

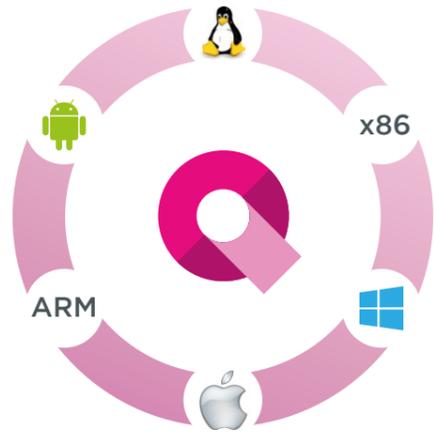


UNIQO HMI

The revolutionary  
visualisation software

# UNIQO HMI is a revolution

Industry 4.0, the IIoT and technological evolution are driving the developments of today and tomorrow.



Inspired by machine builders and their needs for innovative, flexible and powerful visualisation software, we have developed UNIQO HMI. A completely modular and platform-independent software whose components have been designed for the development and programming of industrial applications that are easy and intuitive to use. Regardless of software or hardware, these applications can be used on ARM and x86 architectures as well as on Linux, Windows or Mobile operating systems.

Compliant with OPC UA, the Industry 4.0 standard, UNIQO HMI can communicate with almost any automation device. Thanks to the integration of state-of-the-art methods, technologies and object-oriented programming, the development effort is considerably reduced.

# UNIQO HMI is "Full OPC UA"

Based on the OPC UA standard, **UNIQO HMI is fully compatible with the OPC UA specification.** This allows dynamic OPC UA client/server architectures to be created in which the systems take turns in the role of producers and consumers of the most diverse types of information. With UNIQO HMI, OPC UA can be used for data acquisition from the field, for M2M communication, for information exchange with MES/ERP business management systems and for connection to cloud services.

In a system with UNIQO HMI, you can share not only the data, but also the functions of the application, so that an external OPC UA client can actively interact with all functions of the project, such as user configuration, recipes or graphic resources of the screens.

High Performance

Modular Design

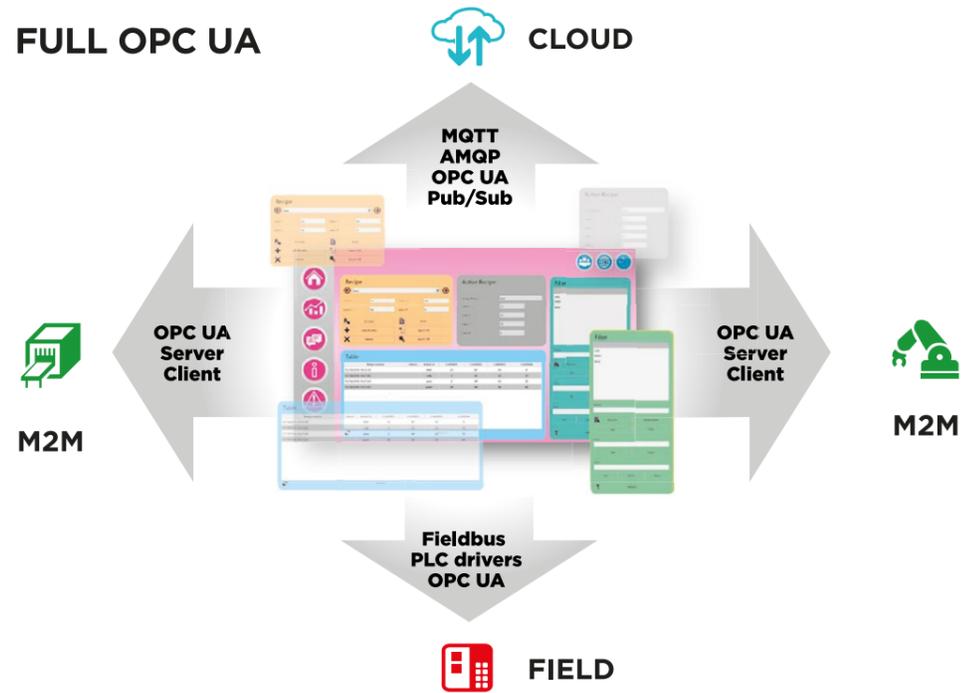
M2M Architectures

Fully Dynamic Applications

Simple

Combine components freely to satisfy any need

# Enter the world of UNIQO HMI



UNIQO HMI offers new, unprecedented possibilities for the dynamic and flexible implementation of visualisation projects. Required components and elements can be adapted or even added at any time during runtime. In addition, UNIQO HMI provides interfaces with which applications can be programmed and modified in C# to increase application functionality.

# Components

**Framework**

### Q PLATFORM

The Q PLATFORM includes all necessary software components for the realization of industrial automation applications. These components provide the common functions including user authentication and profiling, data history, event management, database connection, etc...

**Studio**

### Q STUDIO

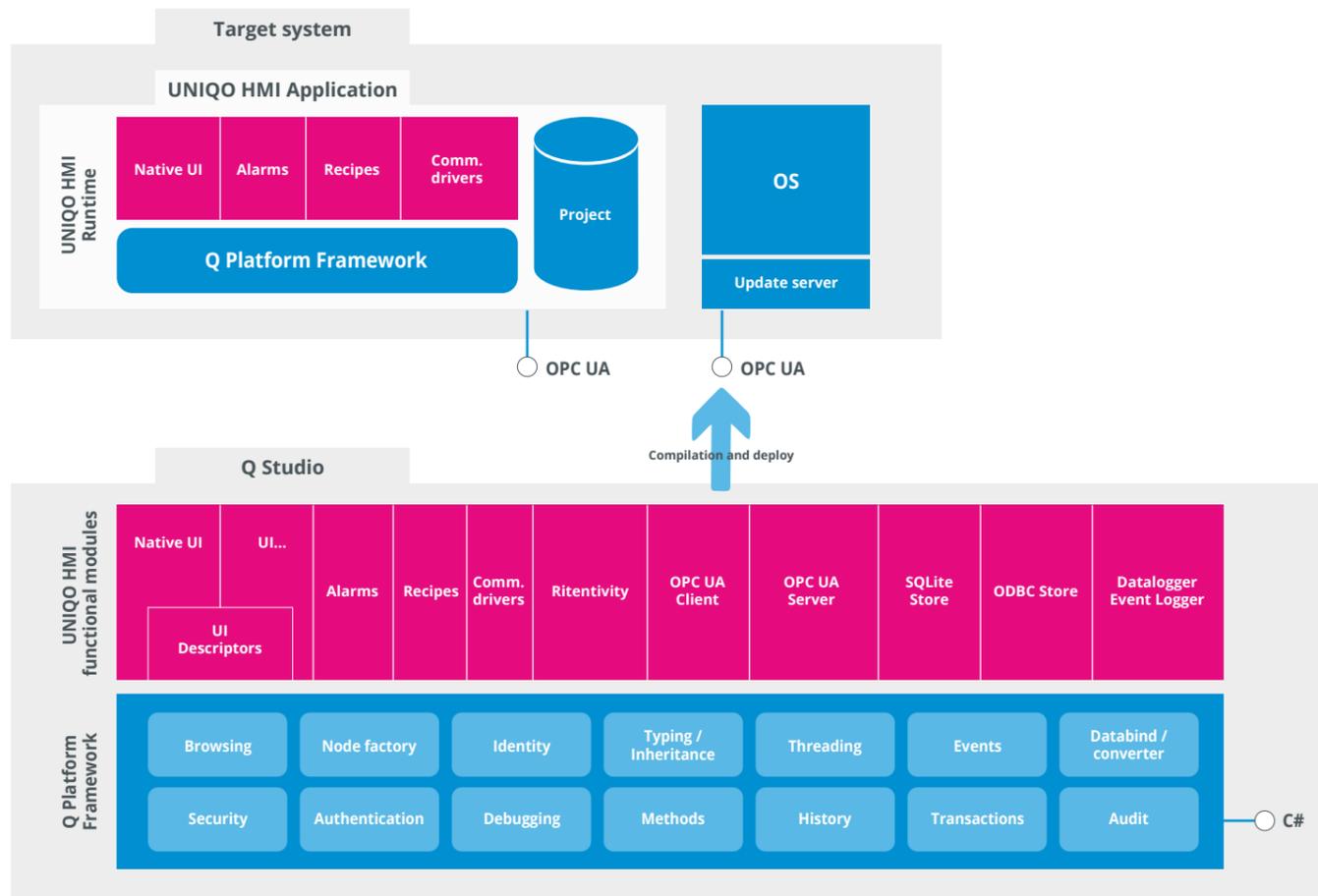
Q STUDIO is the innovative **I**ntegrated **D**evelopment **E**nvironment (IDE) with a visual programming interface, designed for simplifying and optimizing the programming efforts to realize unique HMI applications.

**Runtime**

### UNIQO HMI Runtime

UNIQO HMI Runtime is the software component installed on the systems that executes the applications developed with Q STUDIO.

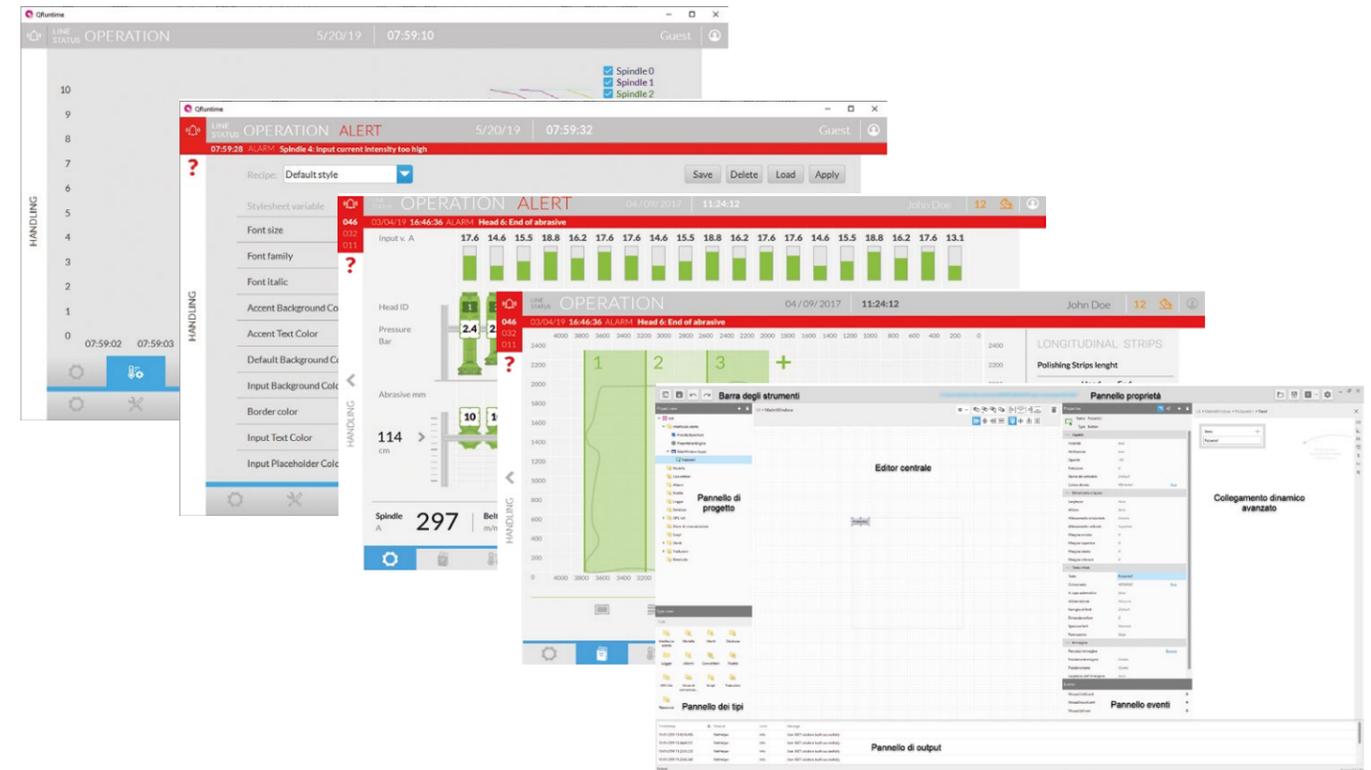
# UNIQO HMI architecture



The UNIQO HMI software platform is built on a platform-independent framework consisting of a set of basic components developed for the implementation of industrial automation applications: the Q platform. The UNIQO HMI "Function Modules" are based on these basic components of the framework, which also provides C# interfaces for an efficient access to its resources.

The applications are developed with the Q-Studio development environment. The runtime components which are required on the target system are automatically recognized, selected and activated by the development environment.

The development environment (IDE) consists of the following elements, which allow a correct configuration of a project.



→ The **Toolbar** provides the basic functions and operations for project development

→ The **Project Tree** displays the elements and folders used in the project

→ The **Type Window** displays the instantiated objects divided into categories

→ The **Properties Window** offers the possibility to modify and define elements, objects and dynamic links

→ In the **Event Window**, actions are configured according to the events, such as mouse clicks

→ The **Central Editor** is the area where the user implements the actual visualisation using graphical and other objects

→ The **Output Window** displays informative messages about possible errors and warnings in the development environment

→ **Advanced Dynamic Links** allow the implementation of advanced relationships (transformations) to add dynamic properties to various objects

# Why UNIQO HMI



## Responsive and modern interfaces

With UNIQO HMI, projects are no longer structured in pages, but in so-called containers, which **automatically adapt the format and positioning** of the objects to the alignment and resolution of the display. Object containers enable the automatic arrangement of elements in rows, columns or a matrix and also enable the use of gestures typical for multitouch systems.



## Object-oriented programming and modular applications

In UNIQO you can **define models** (classes or types) for **any object** of any complexity, independent if they are graphical or not. This enables the definition of logical and functional modules working as models (templates) which can be **instantiated at design time** and at runtime according to the requirements of the specific application. The ability to make project changes at runtime is particularly useful during the commissioning phase of a machine.



## Automatic interchangeability of the connected PLC

In UNIQO HMI, the concept of the "data context", i.e. the set of information to which an object refers, is used everywhere and applies to all objects (graphical and non-graphical) and at every level. When it is applied to the whole project, all the data to which the HMI project refers can change immediately, which also allows the **PLC to change automatically**.



## Optimal integration with PLC programming software

In UNIQO HMI, each **communication protocol supports the import of variables** from the programming environment or directly online from the **PLC memory**. The imported variables can be checked at any time and compared with the current ones of the PLC. It is also possible to select the synchronization mode of the variables.



## Automatic management of international settings

UNIQO HMI manages the international localization settings of OPC UA for the realization of multilingual projects. If the project is used by operators of different regions and languages, the **local settings**, e.g. number separation, decimal number, time format and unit of measurement are **automatically adapted**.



## "Live" changes of the project, even remotely, and retentiveness

Using the "connected" mode ("live mode"), the Q STUDIO development environment can connect to the current project on the target system. An authorized user is granted access and can safely **change and update** all functions of the project in real time **without the need for time-consuming new project planning or machine downtime**. The made changes are automatically detected and stored in a separate memory area, preserving the original project for recovery at any time.



## Integration of C# programs

UNIQO HMI offers the possibility to integrate existing programs developed in C# into the visualisation project. Due to **compliance with the .Net Standard 2.0 specification**, it is guaranteed that these programs are compatible with all operating systems supported by UNIQO HMI Runtime.



## M2M and IoT applications compatible with Industry 4.0

In UNIQO HMI, all **project resources** such as data structures, graphics, users, recipes, data loggers, etc. are **mapped and structured in OPC UA objects** with properties, methods and events. This allows for automatic interfaces to MES/ERP systems or solutions that support the OPC UA standard.

# What are the advantages of UNIQO HMI?

## The right solution for all hardware

UNIQO HMI is **compatible with any hardware platform and operating system**, leaving the designer free to choose the hardware platform that suits the application best. The **optimized architecture** always ensures optimal use of hardware resources and an excellent user experience. UNIQO HMI is compatible with any automation device and can integrate existing systems regardless of the technology used. The cross-platform architecture enables the optimal use of UNIQO HMI in legacy environments.



Compatible with any platform

## Reduced manufacturing times

Thanks to its fully modular and highly flexible architecture, UNIQO HMI enables development times to be shortened without compromising functionality, performance or usability. The ability to quickly prototype UNIQO HMI allows an agile approach to machine development, minimizing investment risk.



Agile Programming



Optimized Development



Accelerated Prototyping

## Secure investment for the future

**UNIQO implements OPC UA**, the recommended standard for Industry 4.0 and IIoT, to develop **future-proof solutions** that are secure and open for the integration of third-party systems. UNIQO expands your business opportunities with new strategies in the design of programs and applications. The **cross-platform architecture** also enables the effective use of UNIQO in existing systems.



OPC UA Server



Optimized Development



Open Solution

# What are the advantages of **UNIQO HMI**?

## Openness, modularity and reusability

With UNIQO HMI it is possible to fully **customize** the functionality of HMI applications by programming in **C# language** to create **unique and perfectly tailored solutions** to the application. The framework on which UNIQO's HMI architecture is based makes it possible to create a project without using the Q Studio development environment. The functions developed by the customer are seamlessly integrated. Projects can be realized according to a modular scheme, which makes it considerably easier to reuse, modify or extend the solution.



Changes and expansions



Use of proprietary tools



Cost reduction



Free combination of modules

## Faster responses to customers or support instances

UNIQO HMI makes changes easier, more convenient and less complicated. By using the OPC UA technology and thanks to the dynamic approach, **projects can also be changed during runtime via the so-called live mode, without having to stop, re-project the application or stop the machine.** The current project is accessed according to the project security settings. UNIQO HMI enables ideal support of the application over the entire life cycle of the machine or system, so that even the most difficult auxiliary scenarios can be solved efficiently.



Real time upgrade



Quick support with OPC UA



Dynamic applications

# UNIQO HMI BUSINESS MODEL

A highly modular and flexible solution such as UNIQO HMI also provides an innovative sales model that offers maximum flexibility at an optimal price-performance ratio.



### UNIQO HMI Runtime has no limits!

In contrast to conventional solutions, UNIQO HMI has no restrictions regarding the number of variables, the number of alarms, project pages, etc...



### The UNIQO HMI Runtime licence is a token container

Each UNIQO HMI runtime licence corresponds to a "container" with a certain number of permitted tokens. Each function is associated with a token value. The designer selects the functions necessary for the development of the application and can activate them.



### Wide range of choices

The components and functions that are to be activated and used in the project are selected at the time of programming using the Q STUDIO development environment. The UNIQO HMI Runtime checks whether the total number of tokens of all activated functions is within the permissible size of the container of the purchased licence.

# UNIQO HMI BUSINESS MODEL

# The functional components of UNIQO HMI

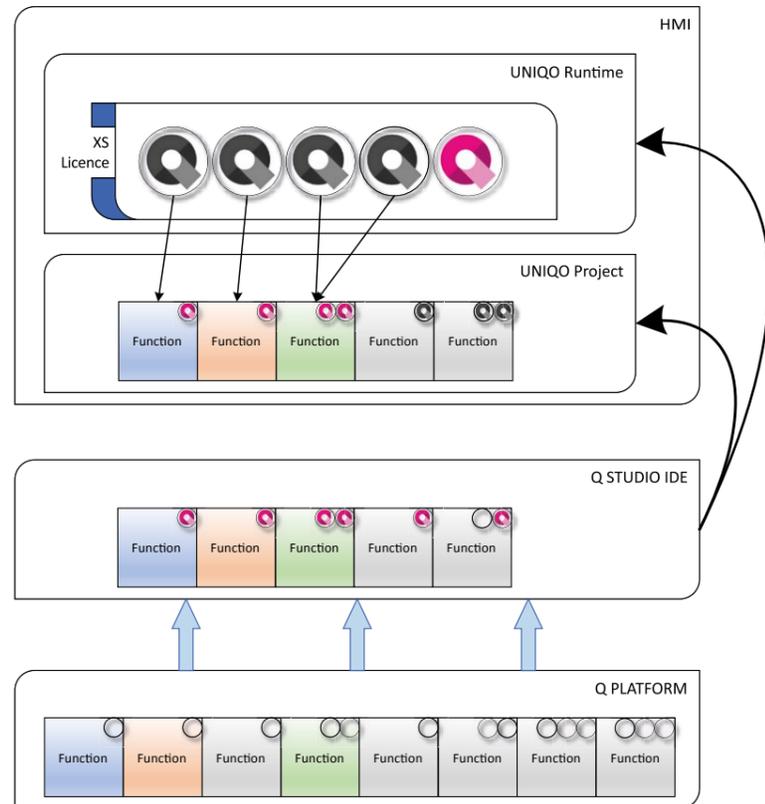


### UNIQO HMI Win 64 licences

The UNIQO HMI licences for WIN64 operating systems are available in six containers (from XS to XXL) representing different maximum quantities of tokens.

### UNIQO HMI licences in embedded systems

ASEM ARM-based systems can be equipped with three different licences (S, M, L) representing three different maximum quantities of tokens.



| Function                          | Description   | Architecture |        | Value in token |
|-----------------------------------|---|--------------|--------|----------------|
|                                   |   | ARM (2)      | Win 64 |                |
| Native Graphical Interface        | The graphic interface enables the visual realization of the project with all classic control data, images and drawings.   | ✓            | ✓      | 1              |
| Alarms                            | Allows the programming and configuration of alarms and alarm messages.  | ✓            | ✓      | 1              |
| Data logger                       | Records the values of variables and stores them in an archive. This function requires a database component (embedded or ODBC).  | ✓            | ✓      | 1              |
| Recipes                           | Manages different sets of variables for storing and referring to process values. This function requires a database component (embedded or ODBC).  | ✓            | ✓      | 1              |
| Event Logger                      | Enables the recording and historization of generic OPC UA events, including alarms. This function requires a database component (embedded or ODBC).   | ✓            | ✓      | 1              |
| Embedded Database                 | Configuration of one or more embedded databases in proprietary format (SQLite) for data storage.  | ✓            | ✓      | 1              |
| ODBC database single connection   | Provides an ODBC interface to one or more database servers such as Microsoft SQL Server and MySQL. Supports only one database connection at a time.   | ✓            | ✓      | 1              |
| ODBC database multiple connection | Provides an ODBC interface to one or more database servers such as Microsoft SQL Server and MySQL. Supports multiple database connections at the same time.   | ✓            | ✓      | 2              |
| Retentivity                       | Changes to a project are automatically detected and stored in a separate memory area. It is possible to restore the original project at any time. This function requires a database component (embedded or ODBC).   | ✓            | ✓      | 1              |
| OPC UA Client Data Access         | Allows the configuration of one or more OPC UA clients in Data Access mode. The Data Access mode refers to the access to automation data, typically digital and analog variables in the OPC UA servers.   | ✓            | ✓      | 1              |
| OPC UA Client Full                | Allows the configuration of one or more OPC UA clients in full mode, which refers to access to any type of resource exposed by the OPC UA servers, including import, export, and synchronization. Access to all project functions can be made via OPC UA servers of other systems with UNIQO HMI. | ✓            | ✓      | 3              |
| OPC UA Server single client       | Enables configuration and display of one or more endpoints for interaction with UA OPC clients. Supports only one OPC UA Client connection at a time.   | ✓            | ✓      | 1              |
| OPC UA Server multi client        | Enables configuration and display of one or more endpoints for interaction with UA OPC clients. Supports multiple connections from OPC UA clients simultaneously.   | ✓            | ✓      | 3              |

2. UNIQO HMI for ARM platforms only supports the Linux operating system

| Win 64 licence | TOKEN |
|----------------|-------|
| XS             | 5     |
| S              | 8     |
| M              | 11    |
| L              | 15    |
| XL             | 21    |
| XXL            | 28    |

| UNIQO HMI licence in ARM embedded systems | TOKEN |
|---|-------|
| S   | 8     |
| M   | 11    |
| L   | 18    |

# UNIQUO HMI Protocols

| Protocols / devices         | Interface |          |           | Architecture |        | Token |
|-----------------------------|-----------|----------|-----------|--------------|--------|-------|
|                             | Serial    | Ethernet | HW add-on | ARM (2)      | Win 64 |       |
| Beckhoff TwinCAT            |           | ✓        |           | ✓            | ✓      | 1     |
| CODESYS                     |           | ✓        |           | ✓            | ✓      | 1     |
| Mitsubishi MELSEC FX3U      |           | ✓        |           | ✓            | ✓      | 1     |
| Mitsubishi MELSEC Q/FX5U    |           | ✓        |           | ✓            | ✓      | 1     |
| Modbus                      | ✓         | ✓        |           | ✓            | ✓      | 1     |
| Omron EtherNet/IP           |           | ✓        |           | ✓            | ✓      | 1     |
| Omron FINS                  | ✓         | ✓        |           | ✓            | ✓      | 1     |
| Rockwell EtherNet/IP        |           | ✓        |           | ✓            | ✓      | 1     |
| Siemens S7 TCP              |           | ✓        |           | ✓            | ✓      | 1     |
| Siemens S7 TIA PROFINET (1) |           | ✓        |           | ✓            | ✓      | 1     |

1. Supports importing variables from TIA Portal with S7-1200 / S7-1500 controllers via symbolic addressing  
 2. UNIQUO HMI for ARM platforms only supports the Linux operating system



# Application cases: UNIQUO HMI in the field

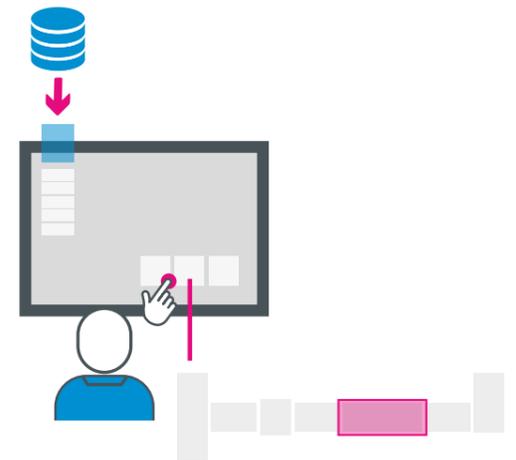
## The self-creating visualisation

### THE NEED

→ Quick implementation of an HMI project for testing special machines and machine functions. The project specification consists only of a list of the I/Os to be managed.

### THE SOLUTION

→ The complete user interfaces can be generated automatically by UNIQUO HMI and dynamically from a tabular description of the control configuration and the I/O modules (e.g. text file from a CMS system) of the respective machine. UNIQUO HMI is able to read and interpret files at runtime and to generate the corresponding interfaces dynamically. The design of the interface is the result of a C# program that instantiates all components of the user interface from the input file at runtime.



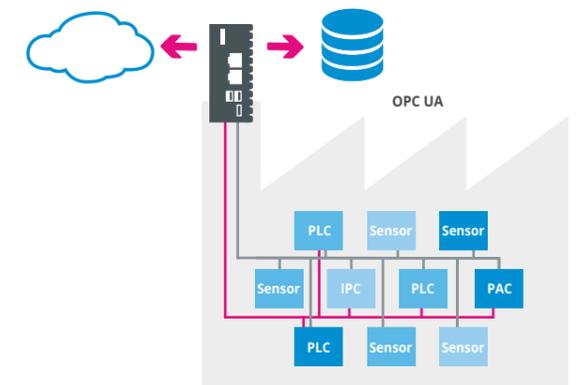
## The gateway

### THE NEED

→ Collecting data from a heterogeneous set of sensors and machines and integrate them homogeneously to make them available to the factory management system that controls production.

### THE SOLUTION

→ UNIQUO HMI has the most common communication protocols in the industry and is therefore suitable for data acquisition from all types of devices. After data acquisition, the data can be modelled within any complex data structures. UNIQUO HMI can provide the collected data via the integrated OPC UA server, manage access via user profile guidelines and guarantee a high degree of data and information protection.





**Over 40 years of innovation made in Italy**

ASEM has successfully pioneered the integration of the **ICT technologies** in the **Industrial Automation** world since **1979**.



**Around 30% of the human capital dedicated to R&D**

ASEM covers all the requirements in terms of **hardware** and **software** design by leveraging a team of **highly experienced and skilled engineers**. Every product is created working together with the **technological partners** and constantly striving to fulfill our customer's needs. This commitment results in solutions that are **highly performing, user friendly, reliable** and **capable** of withstanding with the **most demanding industrial environments** all over the world.



**Leader and trendsetter in the Open Automation**

The constant focus on **customer requirements, innovation** and **quality**, together with the continuous investments in **human capital, technology** and **production processes** make **ASEM** one of the emerging players in the European Industrial Automation market. We provide solutions that are **fully designed, industrialized and manufactured in-house** guaranteeing the full control of the whole value chain.



**Main player in the Industry 4.0 revolution**

Designing **UBIQUITY**, an Internet-based software solution providing remote access to automated machines and plants, ASEM was one the first companies understanding the value of Information and Communication Technologies applied to the Automation. Nowadays ASEM is one of the few European companies mastering on its own all driver technologies of the current 4th Industrial Revolution covering hardware development (x86, ARM platforms and OSs), and software, cloud and communication solutions design.



**Long term continuity**

The full control of design and production processes and the close cooperation with technology trendsetters allow ASEM to ensure a 7/10 years life cycle of its systems and reparability of the same for at least 5 further years, with availability of spare parts. ASEM guarantees End of Life procedures lasting from 6 to 12 months for the Last Buy Order and deliveries.



**Customization**

ASEM realizes "Light Custom" and "Full Custom" products and systems in order to meet the specific needs of its customers. "Light Custom" designs don't involve structural changes to standard products and mainly imply logos replacement, custom labels and personalization of Panel IPC fronts. On the other hand, "Full Custom" designs involve new mechanical components engineering and new electronic boards.

**ASEM in numbers:**

- 2018 revenues: € 38.3 million
- 203 employees
- 5.200 sqm Headquarters in Artergna (UD)
- 3.250 sqm manufacturing facility in Artergna (UD)
- R&D offices in Verona
- R&D offices in Giussano (MB)
- Sales offices in Germany
- Global presence via partners and distributors



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**USER INFORMATION**

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