



# Welcome

## Webinars 2020

### México

### IMA



Webinar IMA      Octubre 2020

## Línea Básica y Estandar de HMI's



|          |                 |
|----------|-----------------|
| Fecha    | 15 Octubre 2020 |
| Hora     | 9:00            |
| Hora     | 16:00           |
| Duración | 1 hora          |
| Costo    | gratuito        |

Descubra mayores informaciones y aprenda a configurar y seleccionar las HMI's de la línea Básica y la Linea Estándar .

En este Webinar, usted aprenderá los detalles comerciales y técnicos más importantes de las líneas BTP 2000, TP 3000, BWP 2000 de HMI's que existen por parte de PHOENIX CONTACT. Se demostrará la utilización del software VISU+ EXPRESS como herramienta de programación de estas terminales así como también la selección y un pequeño panorama de utilización del software WEBVISIT para la programación HTML de las aplicaciones de visualización para la familia de controladores Inline, Axioline y RFC que apliquen a esta herramienta.

# Operation & Monitoring with HMI



Quiz

## What makes a screen an HMI?

- ✓ Device with installed
  - ✓ visualization software, or
  - ✓ web browser
  
- ✓ Hardware is used to visualize / interact with
  - ✓ Machine status
  - ✓ I / O status
  - ✓ Alarms
  - ✓ Trends
  - ✓ Camera
  - ✓ PLC
  - ✓ ...



# HMI & Industrial PC - Differentiation



**Static hardware & software combination – HMI**

HMI = Hardware-Platform plus configuration software  
→ „ready-to-use“ product

PC = Open and configurable PC-platform  
→ custom solutions



Box PCs



Panel PCs



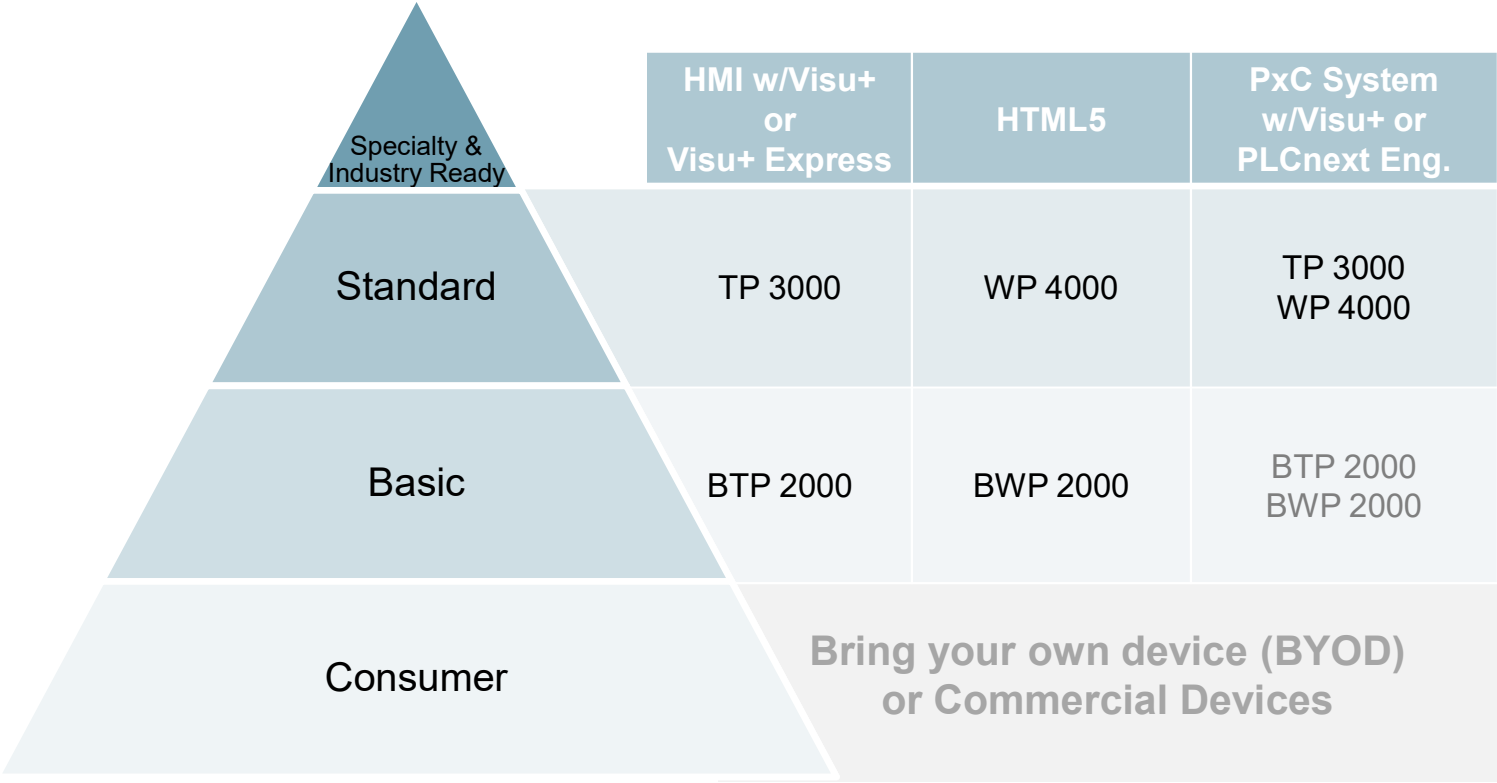
IP65 Panel PCs



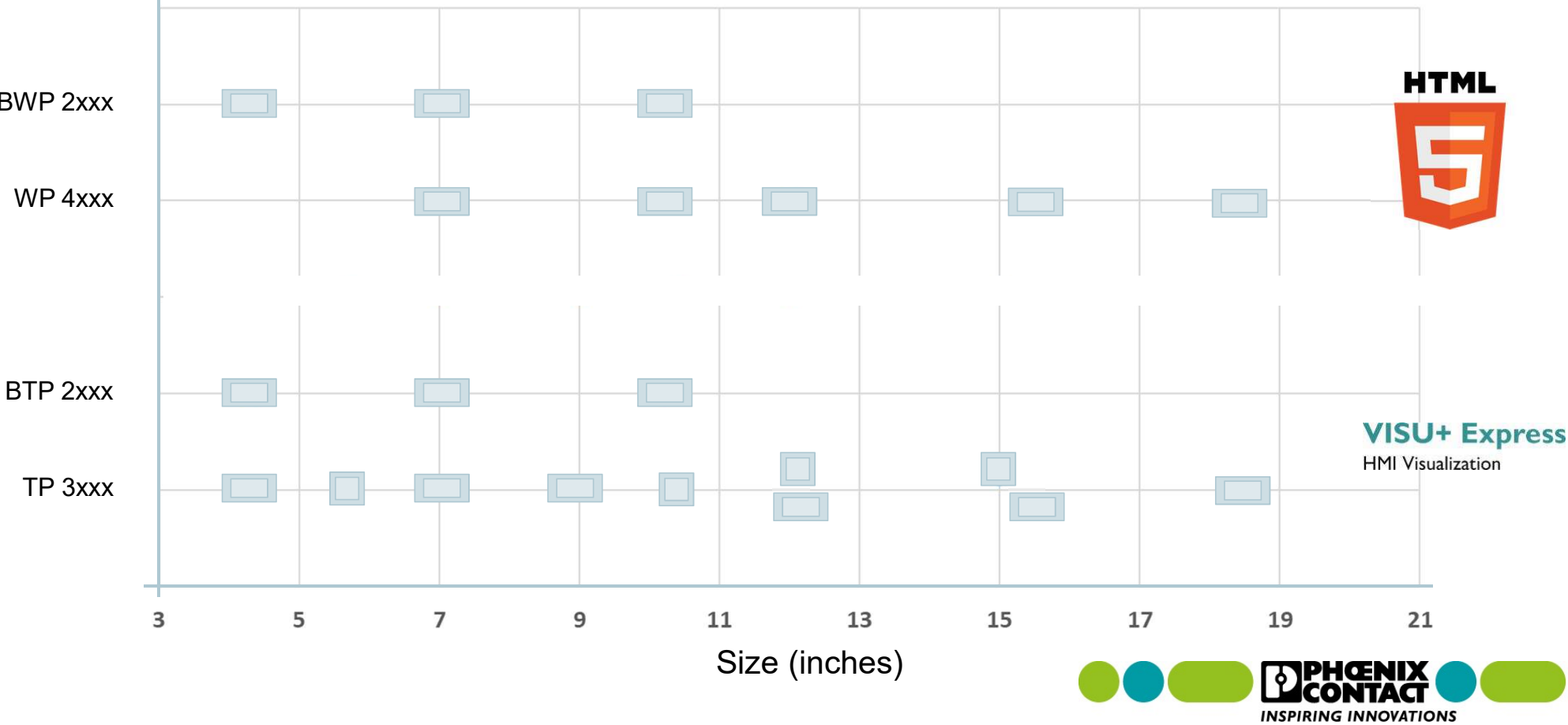
Specialty & Industry ready IPCs

## Configurable Hardware-Platforms

# HMI Product Value Pyramid



# HMI product families and available screen sizes



## Quiz

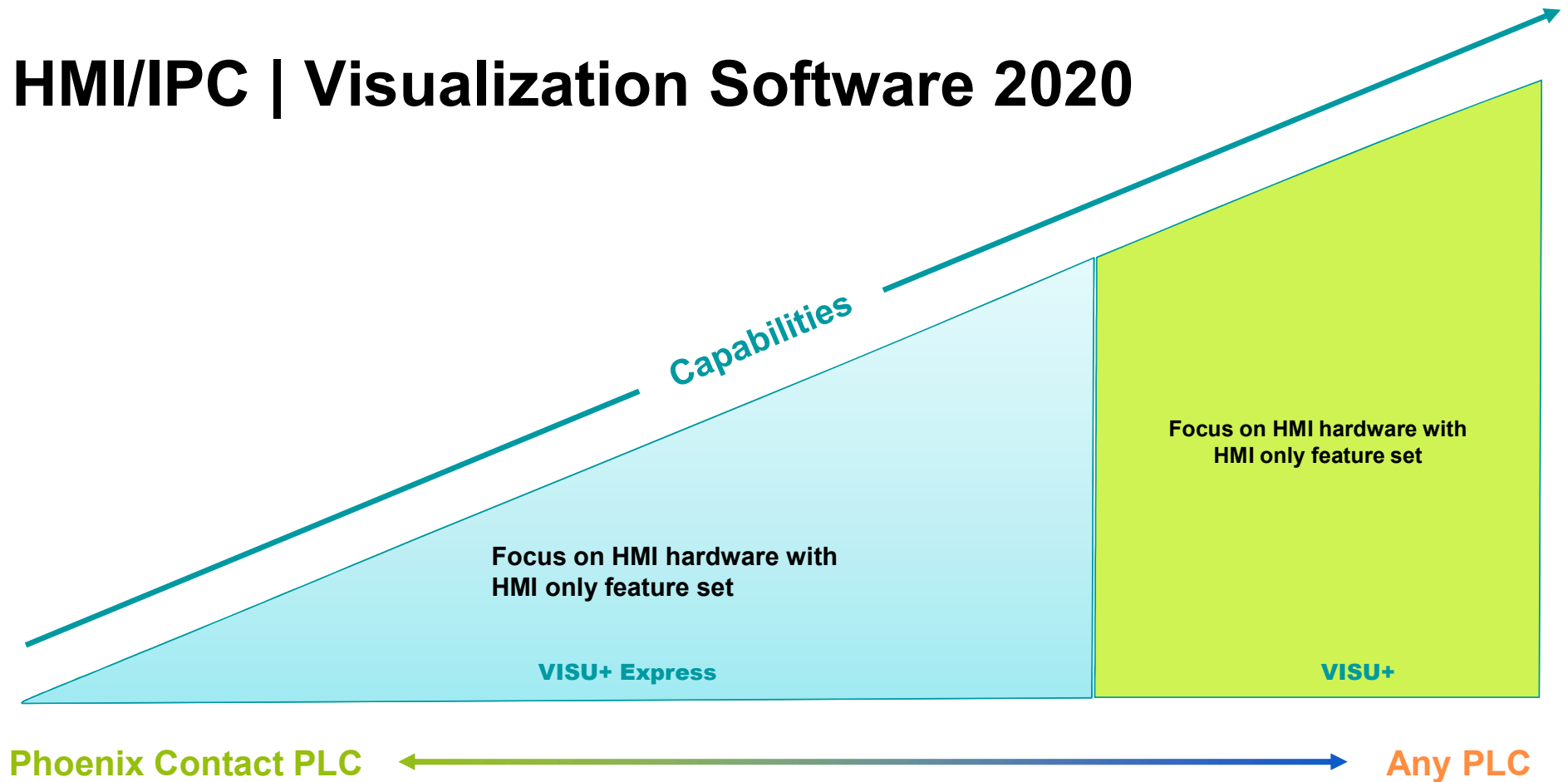
# How can HMIs interact with a machine / device / PLC?



- ✓ Visualization runtime offers native communication drivers
  - ✓ Ethernet/IP
  - ✓ Profinet
  - ✓ .....
- ✓ Protocol converter
  - ✓ OPC
- ✓ HTML5 browser targets IP address of web server (i.e. on PLC)



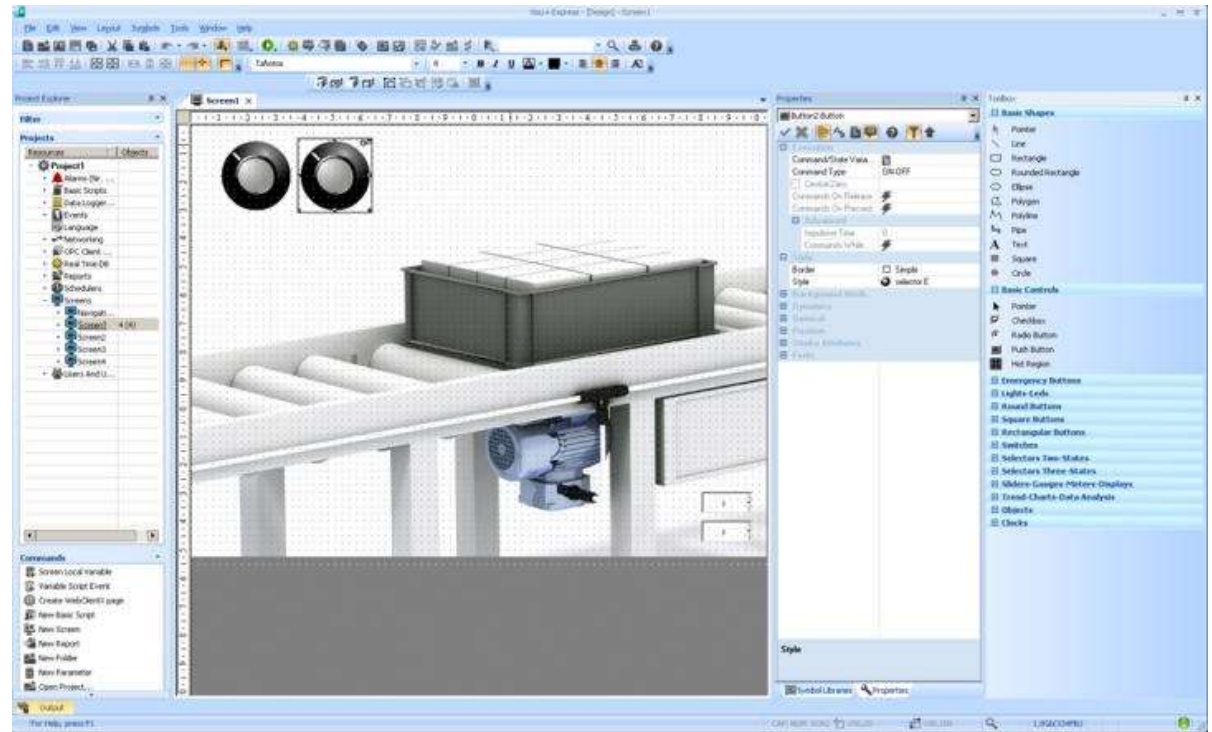
# HMI/IPC | Visualization Software 2020



# Design Software

- EXPRESS is FREE
  - Free download
  - Search for 2402774
- Scalable
  - Derived from SCADA package
  - High quality graphics
  - Simplified user interface
- Advanced
  - Alarming
  - Trending
  - Data Logging
  - Recipe Handling
  - Remote Screen Access
  - ...

## VISU+ Express HMI Visualization



# VISU+ / VISU+ Express – communication drivers



Your connectivity options!

# OPC UA (Unified Architecture)

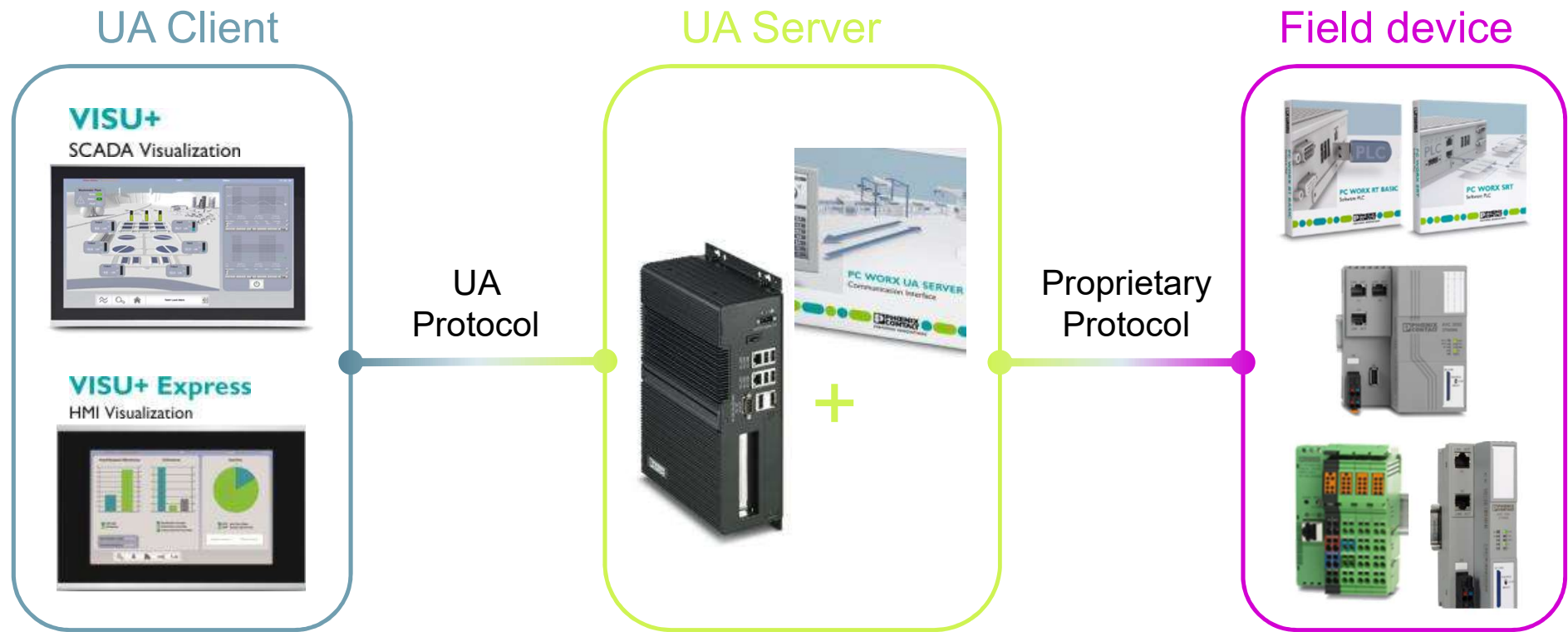
- Next generation OPC Technology with new communication architecture
- Integrated into Visu+ (Express), starting v. 2.52
- Response to evolving market conditions (e.g. IIoT / Industry 4.0)



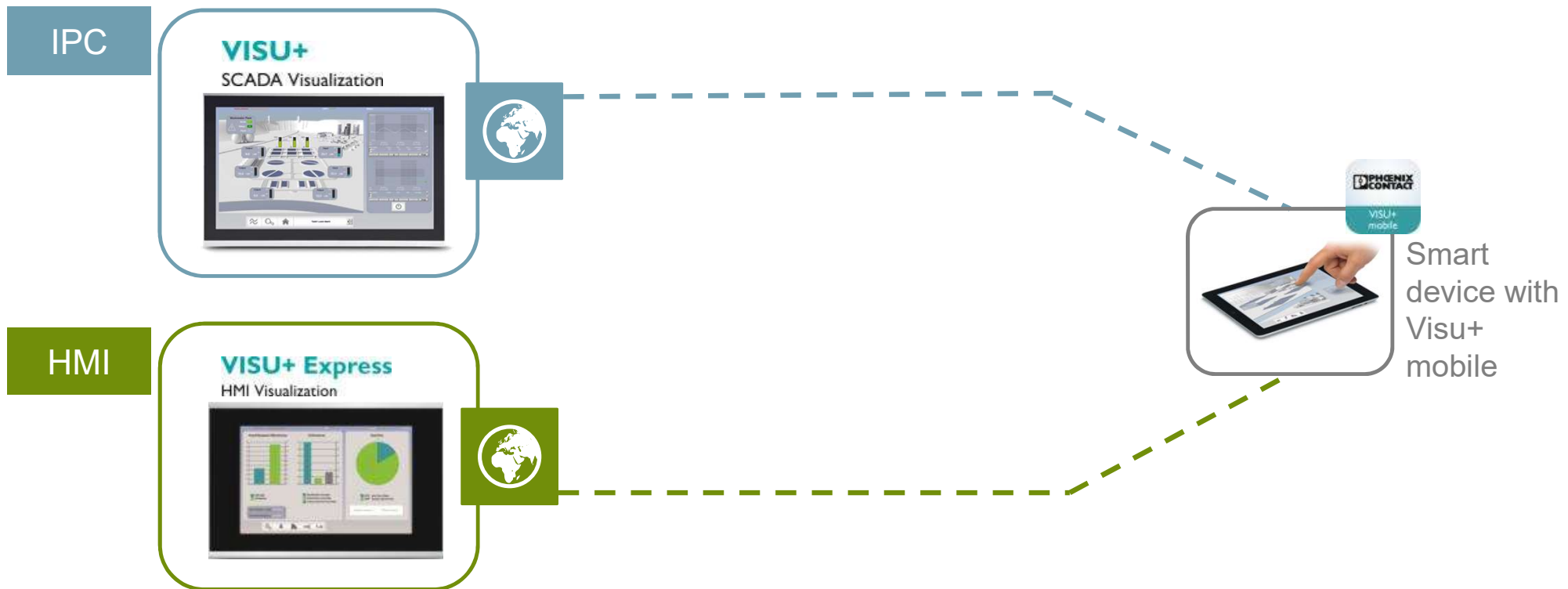
## OPC UA – OPC DA - Comparison

| OPC Classic                                                                                  | OPC UA                                                                                    |
|----------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------|
| <b>Windows platforms</b> - based on COM/DCOM-Technology                                      | <b>Cross-Platform compatibility</b> - communication based on SOA/web services             |
| <b>Complex configuration</b> - DCOM for inter-process security                               | <b>Security by design</b> - usage of known standards, firewall friendly                   |
| <b>Limited scalability</b> - strong Windows dependencies                                     | <b>Full scalability</b> - smallest OPC UA Server stack runs on a 64 KByte Microcontroller |
| <b>Limited data model</b> – insufficient to address requirements of todays connected devices | <b>Flexible Address Space</b> – flexible concept based on objects                         |
| <b>N/A</b>                                                                                   | <b>Application specific profiles</b> – e.g. PLCopen, MES, BACnet                          |

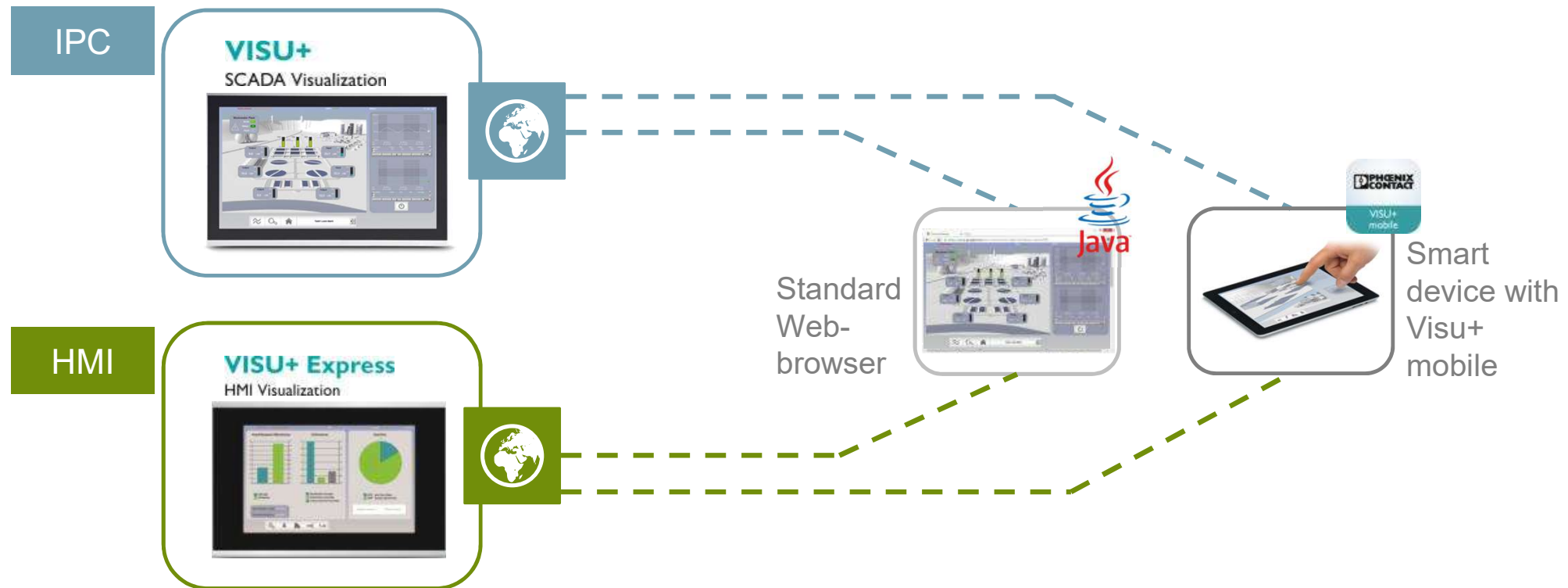
# OPC UA – Communication example



# Remote data access with WebClient



# Remote data access with WebClient and HTML5



# Visualization Softwares HMI



## HMI visualization



**VISU+**  
SCADA Visualization

## Basic HMI – BTP 2000

Screen sizes 4.3", 7", 10.2"

ARM9 i.MX28, 454MHz processor

Resistive single touch



Visu+ / Visu+ Express

0...50°C operating temperature

Ethernet, RS-232 & RS-485 interfaces

Plastic housing

**Basic performance needs**



## Powerful Standard HMI – TP 3000

Screen sizes from 4" to 15"

Powerful Arm® Cortex® A8  
1 GHz processor

Resistive single touch

Visu+/Visu+ Express

0...50°C operating temperature

Metal housing



**High Quality Touch Panels**

Basic HMI

**BTP 2000**



Video BTP 2000

# Standard HMI Panel with Capacitive Touch - TP 3000 PCAP

Screen sizes from 7" to 18.5"

Powerful Arm® Cortex® A8  
1 GHz processor

Capacitive multi touch



Visu+/Visu+ Express

0...50°C operating temperature

Metal housing in same look as  
VL2 Panel PCs



**Attractive design**

# Rugged HMI – TP 3000/WT

Rugged design  
Extended temperature range  
and IP67 protection class  
rated

Sunlight readable  
Wide operating temperature  
(-20/-30...70°C)  
UV and IR protection



Enhanced protection  
Protection against corrosives  
and termites

Scratch resistant  
Glass front with resistive touch  
interface

Additional approvals  
UL Class1 Div2 (HazLoc)



**Built for the EXTREME**

# Maritime HMI panel – TPM 3000

Alarming  
Integrated buzzer and  
potential free contact

Fully dimmable LED  
backlight  
With buttons on bezel



Certifications  
Approved by all relevant  
maritime agencies

Flexible  
Configurable with fieldbus &  
COM ports

Software options  
Maritime touch panel with Visu+  
or Microbrowser runtime



**Full range of Marine approvals**

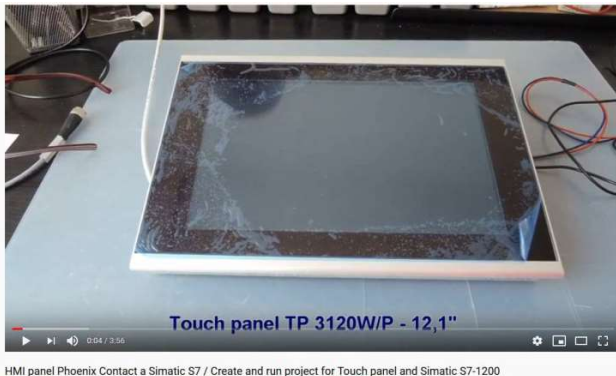
Basic HMI

## BTP 2000



Video BTP 2000

## Estándar HMI TP 3000



## Video TP 3000

## Web based visualization





## Web Panel Advantages

**EASY** - HMI that does not require any local software download.  
Simply points to IP address of ANY web server

**OPEN** – No longer tied to a communication protocol.  
No Profinet, Ethernet IP, MODBUS TCP, etc.

**UNIVERSAL** - Allows secure connection between ANY web server and the web panel regardless if they are “side-by-side” or “across the globe”





# - OPEN AUTOMATION SYSTEM

- Total Flexibility in Engineering
  - ✓ Virtually no limits to the graphical capabilities, and usability features that can be utilized
  - ✓ Future proof
- Open standard
  - ✓ Visualization is located on PLC
  - ✓ Facilitates Responsive Design
  - ✓ HMI Hardware is independent from Engineering Tool
  - ✓ Works with industrial HMI devices, Smart Phones, Tablets and PCs





## HMI product families

Two classes of products

- **Standard – WP 4000**

- Best in class hardware
- Wide product choices



- **Basic – BWP 2000**

- Applications with basic performance needs
- Price sensitive applications & markets





## Standard Web Panel – WP 4000

Screen sizes 7“, 10.1“,  
12.1“, 15.6“, 18.5“ PCAP  
Multi-Touch

Resistive 7“ Single-Touch  
option



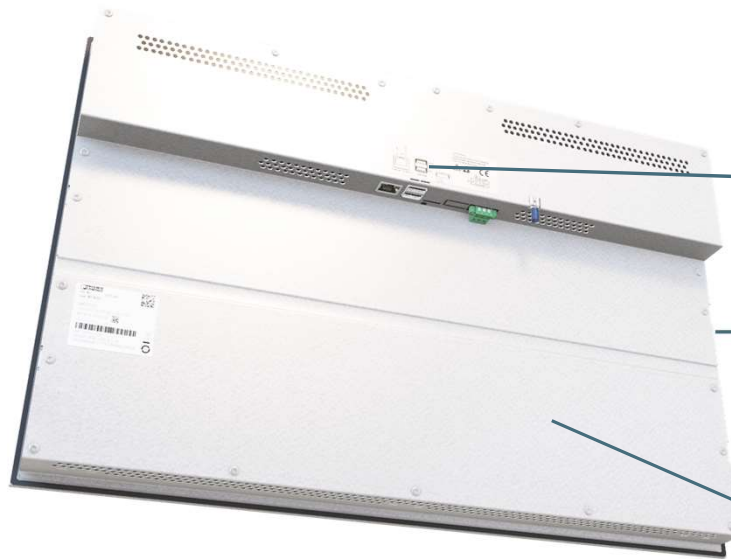
HTML5 Browser QT

All metal housing





## Standard Web Panel – WP 4000



1x Ethernet, 2x USB 2.0

Metal housing improves EMC

High-Performance CPU:  
Arm® Cortex®-A53  
(Quad-Core)





## Standard Web Panel – WP 4000



| Description         | WP 4070-WVRS                 | WP 4070-WXPS                | WP 4101-WXPS     | WP 4120-WXPS     | WP 4156-WHPS     | WP 4185-WHPS   |
|---------------------|------------------------------|-----------------------------|------------------|------------------|------------------|----------------|
| Display size        | 17.78 cm (7")                |                             | 25.65 cm (10.1") | 30.73 cm (12.1") | 39.63 cm (15.6") | 47 cm (18.5")  |
| Touch technology    | Analog resistive (Polyester) | Projected capacitive (PCAP) |                  |                  |                  |                |
| Physical dimensions | 203 x 147 x 48               | 186 x 146 x 51              | 263 x 199 x 51   | 302 x 229 x 51   | 436 x 278 x 59   | 485 x 329 x 61 |
| Weight              | 0.8 kg                       |                             | 1.3 kg           | 1.7 kg           | 4 kg             | 5.5 kg         |
| Art.-Nr.            | 1148694                      | 1148693                     | 1148687          | 1148689          | 1148691          | 1148690        |



## Basic Web Panel – BWP 2000

Screen sizes 4.3“, 7“, 10.2“

350 Cd/m<sup>2</sup> LED backlight

Resistive single touch

Arm Cortex A9, 1 GHz CPU



HTML5 Browser Otter

0...50°C operating temperature

Ethernet connectivity

Plastic housing

**Basic performance needs**





## Comparison: WP 4000 vs. BWP 2000

### WP 4000



1. 6 display choices
2. Capacitive or 7" Resistive touch
3. Can target 4 IP addresses
4. Higher screen resolution
5. Metal housing
6. Faster performance
7. Higher price

### BWP 2000

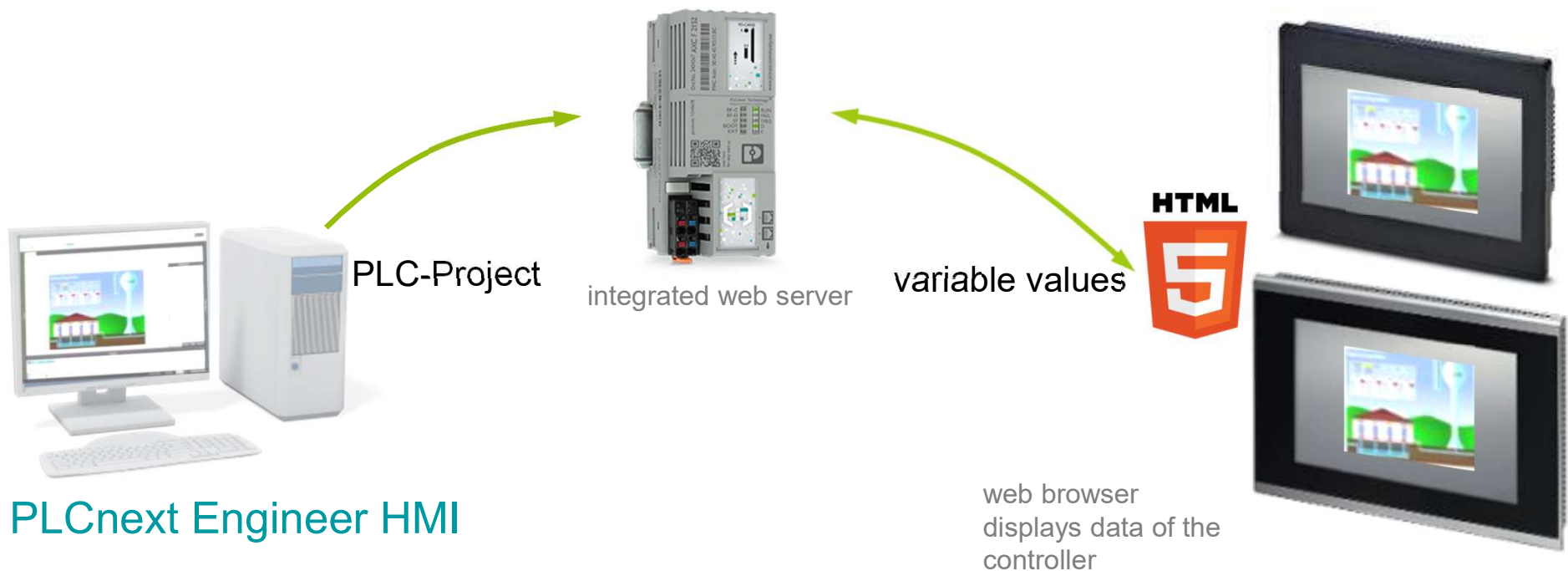


1. 3 display choices
2. Resistive touch
3. Can target 1 IP address
4. Standard screen resolution
5. Plastic housing
6. Basic performance
7. Lower price



# Application example: PLC with integrated web server, using

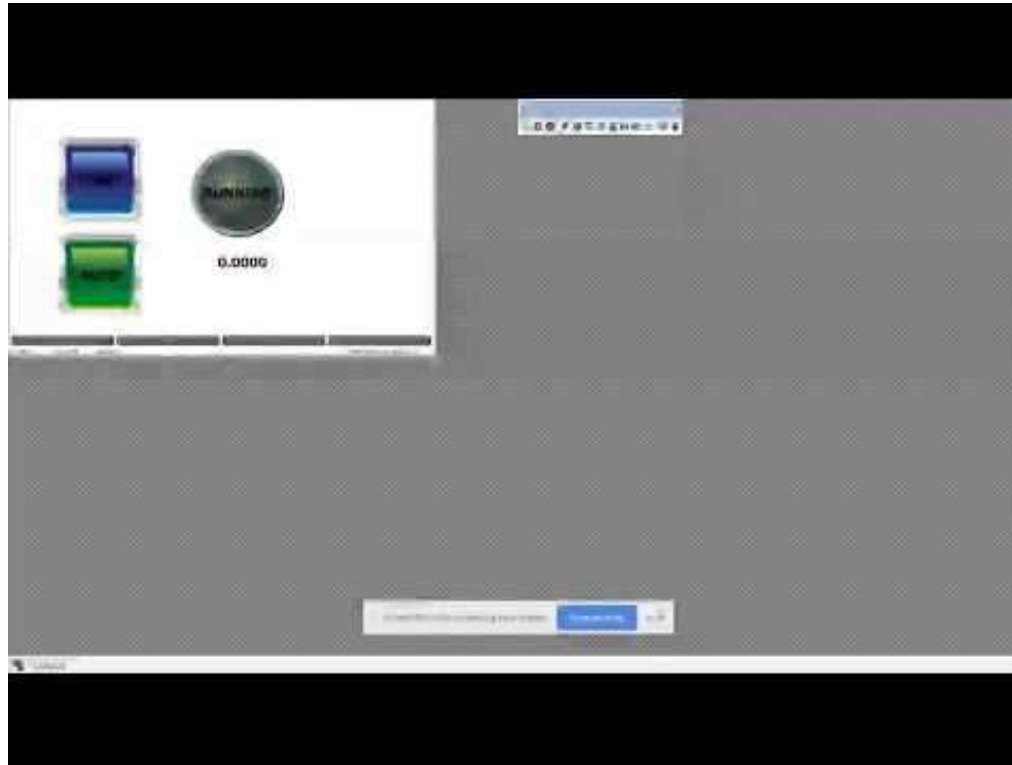
PLCnext Technology<sup>®</sup>  
Designed by PHOENIX CONTACT



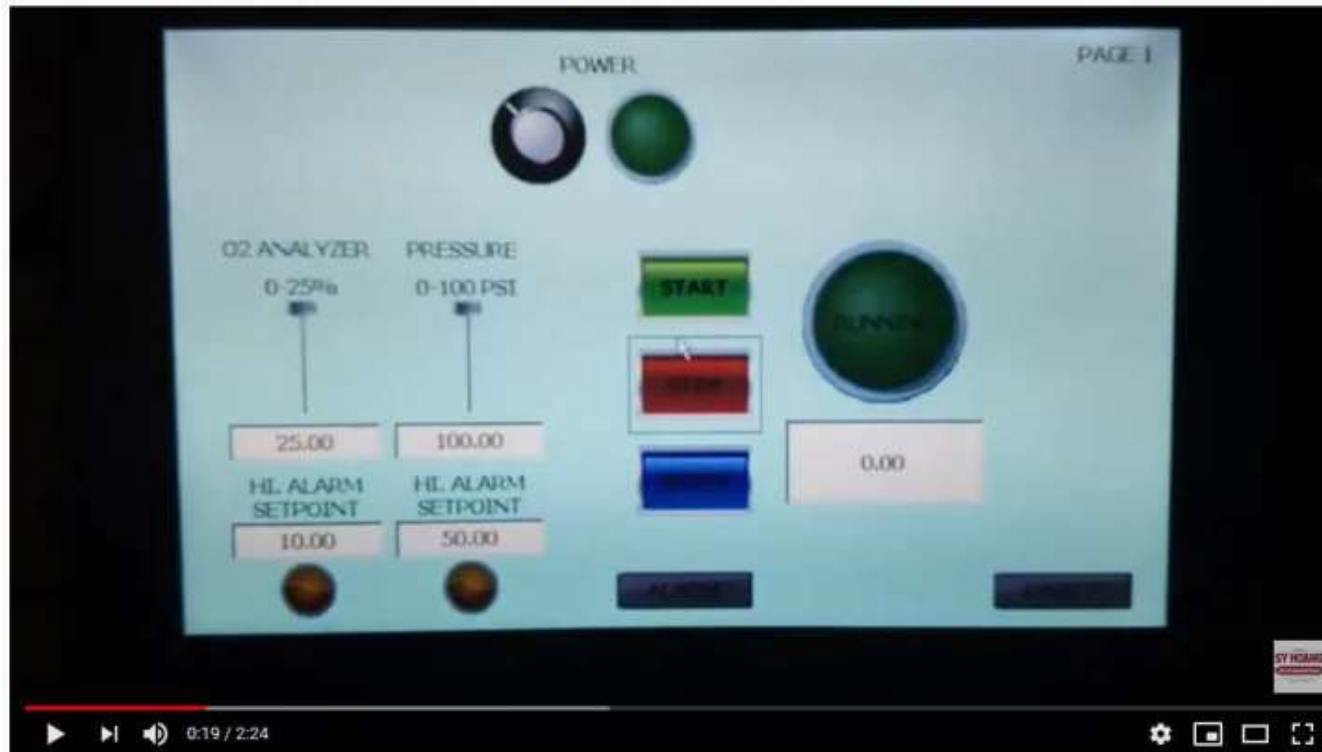
## HMI Basic

Learning.....  
Applications



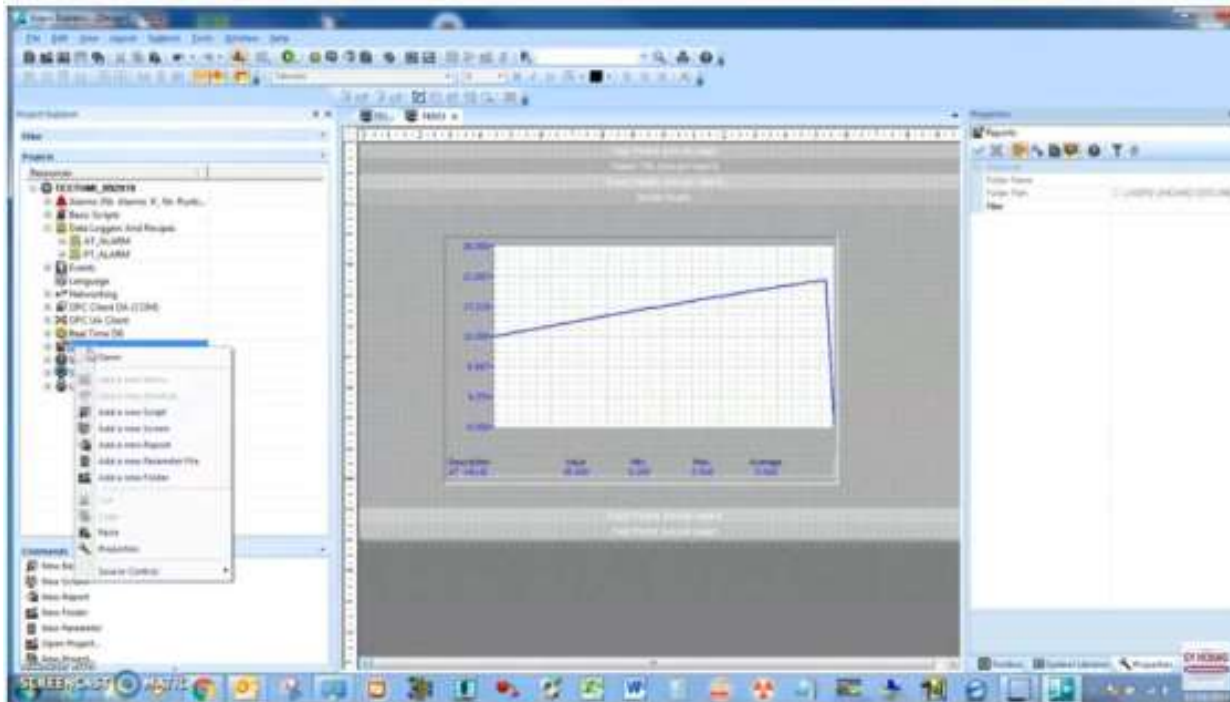


## Video Basic Programming and Setup



PHOENIX CONTACT HMI BTP 2070W

## Video BTP 2070W



Phoenix Visu+ Report Generation

## Video Report Generation

## Phoenix Contact - Visu+ Express-Modbus TCP/IP communication-Schneider PLC

### Part 1: Programming

- HMI: Phoenix Contact TP 3154W
- HMI software: Visu+ Express
- PLC: Schneider TM251MESE
- PLC software: Ecostruxure Machine Expert
- Tags:

| Name       | Type | Modbus Address |
|------------|------|----------------|
| X1         | REAL | 40001 & 40002  |
| X2         | REAL | 40003 & 40004  |
| RESULT_ADD | REAL | 40005 & 40006  |

## Video VISU+ EXPRESS con Modbus TCP/IP

## Video Webvisit



# Linea Básica y Estándar HMI



Thank you