



THIRD DIMENSION

ADVANCING MANUFACTURING

Vectro[®]2 for Universal Robots



WELCOME TO THIRD DIMENSION

We design, manufacture and sell, hand-held and automated non-contact gauging systems to the largest names in aerospace, automotive and energy sectors, worldwide.



PRODUCTS

HAND HELD

NON-CONTACT PRECISION MEASUREMENT TOOLS



 **GAPGUN®PRO2**

HARDWARE - HANDHELD



OUR PRODUCTS

Automated



NON-CONTACT PRECISION MEASUREMENT TOOLS



HARDWARE - AUTOMATED



PRODUCTS

SOFTWARE

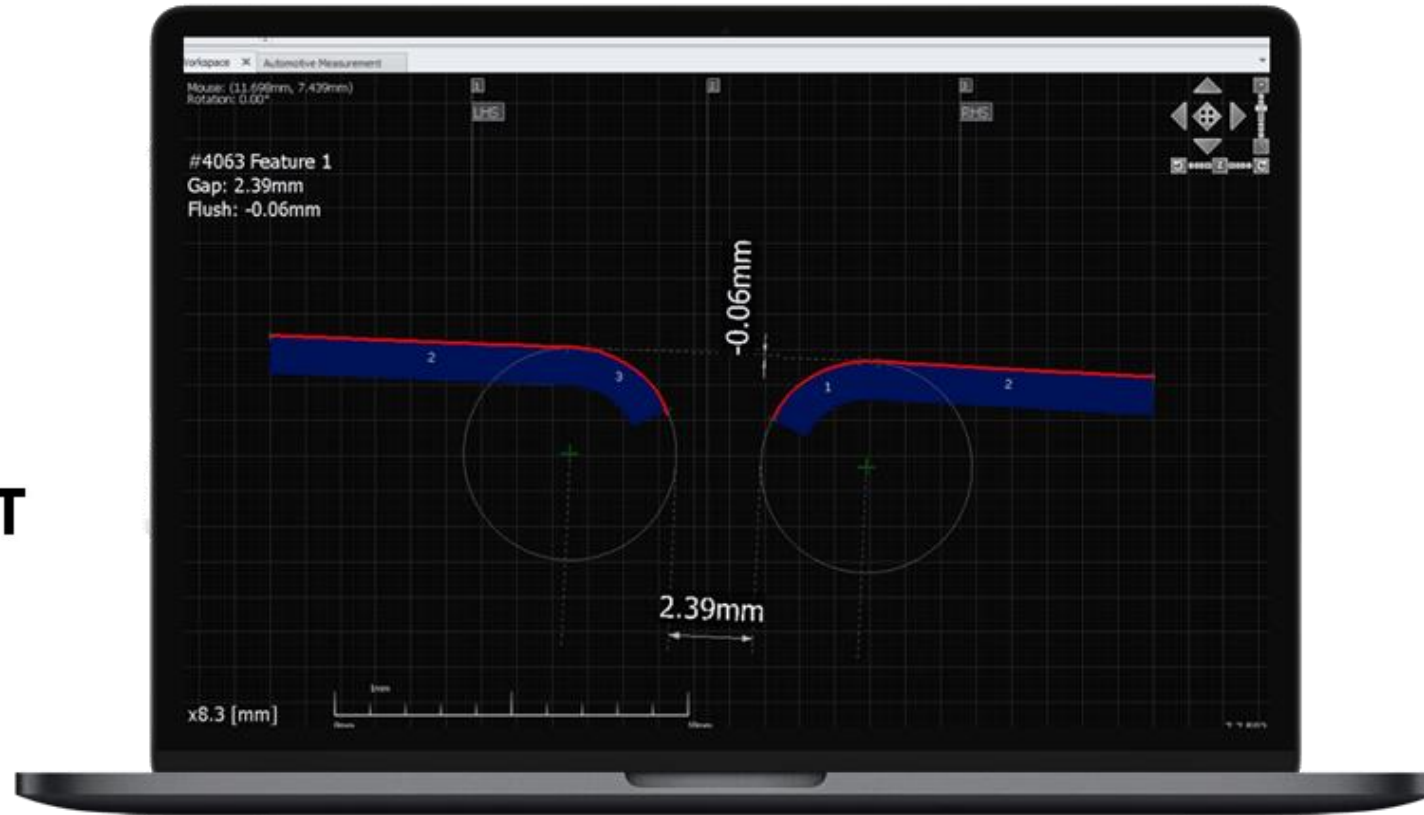
SOFTWARE TO INTEGRATE, ANALYSE, LINK AND EXPORT DATA

 **LINK**

 **SPC3d**

 **INSPECT**

 **INLINE**



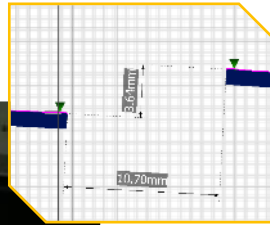
SOFTWARE



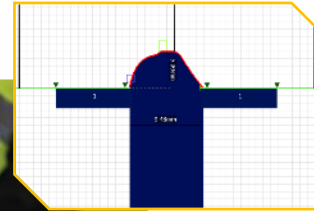
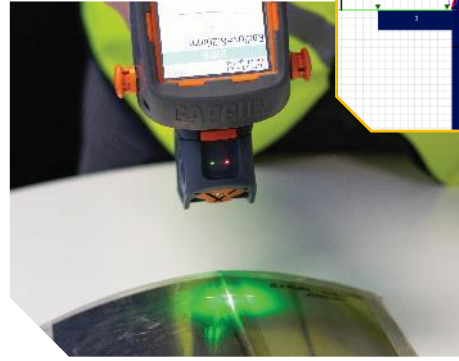
WHAT WE MEASURE

2D PROFILES

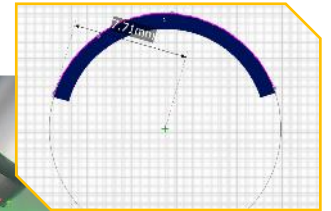
Gap and Flush



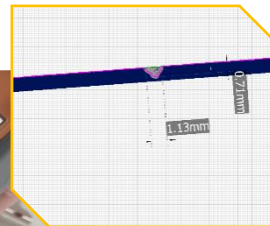
Weld



Radius



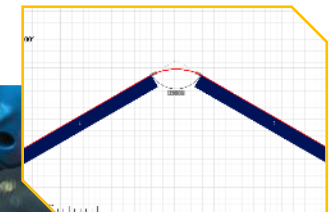
Scratch



Burr



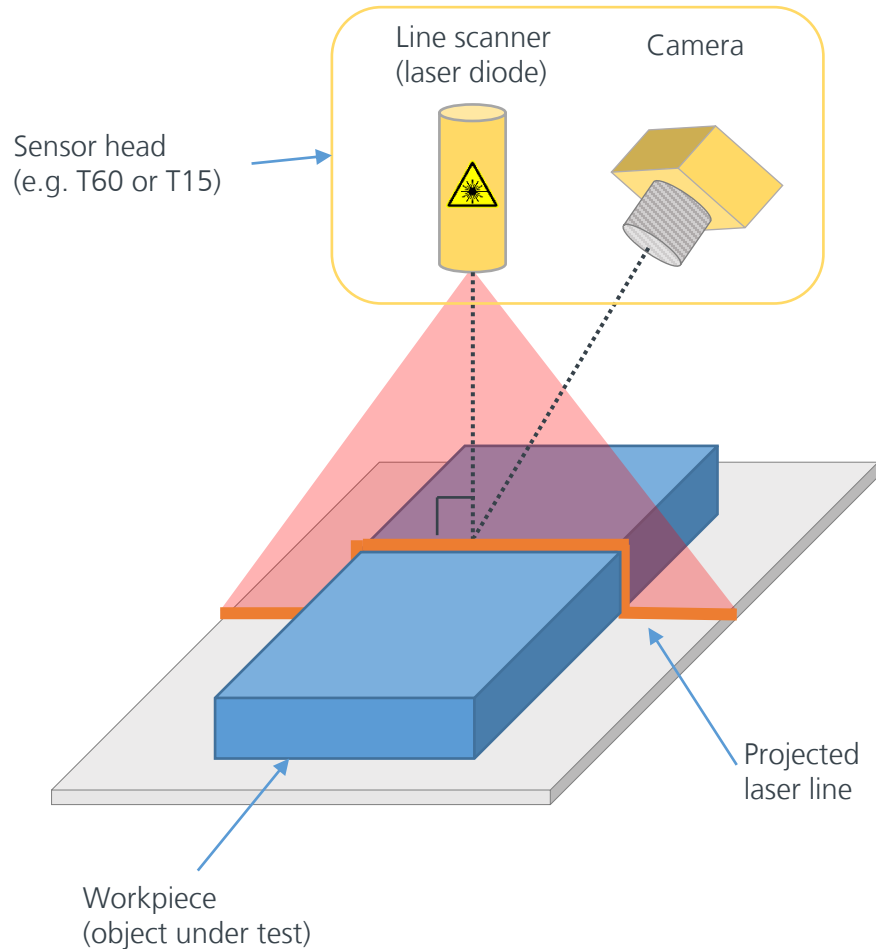
Angle & Chamfer





HOW WE MEASURE

Laser Triangulation with Violet Laser



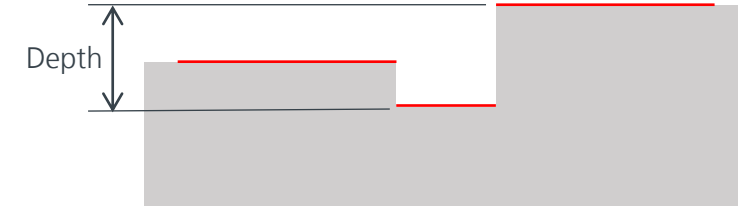
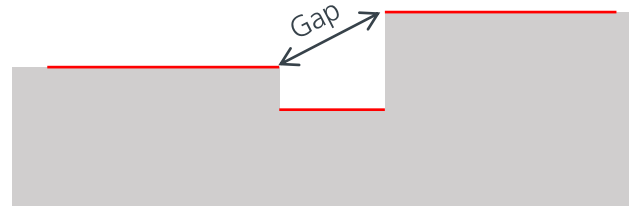
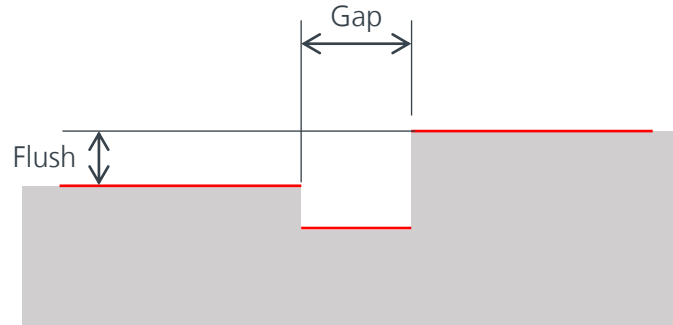
- Principal

- MEASURE command sent to Vectro®2 Data Collector from system controller
 - E.G. TP plugin, robot program, PLC, LINK application or other third party software
- Line scanner projects laser line onto surface of object being measured
- Camera observes line from known angle.
 - Image of line on camera sensor distorted relative to profile of object under test
- Vectro Data Collector reconstructs profile and computes measurement results according to parameters defined in selected tool (e.g. PanelGF, Angle, etc.)
- Measurement results returned to system controller for further processing and storage.



HOW WE MEASURE

Tools define a feature and the way it is measured



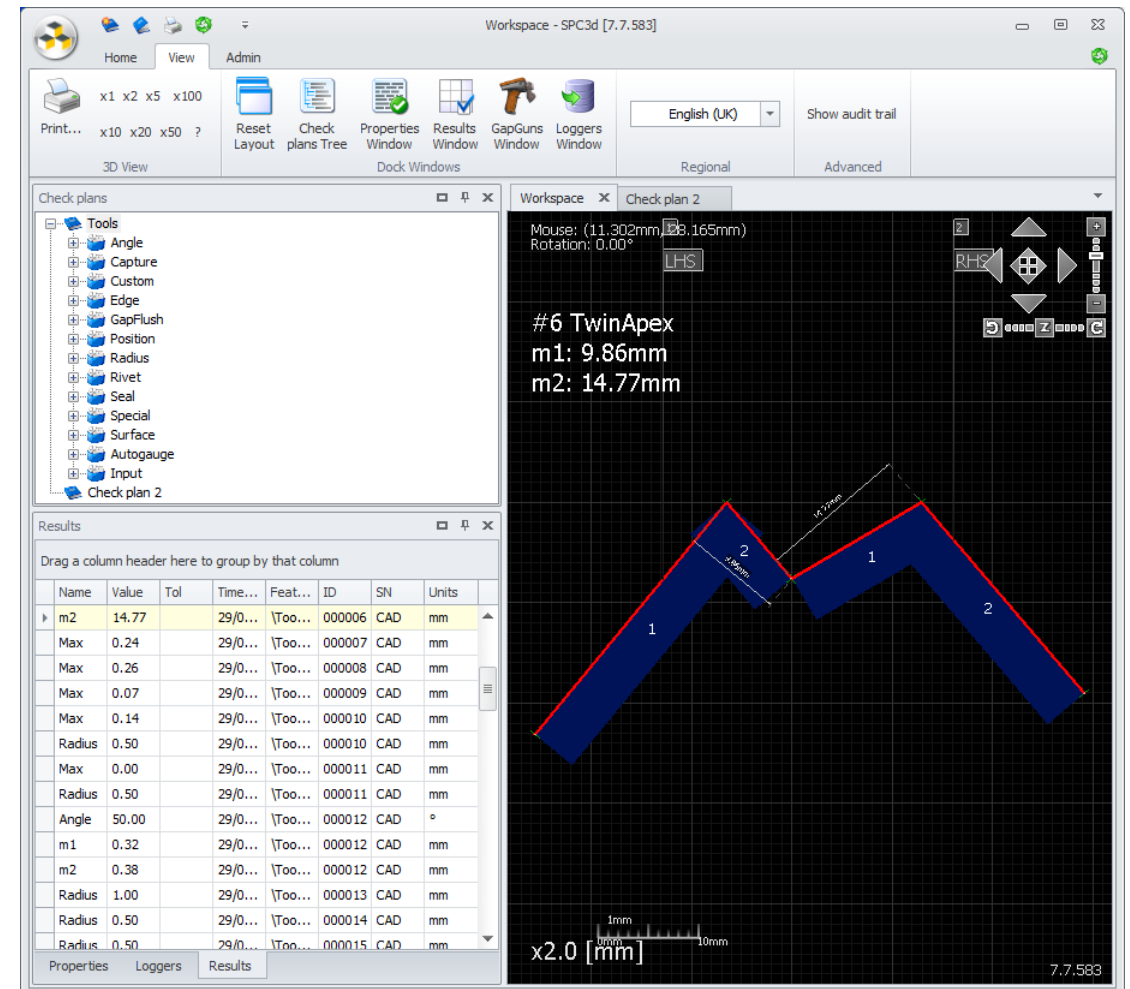
- A single feature can be measured in different ways
 - A custom **Tool** created with SPC3D gives the results that *you* want
- A **Tool** defines the way a part is measured
 - Specifies the points from which measurements are taken
 - Defines the tolerances
 - Takes account of specular or diffuse reflection from the surface



SPC3D

The power behind VECTRO and GapGun

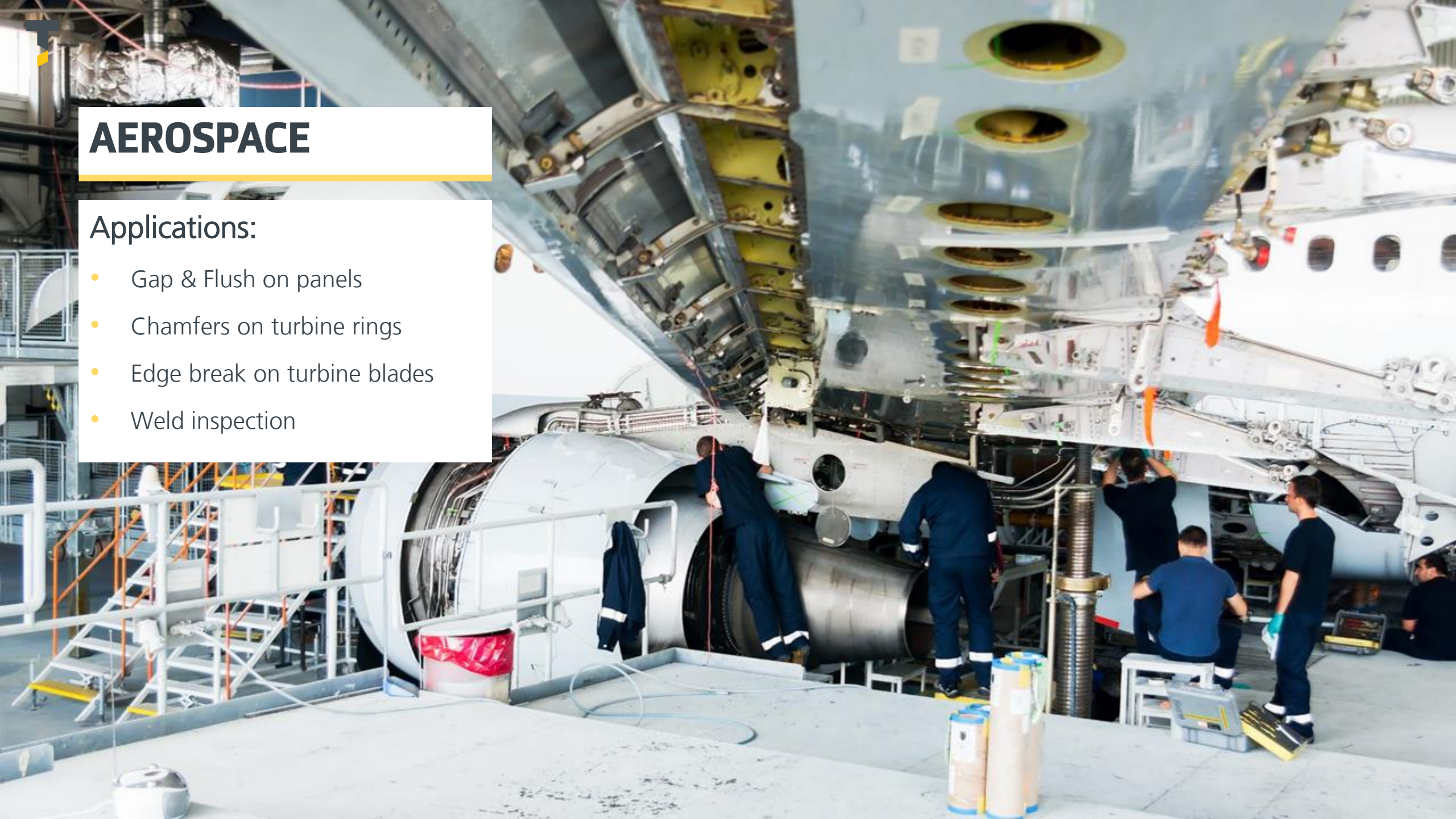
- Create custom **Tools** to define:
 - The profile of the feature under test
 - The measurement and tolerances
 - The characteristics of the surfaces being measured
- Create Checkplans
 - A list of **Features** in a **Job** and the associated **Tools** to measure them with
 - A record of the results from each **Job**
 - Upload to Vectro / GapGun via LAN or USB
- Loggers
 - SPC3D includes Loggers that format results for output to other devices and software
 - Create custom loggers



AEROSPACE

Applications:

- Gap & Flush on panels
- Chamfers on turbine rings
- Edge break on turbine blades
- Weld inspection



A worker in a blue uniform is working on a car chassis in a factory. The worker is standing next to the chassis, which is mounted on a yellow frame. The worker is holding a tool and appears to be working on the front of the car. The background shows a large industrial facility with various equipment and structures.

AUTOMOTIVE

Applications

- Gap & Flush - exterior panels, BIW and end of line
- Gap & Flush - internal and external trim, dashboard, steering wheels, lights, decorative trim...
- Angles – pressed parts
- Weld / seal inspection
- Gaps - clutches, brakes, EV batteries



ENERGY

Applications:

- Wind turbine blade joint flush
- Wind turbine blade defects
- Tile gaps in nuclear reactors





Non-contact gauging system for deployment on industrial and collaborative robots.



UR+ SOLUTION

Vectro[®]2 for Universal Robots



Package of hardware, software, documentation:

- Vectro2 base system kit
- UR Expansion Pack:
 - ✓ UR+ Certified URCap
 - ✓ Sensor mount and robot flange adapter
 - ✓ Quick Start Guide
- Power and data cables
- Cable guide kit (optional)
- [Universal Robots website listing](#)

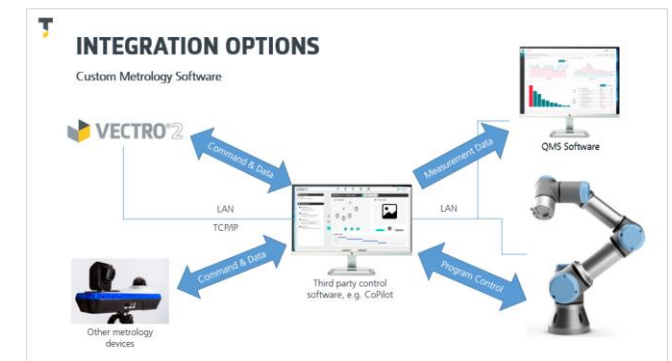
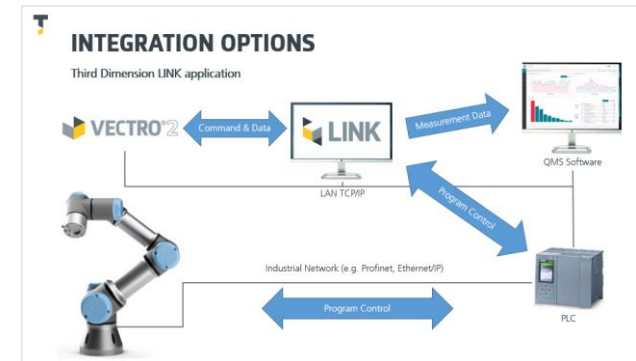
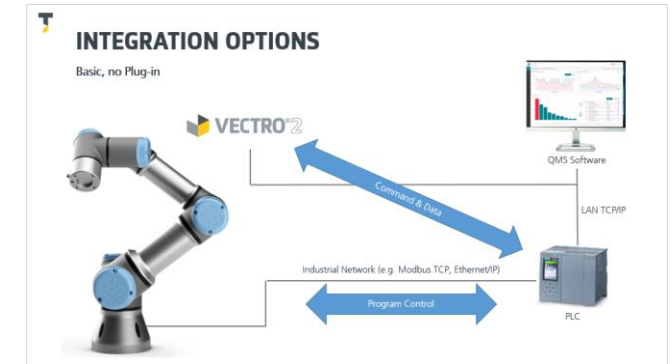
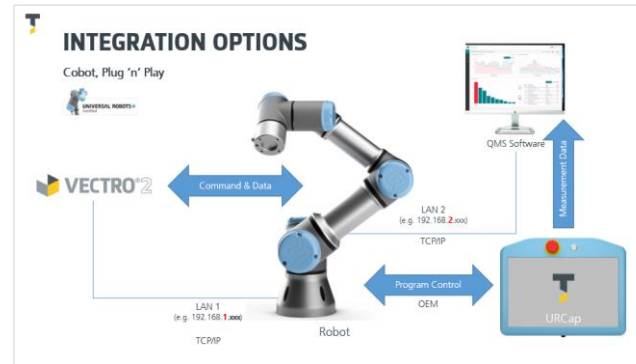




INTEGRATION OPTIONS

Examples of Vectro®2 integration methods

- Vectro®2 can be integrated in many different ways
- Our Universal Robots 'Expansion Pack' provides a simple plug and play option for rapid deployment and ease of use
- TCP/IP and Modbus TCP protocols are standard
- Custom .NET Windows applications can be developed with our LINK SDK
- Vectro®2 is supported by third party software such as CoPilot from Galixia Labs.



Click on thumbnail for to view slide. Use  to return to this slide.



UNIQUE SELLING POINTS

Vectro®2 automated non-contact gauging solution

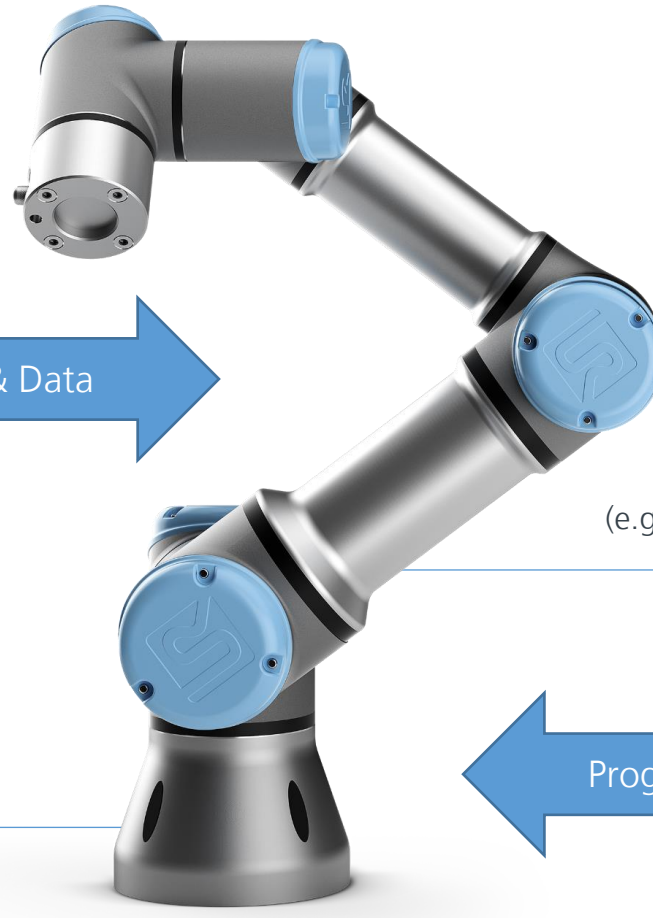
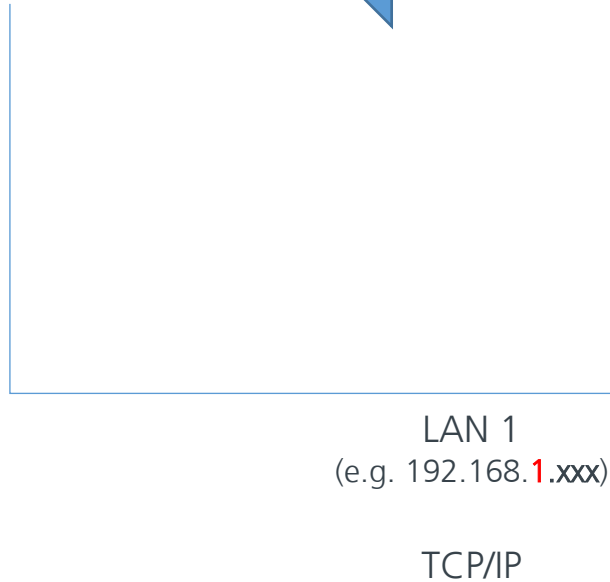
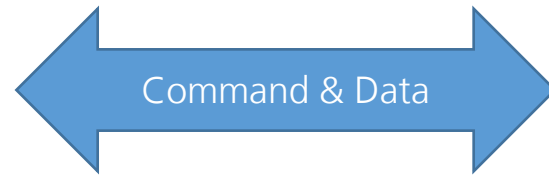
- ✓ Automate inspection and quality control of critical workpiece features
- ✓ Implement metrology driven process control (Industry 4.0)
- ✓ Proven, globally respected, GapGun technology
- ✓ Compact, low mass design
- ✓ Create custom tools with SPC3D software
- ✓ Traceable measurement data
- ✓ Sensors approved for use by major aerospace and automotive OEM's
- ✓ UR+ Certified URCap for Universal Robots plug & play solution
- ✓ Flexible integration options for more complex cells





INTEGRATION OPTIONS

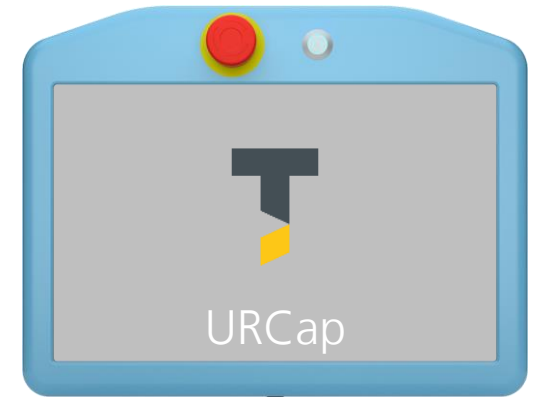
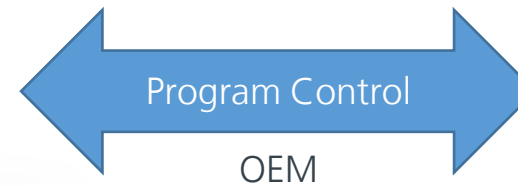
Cobot, Plug 'n' Play



Robot

LAN 2
(e.g. 192.168.2.xxx)

TCP/IP



QMS Software

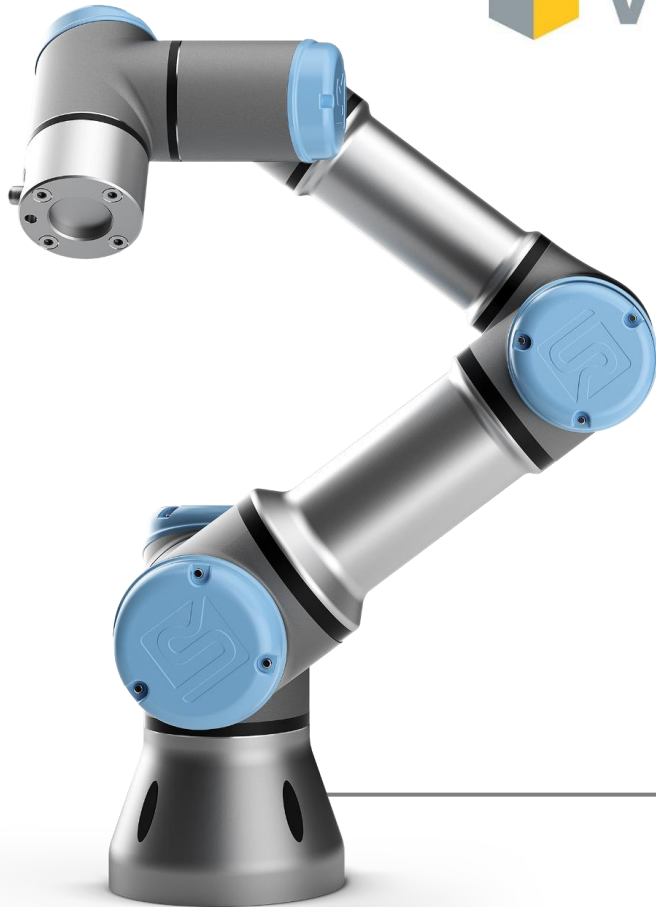


Measurement Data



INTEGRATION OPTIONS

Basic, no Plug-in



QMS Software

LAN TCP/IP



PLC

Command & Data

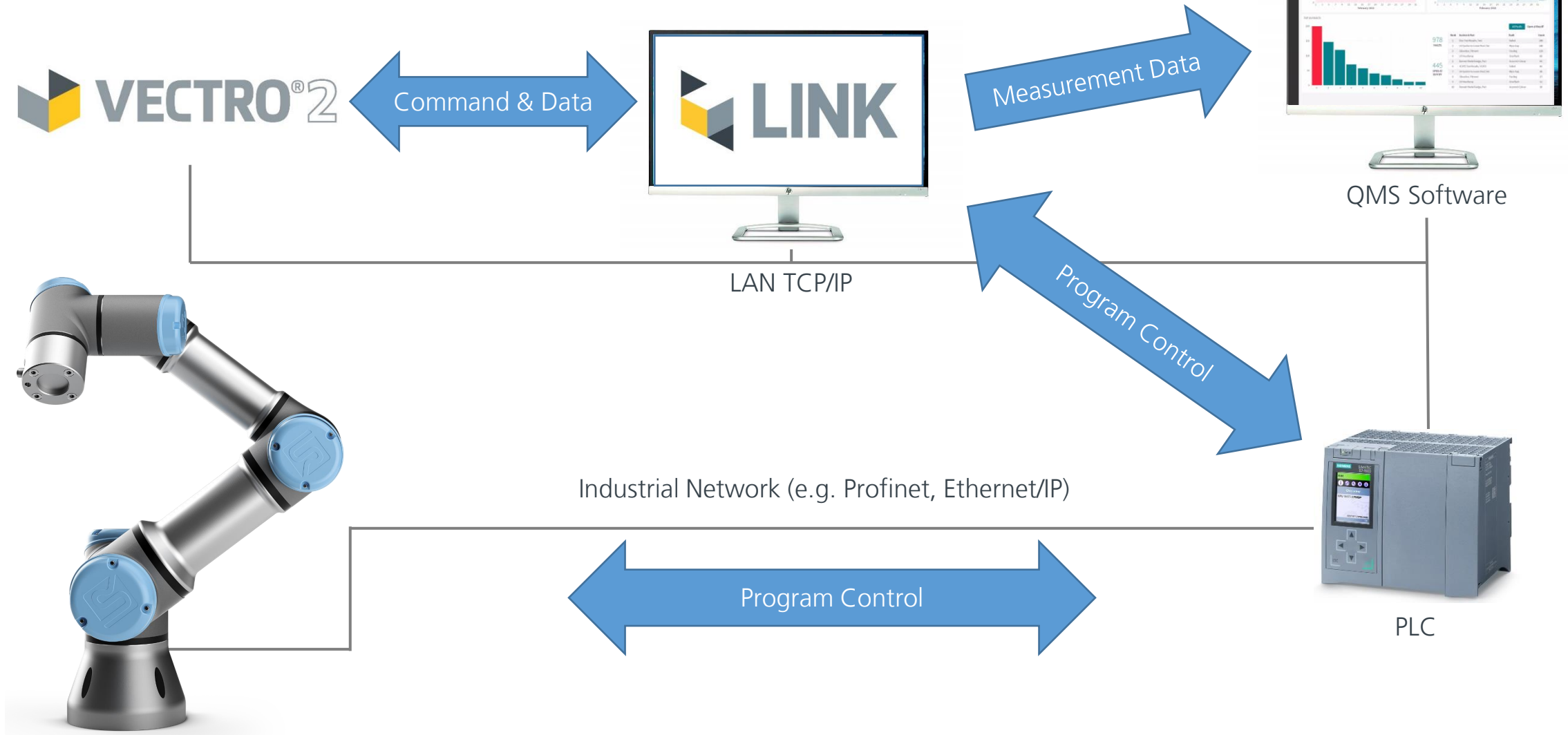
Industrial Network (e.g. Modbus TCP, Ethernet/IP)

Program Control



INTEGRATION OPTIONS

Third Dimension LINK application





INTEGRATION OPTIONS

Custom Metrology Software



Command & Data

LAN

TCP/IP

Command & Data

Measurement Data

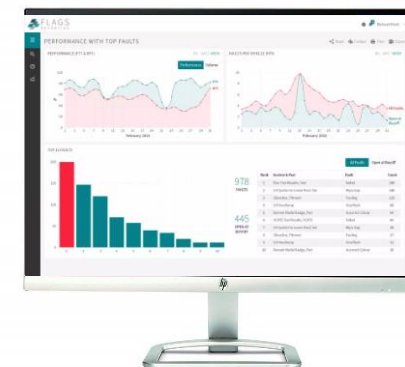
LAN

Program Control

Third party control
software, e.g. CoPilot



Other metrology
devices



QMS Software

