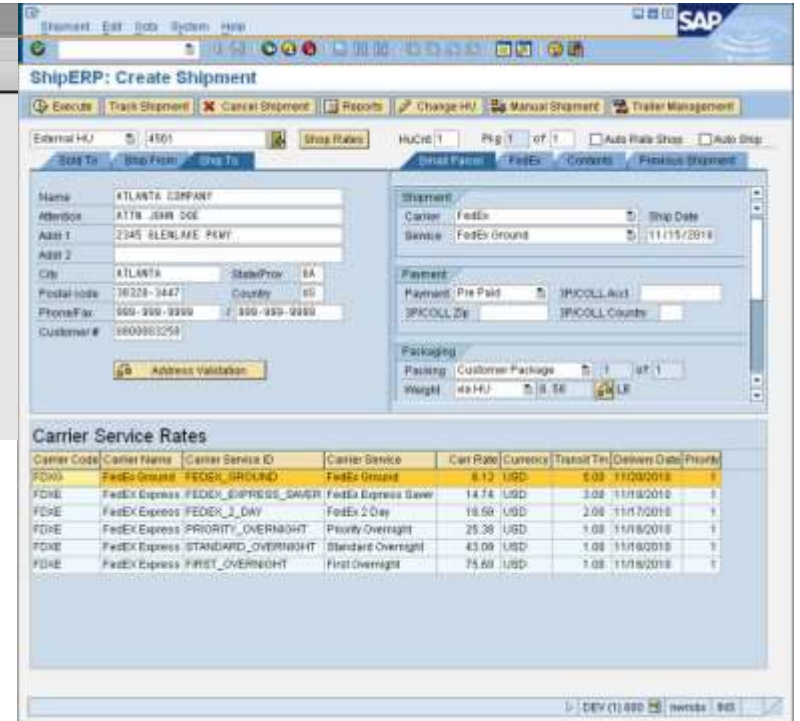


Figure 4: Example Level 2 display of a reactor

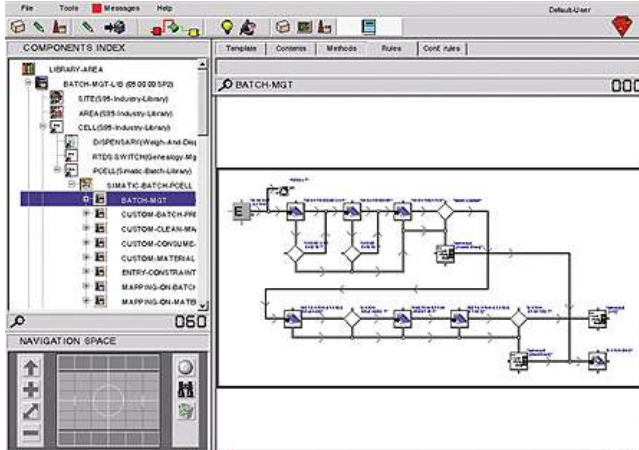
SCADA



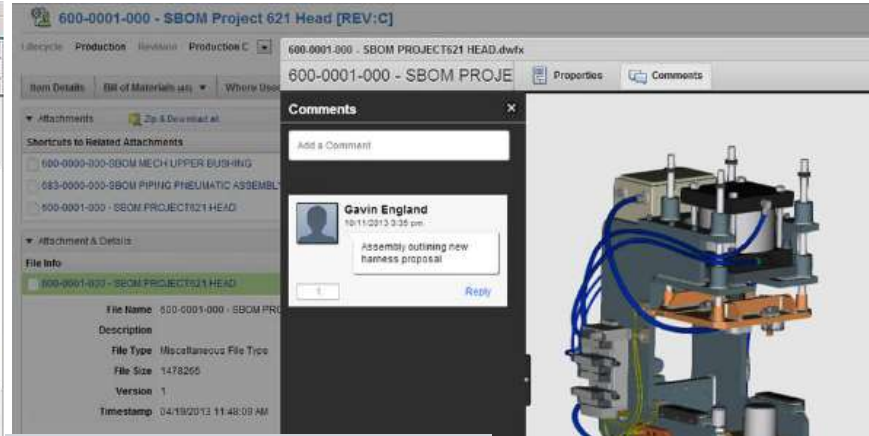
Industrie 4.0 Cyber Security
 Industrial Internet of Things Data
 Cloud IT/OT Integration

OT landschap

MES/MOM



PLM



ERP

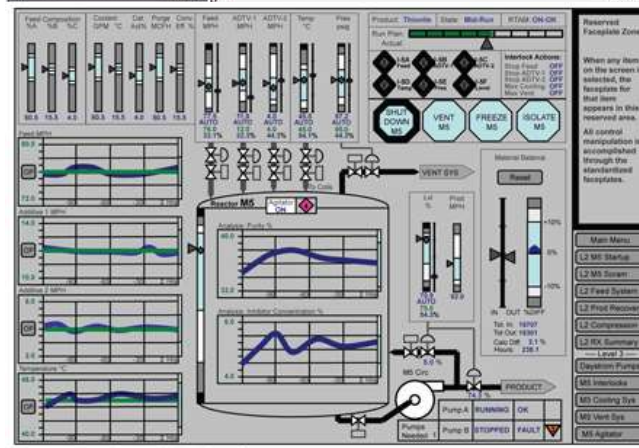
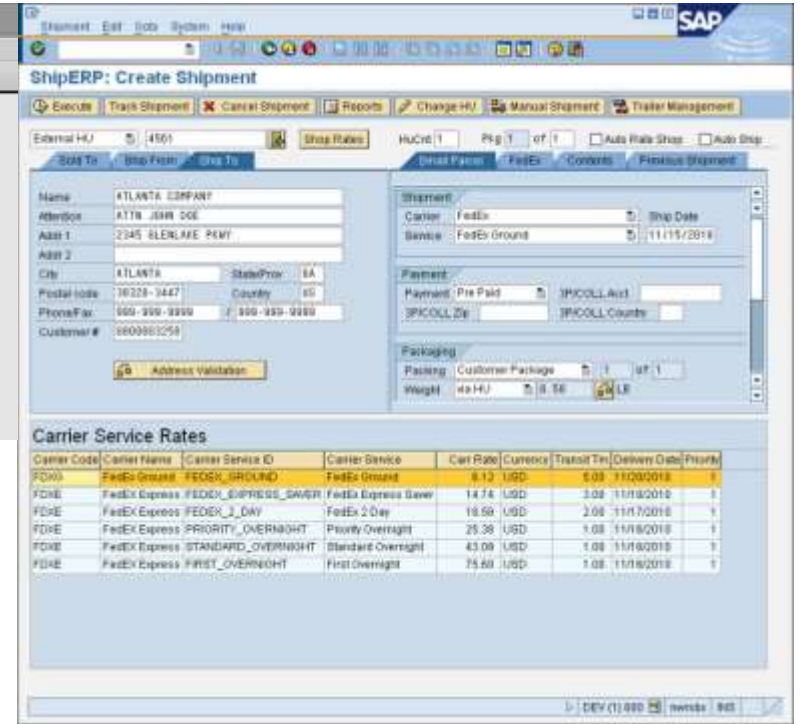
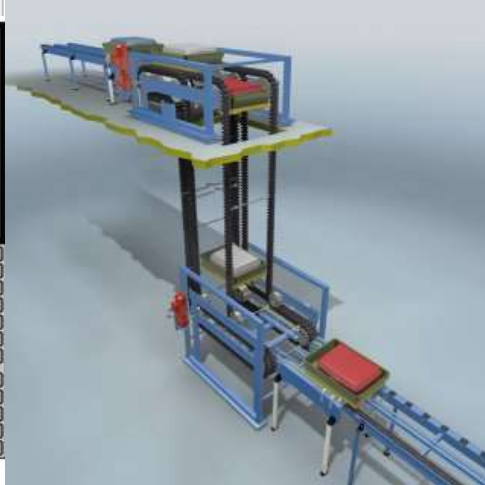


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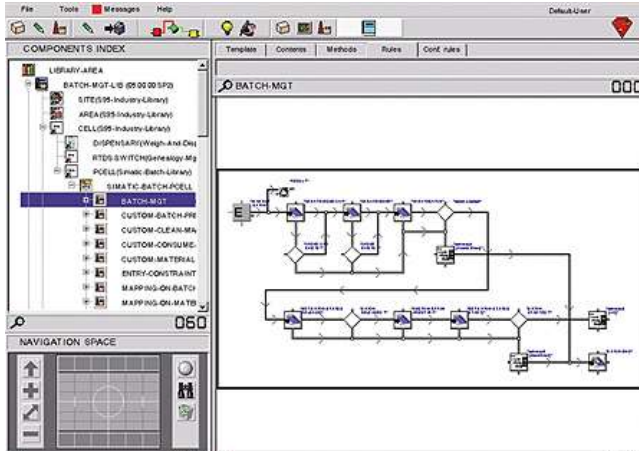


SCADA

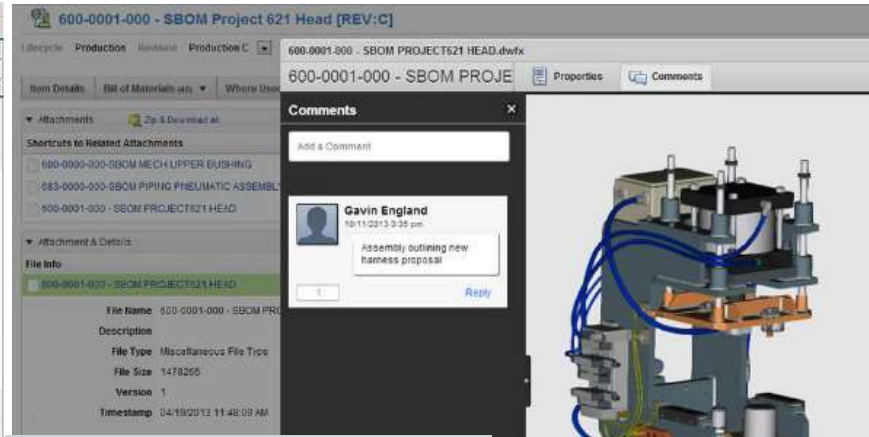
PLC

OT landschap

MES/MOM



PLM



ERP

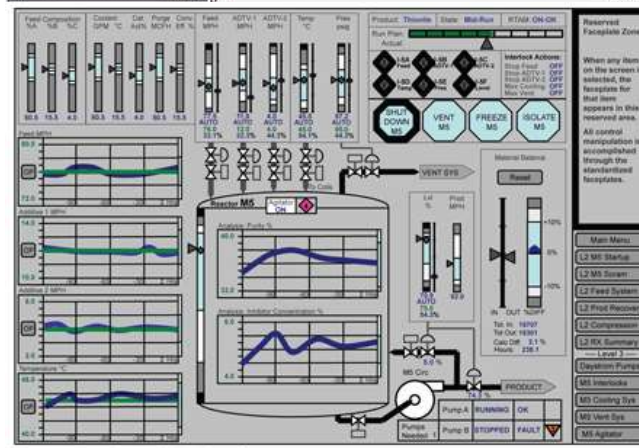
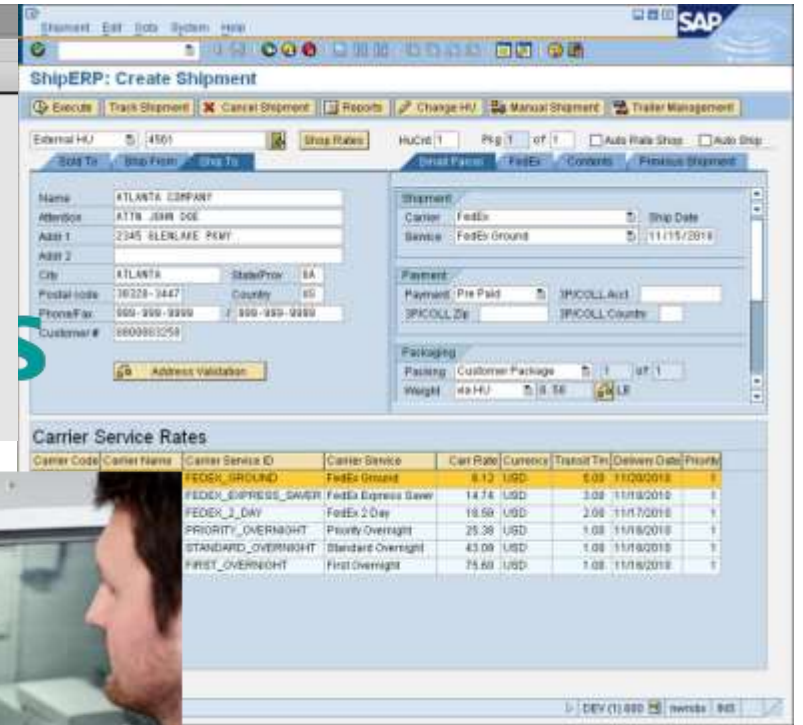


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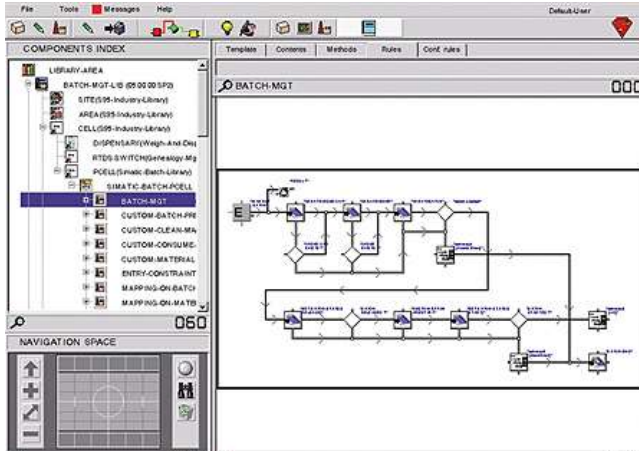
PLC

CAD/CAM

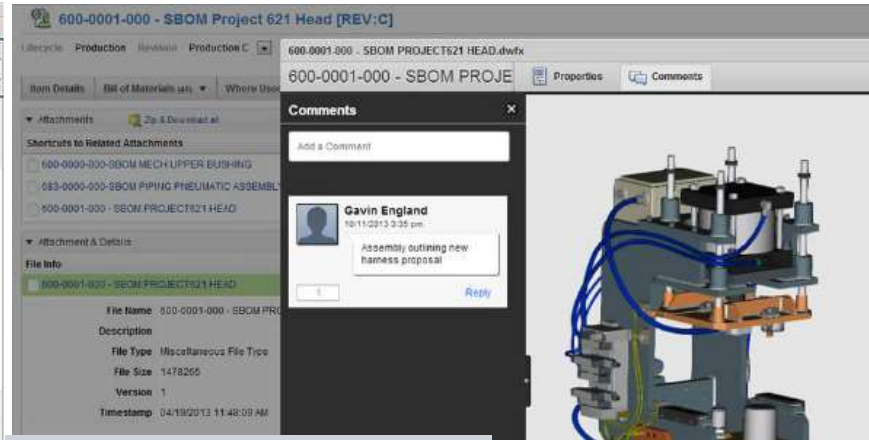


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MES/MOM



PLM



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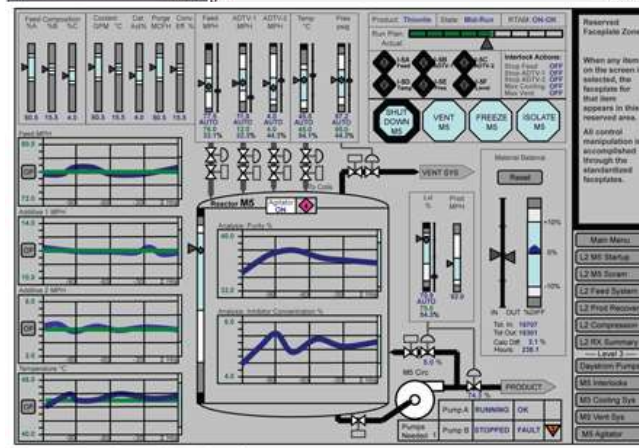
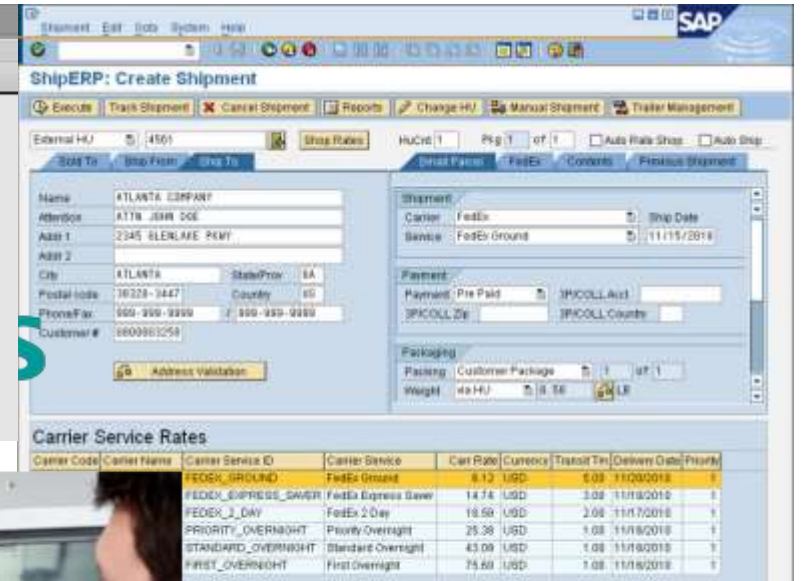


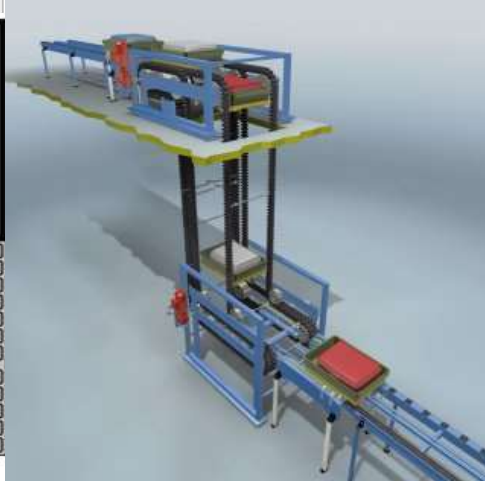
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SCADA

PLC

CAD/CAM

DCS



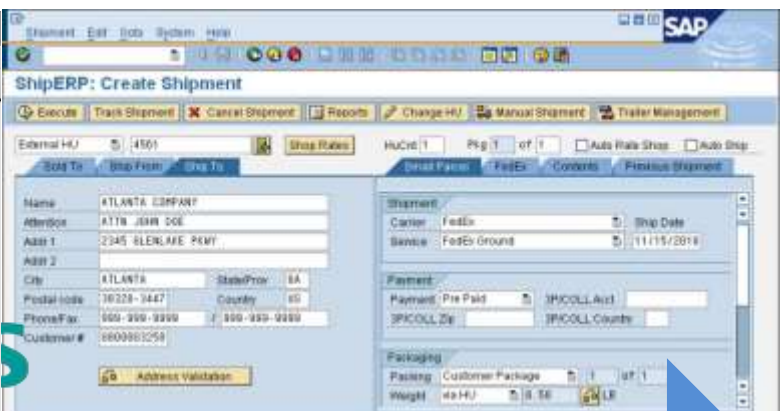
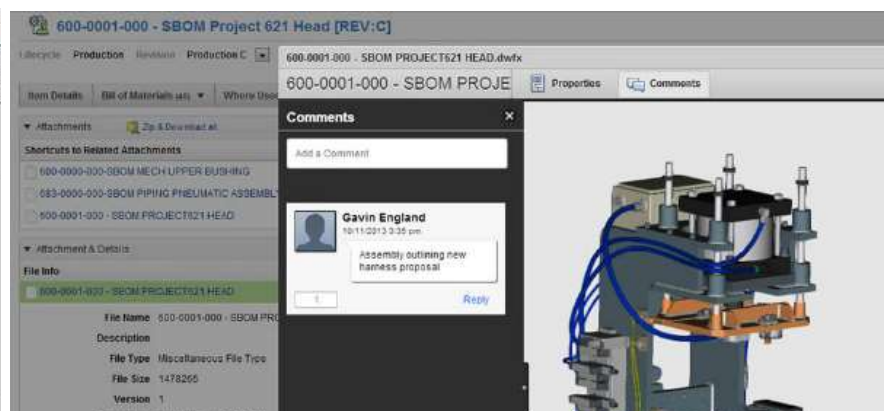
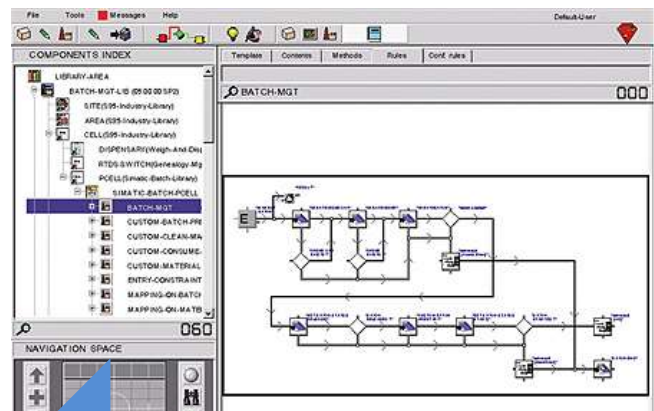
OT landschap werkelijkheid

Applicatie integratie

MES/MOM

PLM

ERP



(Industrial) Ethernet

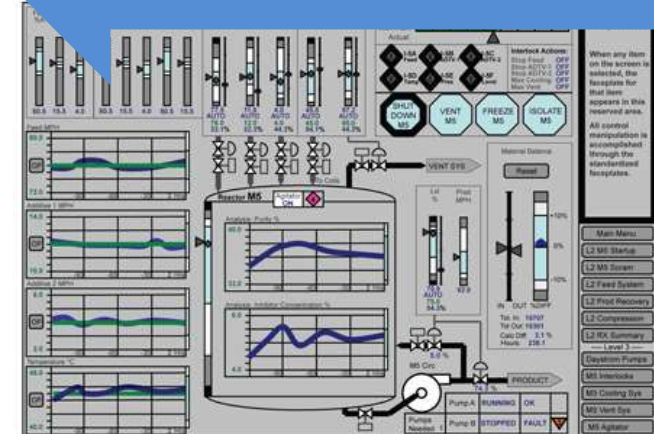
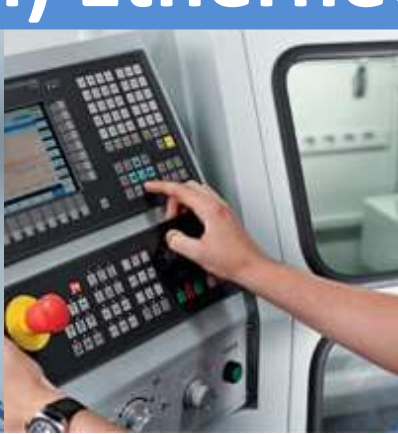


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SCADA



PLC



CAD/CAM



DCS

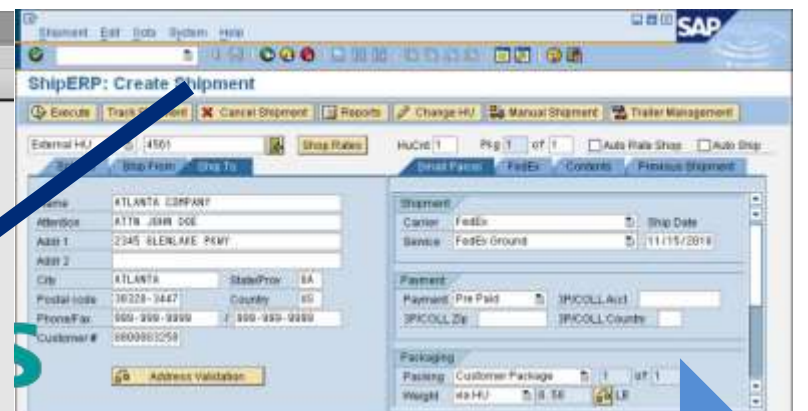
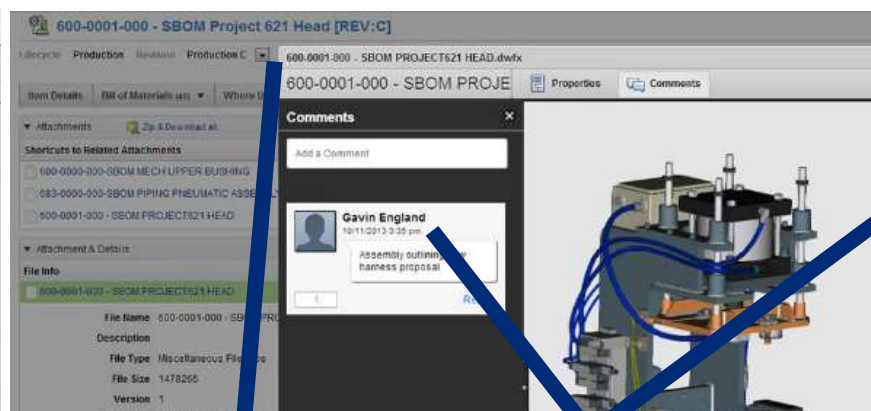
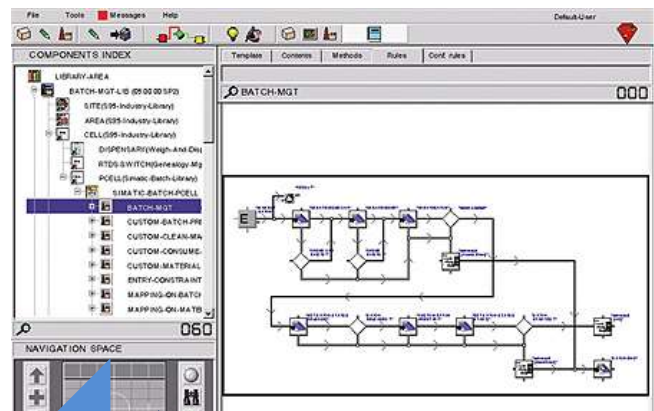
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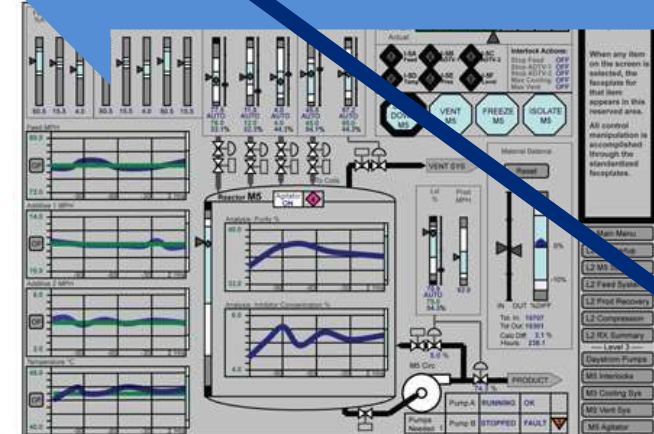
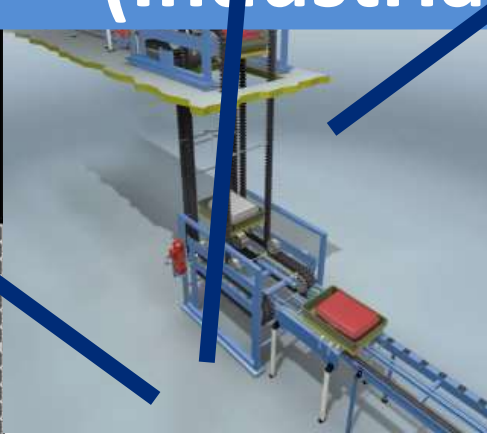


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PLC



CAD/CAM

| | | | | |
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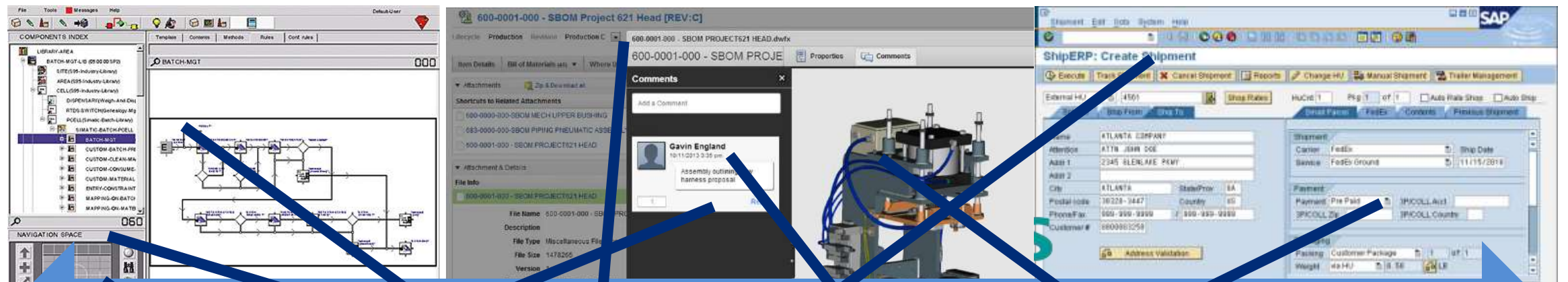
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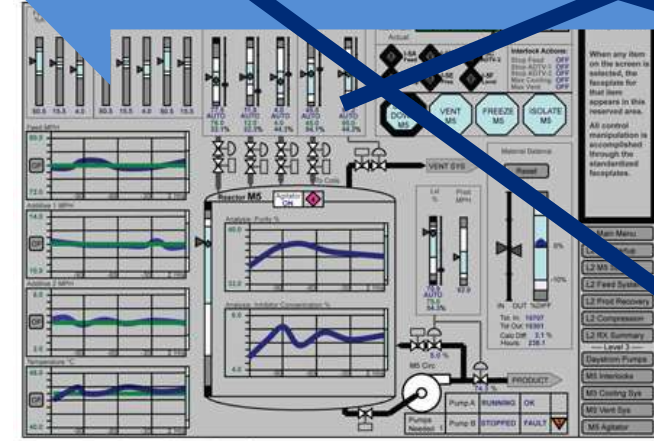


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CAD/CAM



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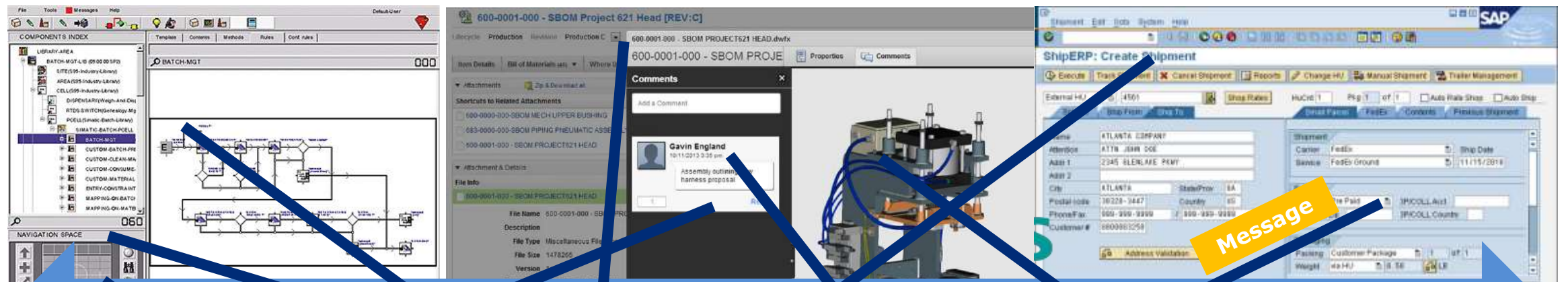
OT landscape werkelijkheid

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Message

(Industrial) Ethernet

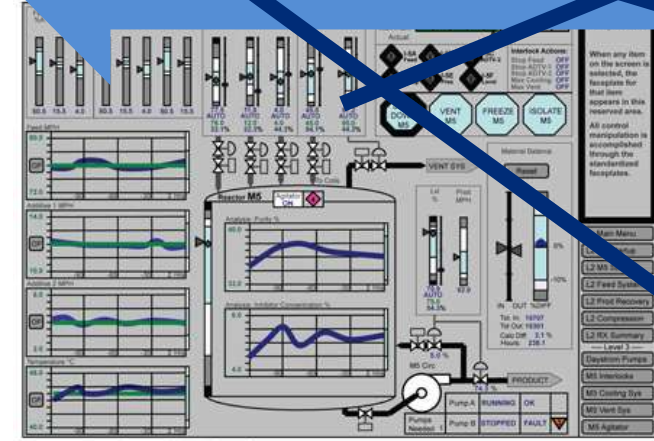


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SCADA



PLC



CAD/CAM



DCS

OT landscape werkelijkheid

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Message

Message

(Industrial) Ethernet

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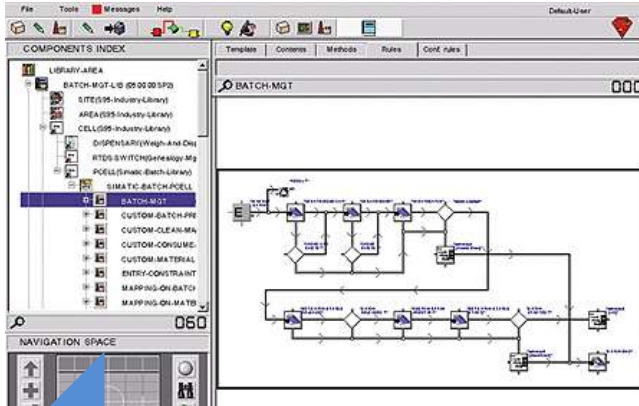
PLC

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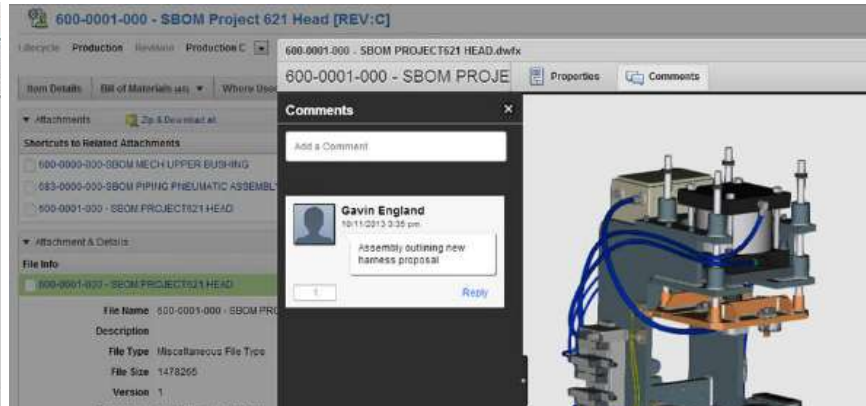
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OT landschap

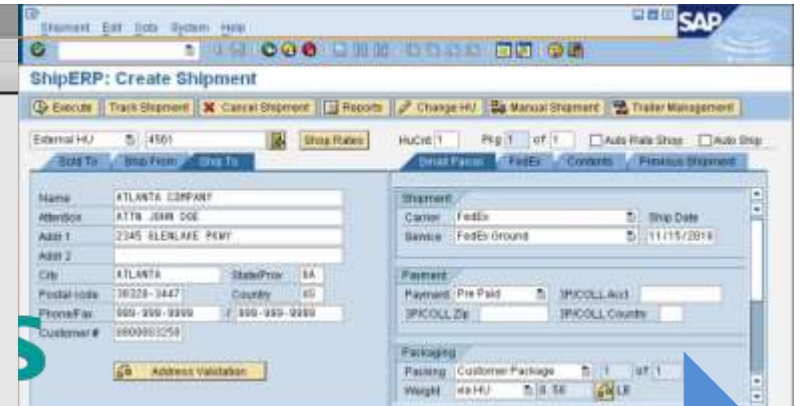
MES/MOM



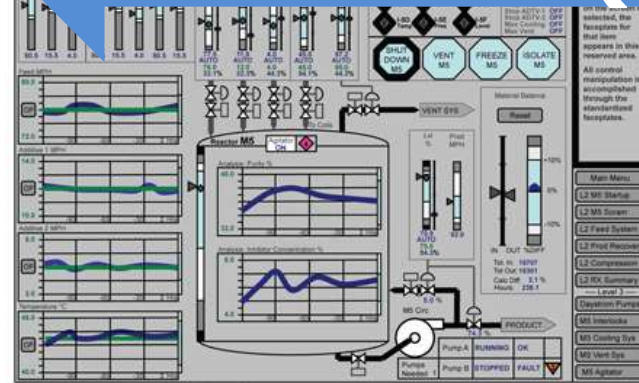
PLM



ERP



(Industrial) Ethernet



SCADA



PLC



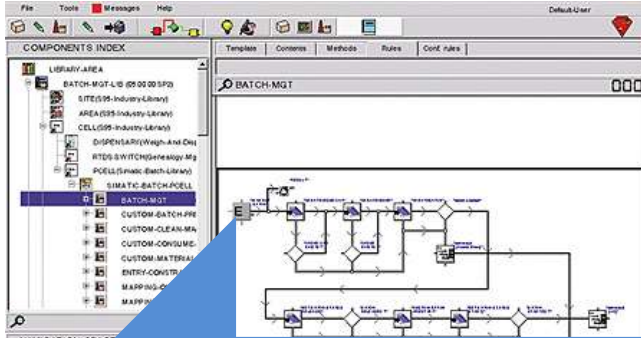
CAD/CAM



DCS

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MES/MOM



PLM



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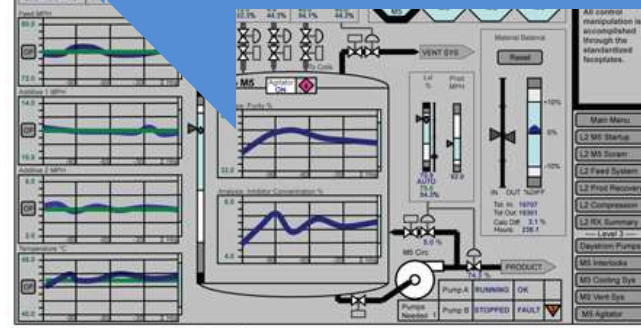
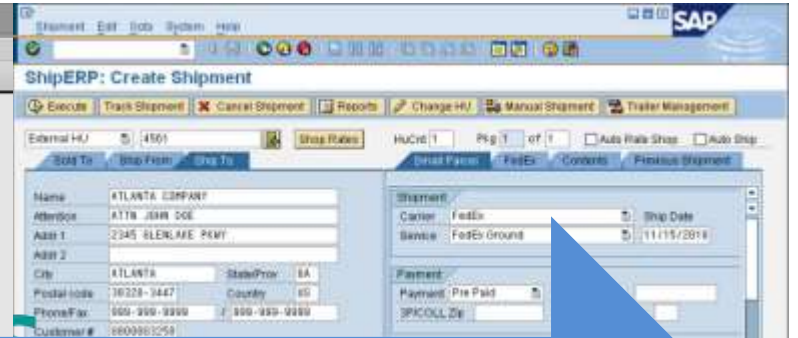


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SCADA

PLC

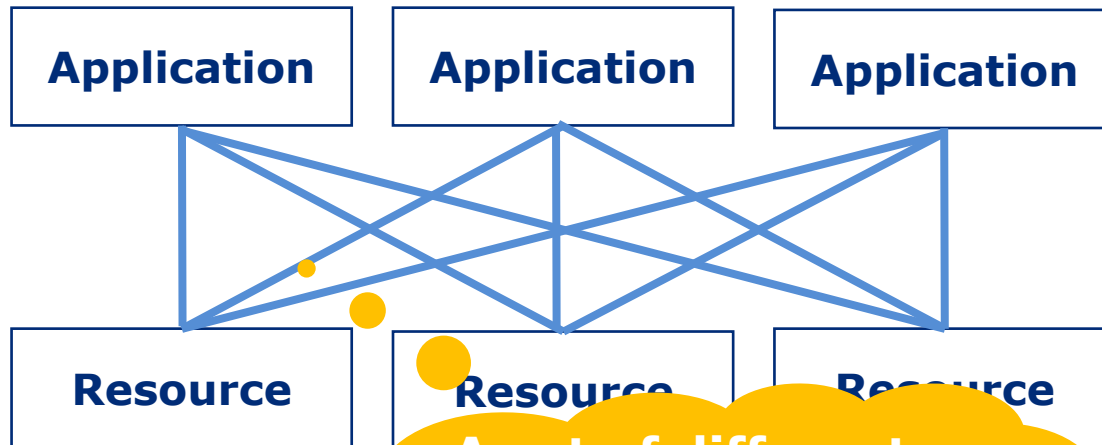
CAD/CAM

DCS

Historie

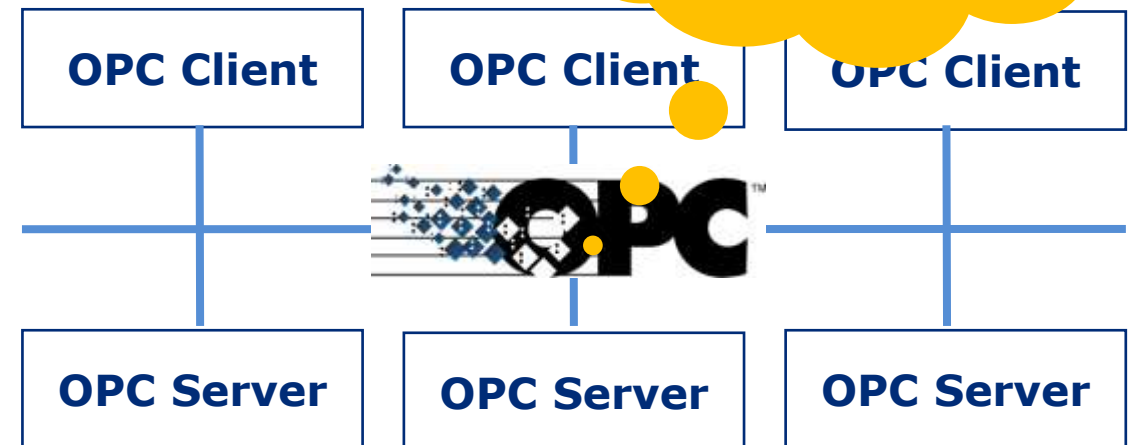
OPC Classic

Usual



A set of different protocols and integration strategies

Desirable



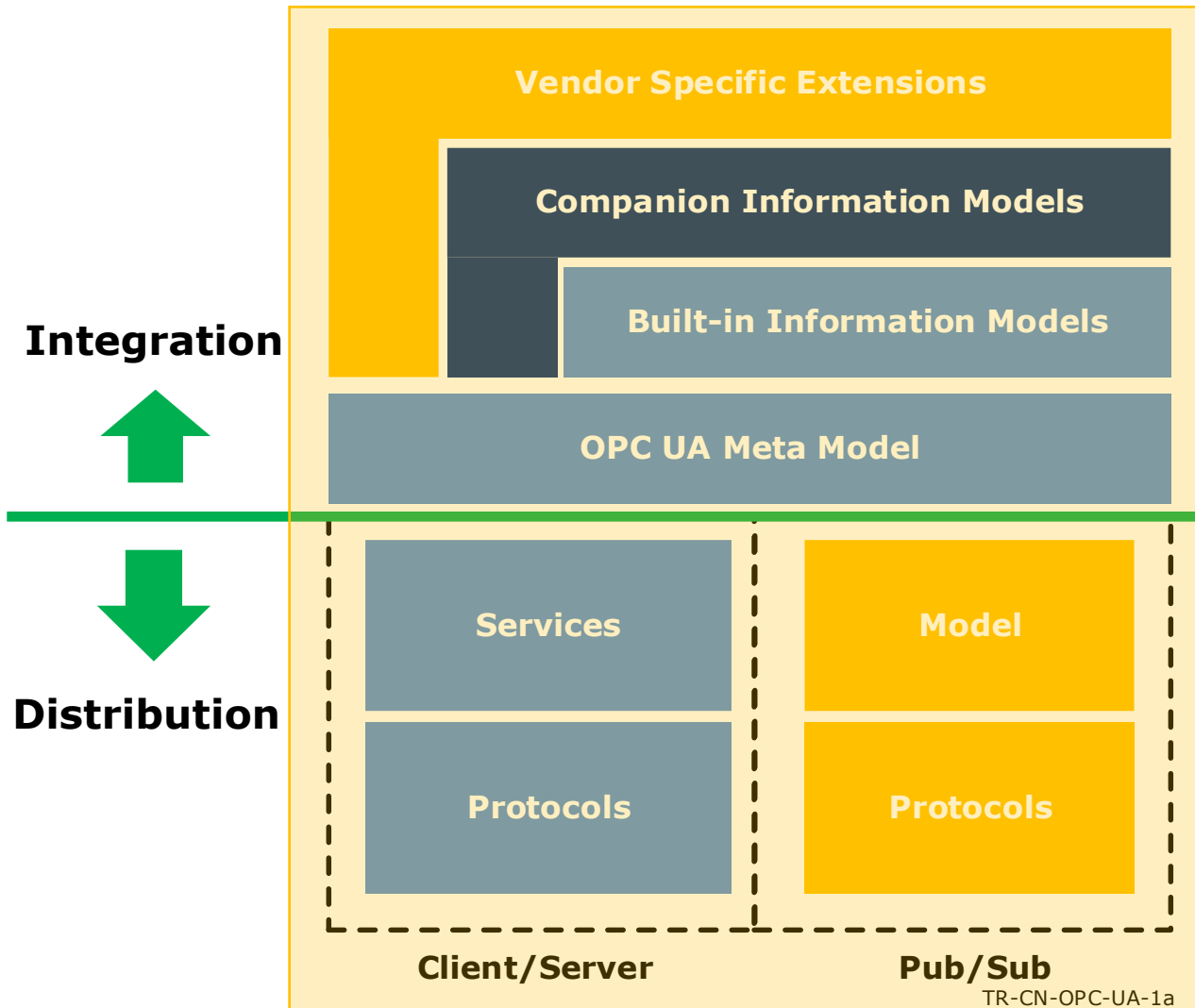
Widely supported standard.

Wat is OPC UA

Ontwerp doelen OPC UA

- Applicaties ondersteunen die complexe data gebruiken.
- Metadata gebruiken zodat generieke clients data kunnen interpreteren zonder à priori voorkennis.
- Gebruik maken van algemeen gangbare internet standaarden (Web services, XML, HTTP, TCP...)

Overzicht opbouw OPC UA



- Twee delen:
 - Distributie : communicatie;
 - Integratie: Informatie model.
- Service oriented Architecture.



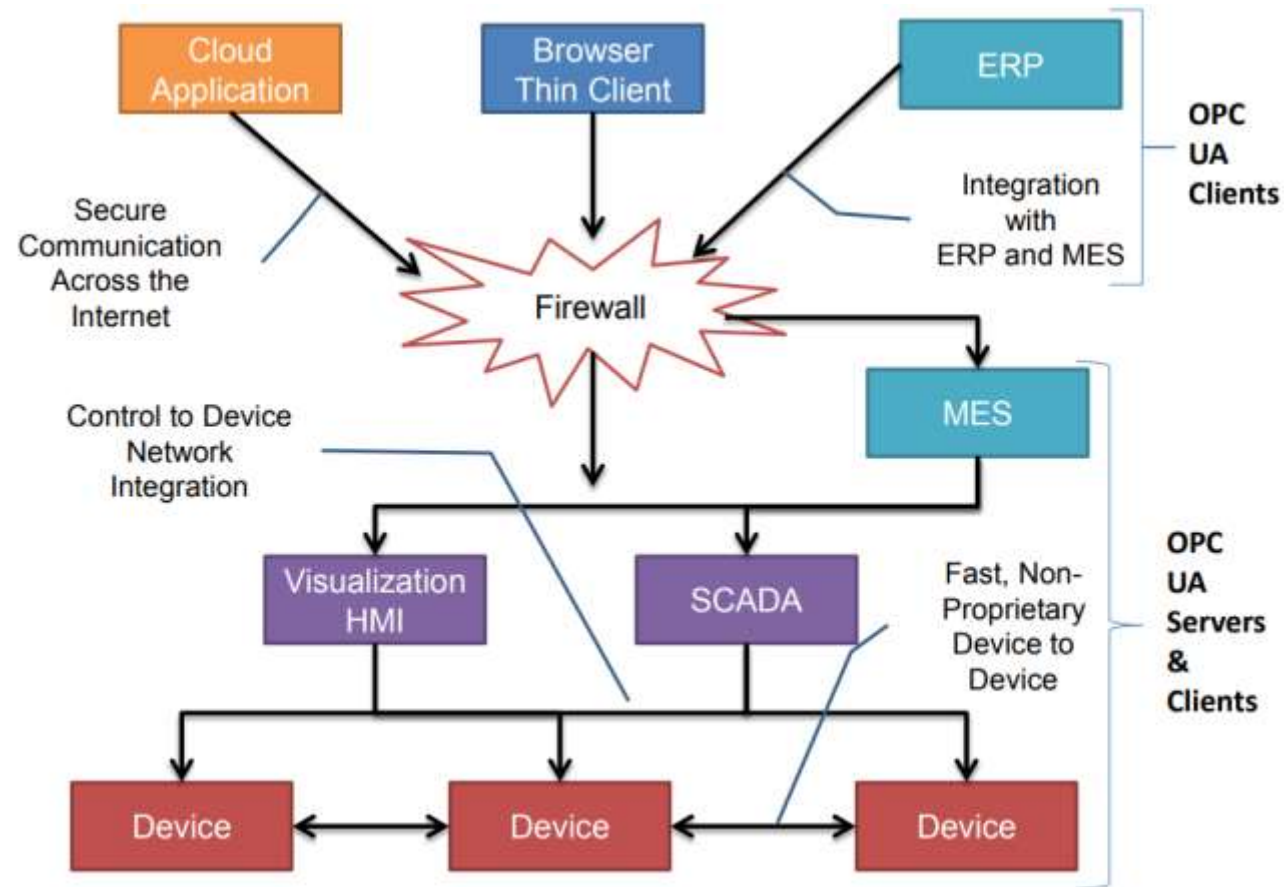
Companion information models

- OPC UA Informatie model 30140 (Profinet)
- OPC UA Informatie model voor IEC 61131-3 (PLCopen)



PLCopen[®]
for efficiency in automation

OPC UA toepassingen

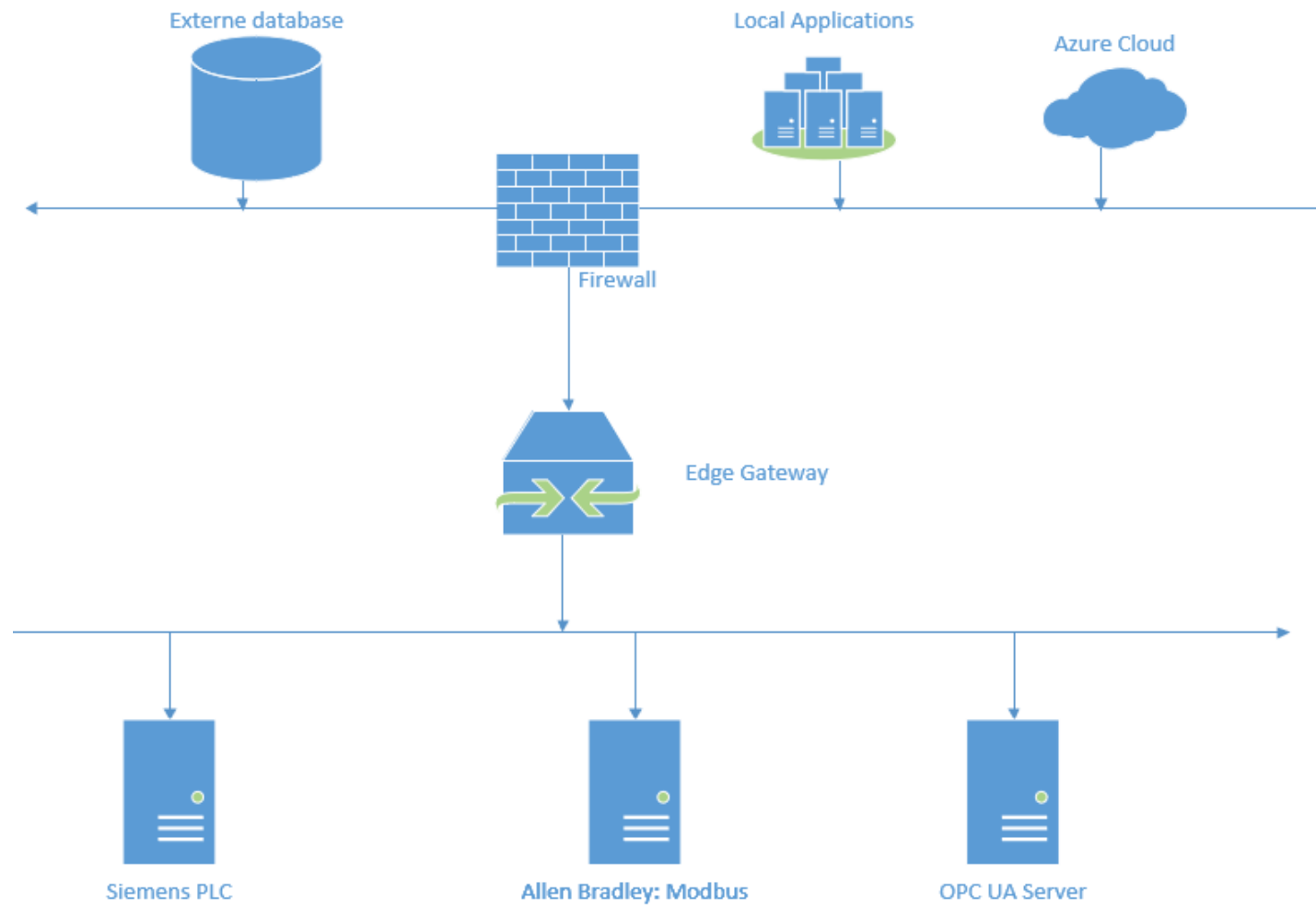


- OPC UA on Chip
 - Sensoren worden uitgerust met een OPC UA interface
- OPC UA (pub/sub) en TSN
 - Om van OPC UA een realtime protocol te maken, moet het in combinatie met TSN worden gebruikt.



OPC UA

Edge gateway



Afsluiting

Vragen?

