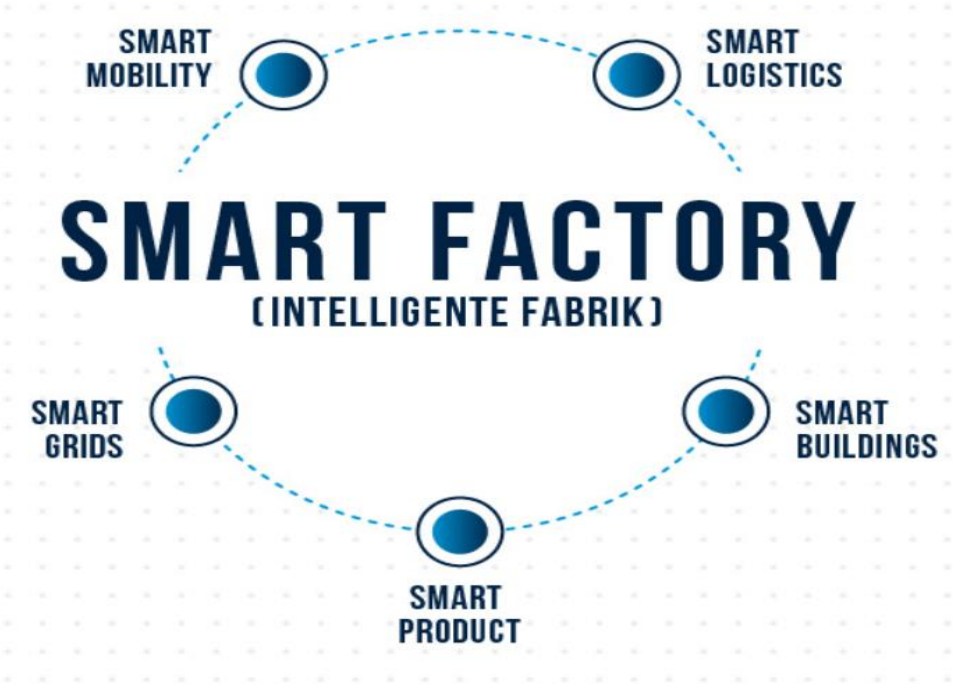
Draft

Sylvac-Scan

Automation guide

2018

INDUSTRIE 4.0



Sylvac IoT Concept

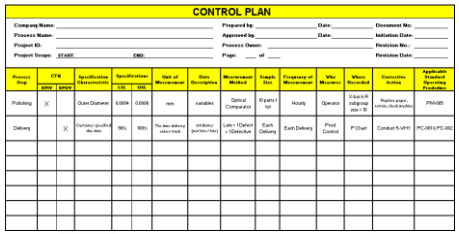
Link with existing full SPC Software and ERP

3. Tools management
Calibration date
Battery level
Localisation
Firmware update

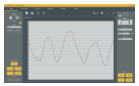
sylvac tools manager

sylvac tools correction

2. Control plan



1. Monitoring & SPC Light



Monitoring

OUTPUTS

INPUTS

Database

GATEWAY

Temperature
Pressure
Time Management

Sylvac SCAN

Display Unit

Sylvac VISIO

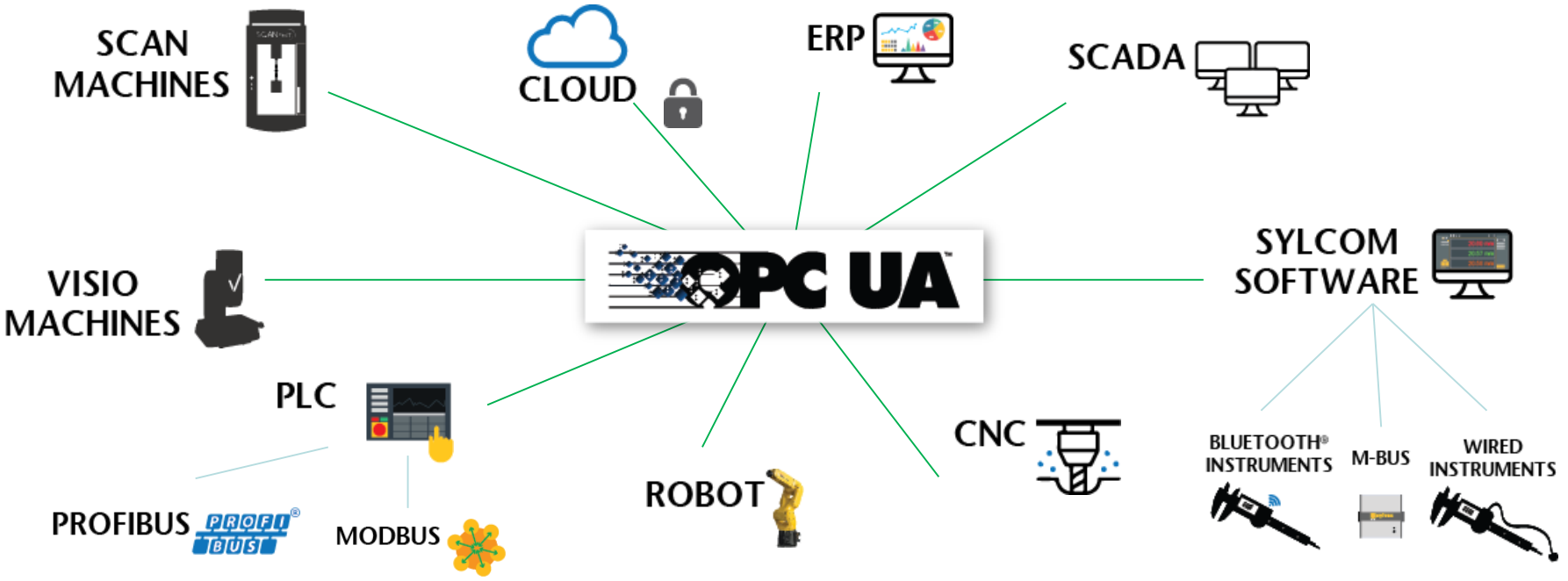
LAN
WIFI
3G/4G

sylvac anywhere

SYLCOM

Proximity
Power
USB
RS232

OPC-UA : bridge between IP world and shop floor



TCP/IP (Ethernet)

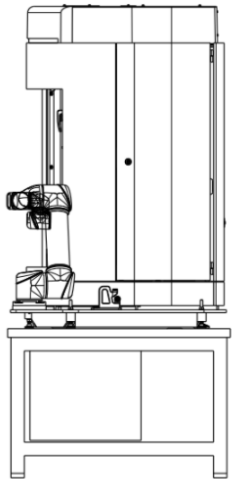
What is OPC UA ?
OPC Unified Architecture (OPC UA) is a communication protocol for industrial automation applications, perfectly adapted to Industry 4.0.
It is based on the client-server principle and bridges the gap between the IP-based world of IT and the production floor.

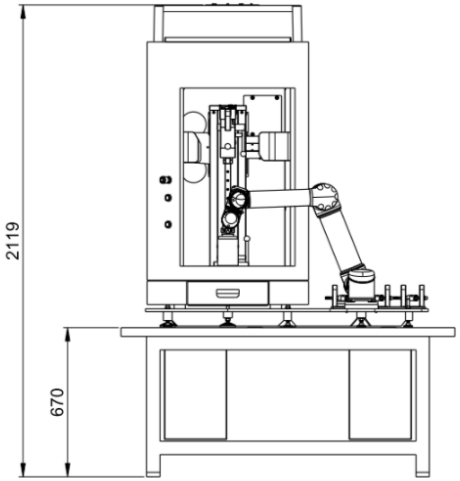
Benefits of OPC UA
- Opened
- Scalable
- Secured
- Unify data
- Interoperable
- Modern
- Reliable
- Flexible

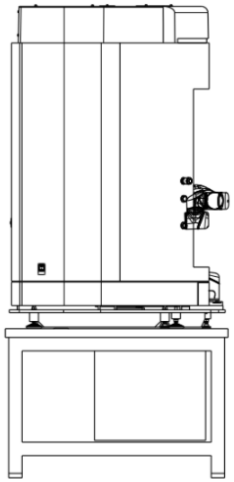
For which sectors ?
- Industry
- Automotive
- Transport
- Retail
- Energy
- Gas
- Chemistry
- Hydrocarbures

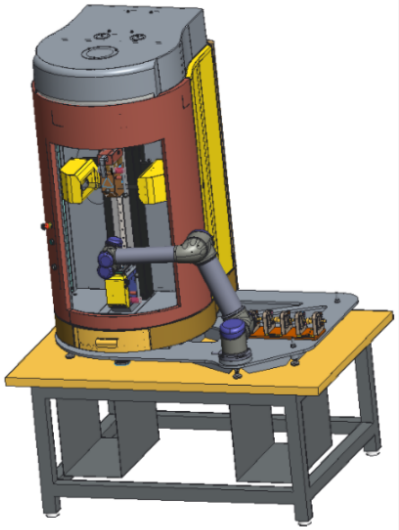
SYLVAC SCAN F60

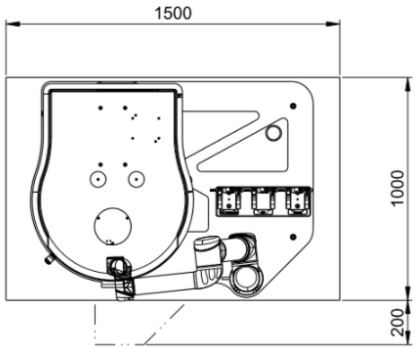
SYLVAC SCAN F60











Maximum distance of robot
during mouvements

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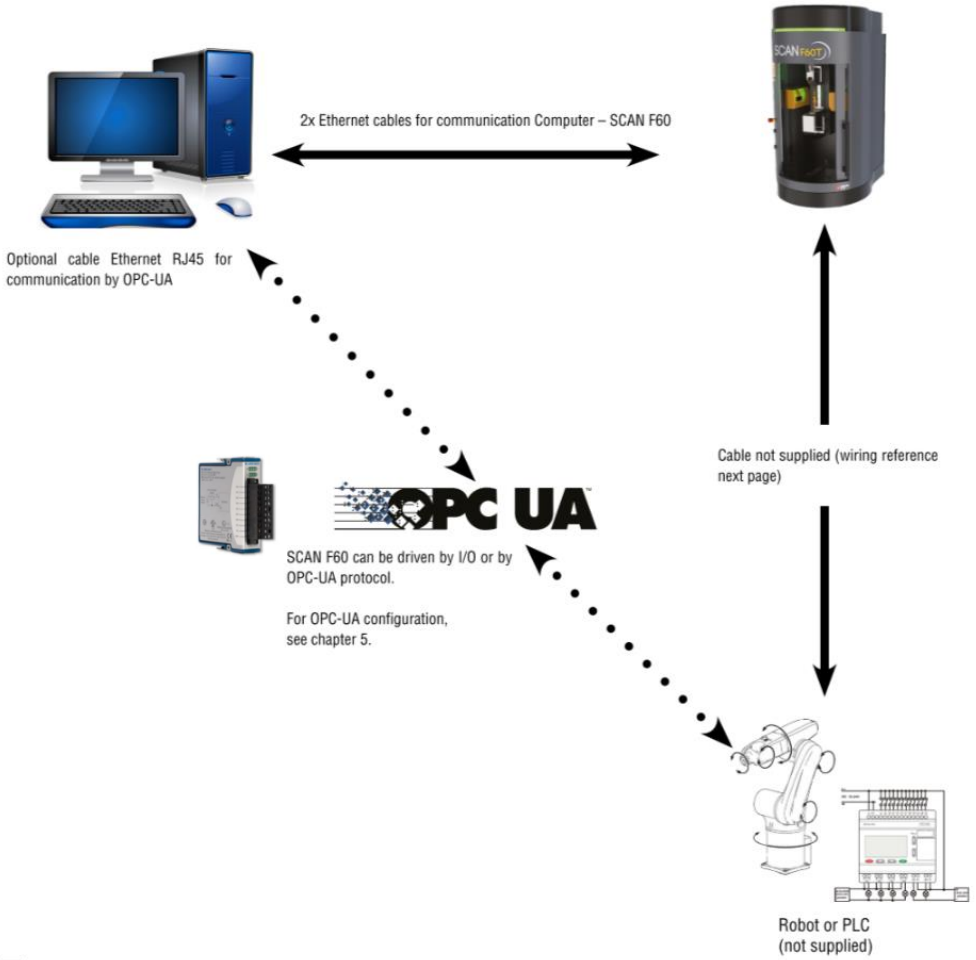
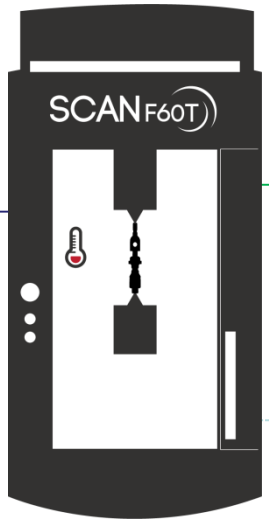
SYLVAC SCAN F60



Scan F60T with automation option



INTEGRATED SENSORS

Park position
Open door
3x temperature
Pneumatic tailstock in

TCP/IP

CLOUD
(client)

ERP
(client)

SCADA
(client)

OPC UA
(server)

CNC
(server)

ROBOT
(client/server)

PLC
(client/server)

I/O

Inputs
- Move park position
- Start program
- Start calibration
- 2x programmable inputs
- 4x pneumatic valve to move and open tailstock and tools

Outputs
- Sensors : tailstock, door and slide state
- 6x programmable outputs
- Measurement state (pass, rework, ...)

PROFIBUS

MODBUS

Sensors OPC UA
Sensors available on I/O and OPC UA
TCP/IP (Ethernet)
Electrical I/O wired 24 Volts

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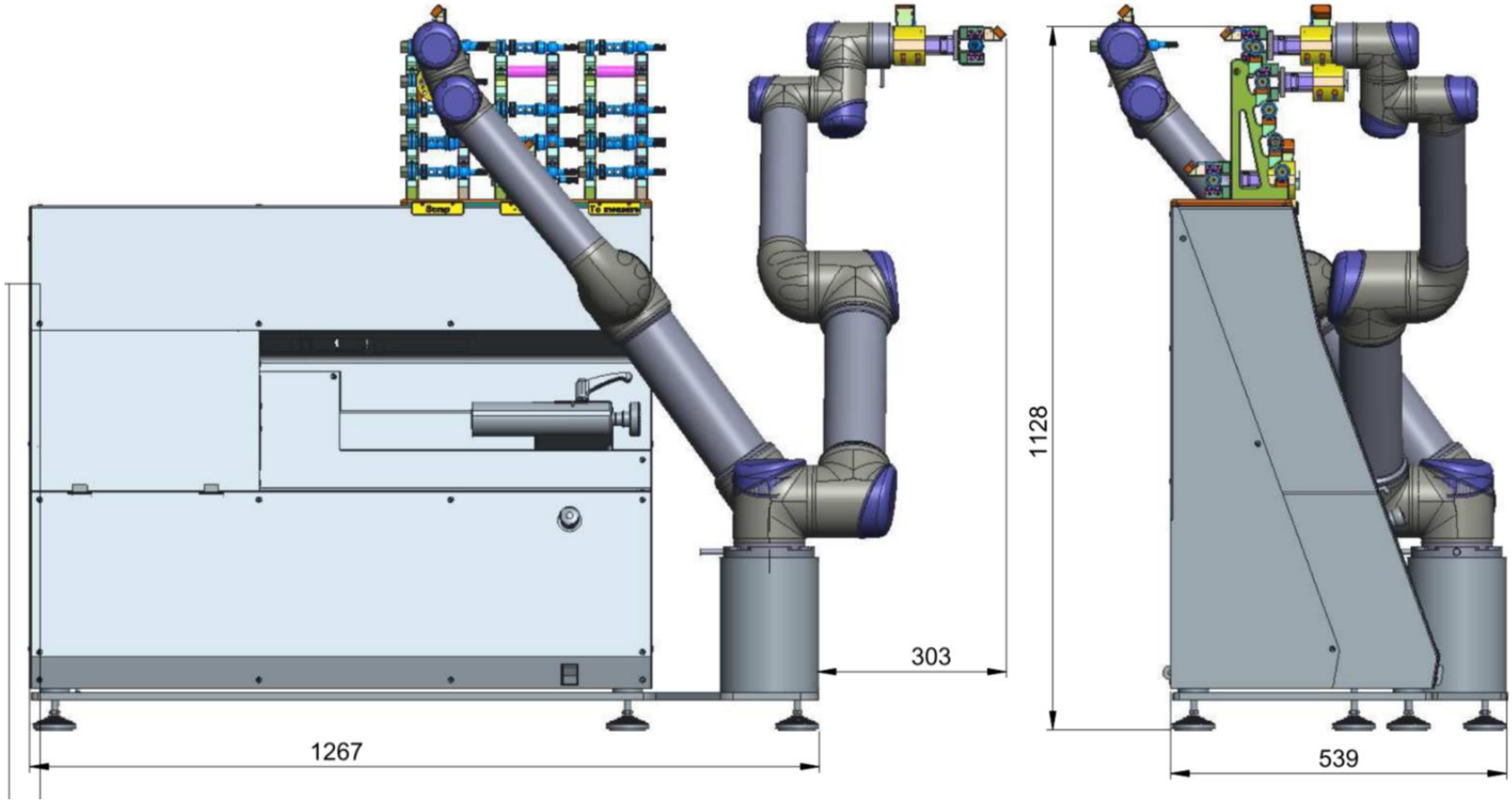

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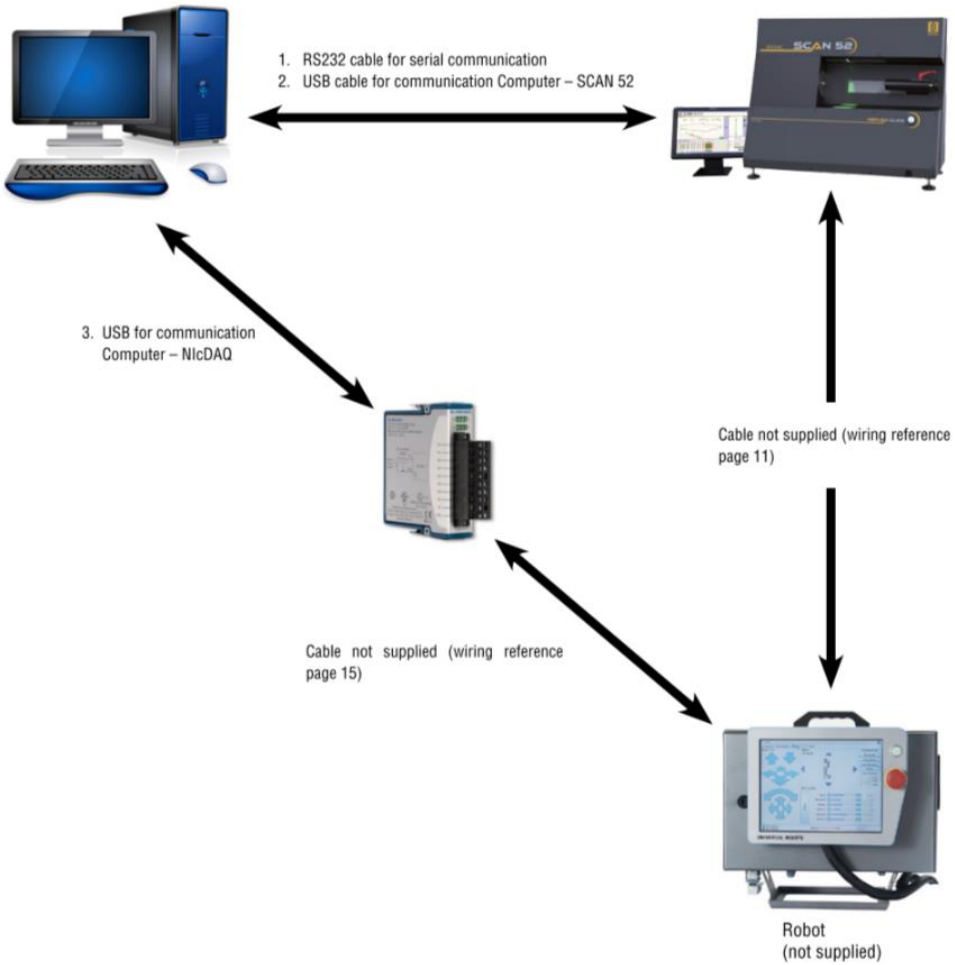


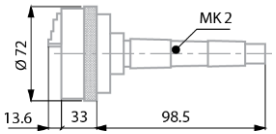
Supply

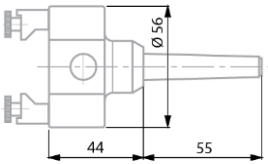
sylvac

Sylvac Scan

OPC UA

Communication

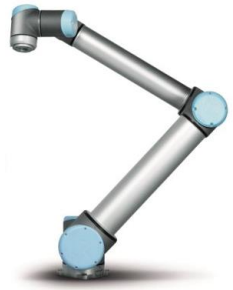




Part fixture

Local Integrator

Part delivery & cleaning



Robot

Robot gripper

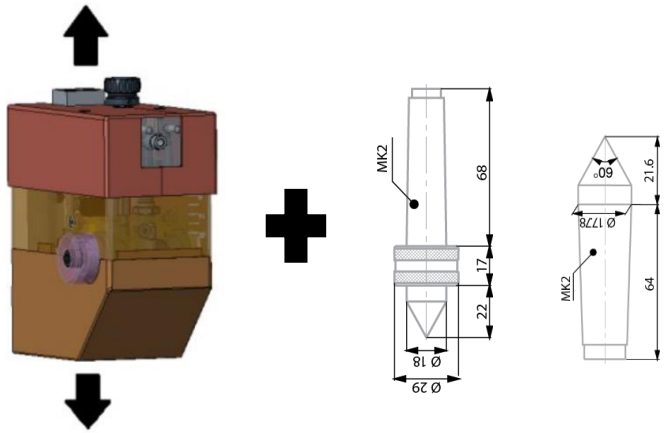
Safety cell
where applicable

SWISS MADE

Work-Holding / Fixtures

Automated solutions need a fixture which can be loaded by the robot or controlled remotely, typically via a robot controller or PLC system. These can fall into 2 categories as illustrated below. Upon receipt of part drawings and sample parts, Sylvac can normally propose a suitable automated fixture.

Standard / Machine integrated



Parts with centres or suitable bores either end can be loaded using robot in an upward motion.

Automated tailstock motion available on new D-series machines only.*

Add-on automated fixutre

Stand alone automated fixture with MT2 shank, loaded in the headstock. Designed and sourced to suit parts.

Communication

Standard I/O interface module from National instrument, connected to Scan PC via USB. I/O's mapped through software for relvenant signal i.e. Pass / Fail / ready / busy. I/O's hard wired to robot controller / PLC, additional safety/sensor hardware also wired.

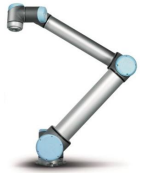
OPC UA

OPC-UA communication protocol, connected to PC by ethernet cable. I/O's mapped through software for relvenant signal i.e. Pass / Fail / ready / busy. Additional cable wired between machine and robot/PLC for safety / sensors.

Local Integrator

OPC UA

Signal and I/O's mapped and wired into robot / PLC from Scan.



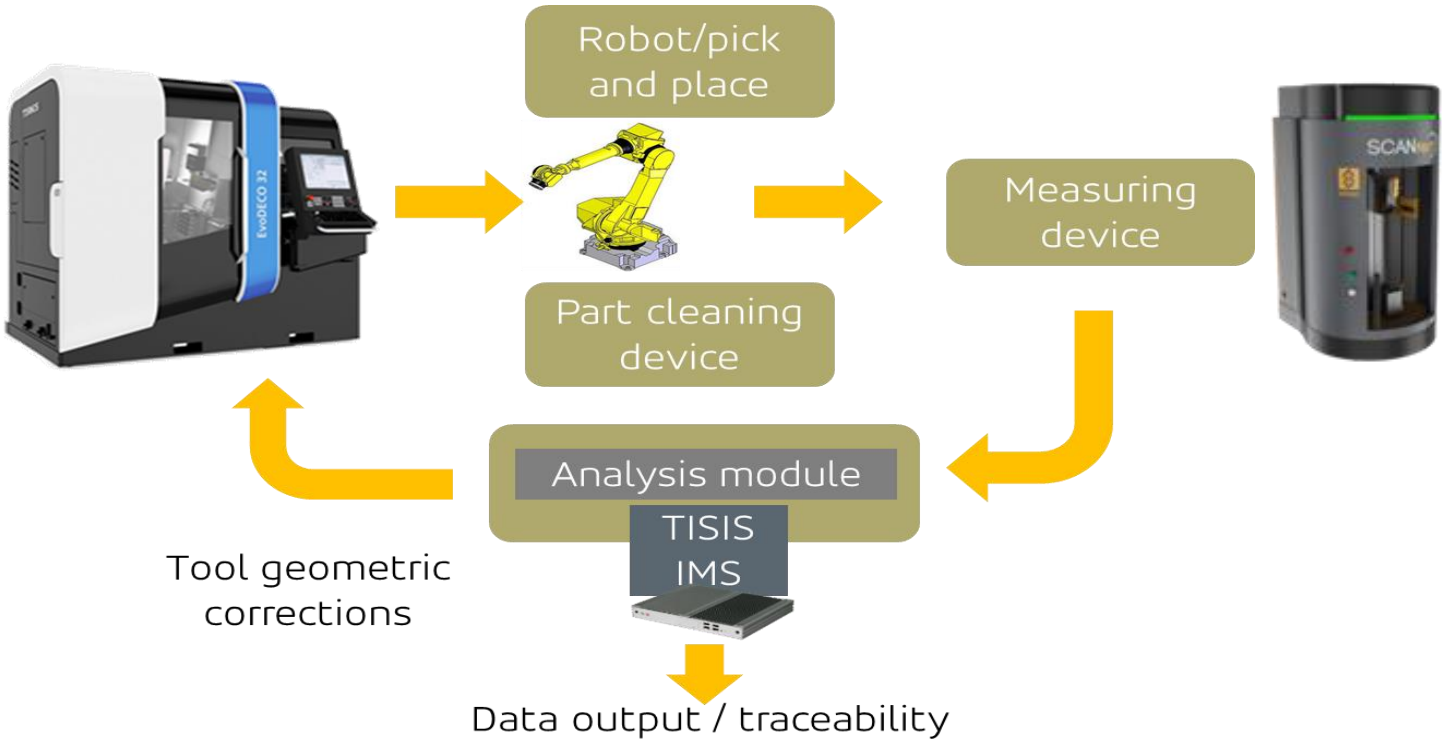
Robot is programmed and setup by local integrator.

Part delivery systems and safety equipment is programmed, connected and synchronised where applicable.

Other points

- 902.7017 – Option is for the Sylvac-Scan automation module and the I/O or OPC-UA communication interface to be included.
- 902.6608 – Option was intended to be used for the automated tailstock option, however this unfortunately is no longer an option, until the D-series machines are released in 2019.
- Only work-holding / fixutres which are standalone should be used, until automated tailsotck becomes available.
- Part cleaniness needs to be considered to ensure part is delivered to the machine in a measurable condition free of contamination.

Machine Tool Feedback (MTF)



Machine tool feedback for a complete closed loop system can be setup. Measured data is sent back to the machine tool typically through a 3rd party software/interface with calculated offsets, Caron Engineering / TISIS / IMS….

SYLVAC SCAN

The metrological solution for turned parts