

Product introduction

Dec, 2019

IIoT Advantech

ADVANTECH

XNavi



XNavi Software Solutions

ADVANTECH
XNavi



Menu Driven



Deep Neural Networks



Flowchart Based



Dashboard



MotionNavi

SoftMotion on CoDeSys
Software Platform

VisionNavi

Task Flow Machine Vision
APP. Software

AINavi

Deep-learning-based Image
Analysis Software

DAQNavi

High Speed Data Acquisition &
Condition Monitoring

HMINavi

HMI Software

Machine Vision Solution Software

Agenda

1. Overview, Architecture
2. Selling point
3. Features
4. Applications



Dec., 2019

Neil.Chen, IIoT Advantech

ADVANTECH
XNavi

VisionNavi

Industrial IoT Machine Vision Solutions



Communication



Diagnosis

ADVANTECH
WISE-PaaS
IoT Edge Intelligence



Big Data Analysis



Deep Learning



Private Cloud and Storage Servers

VisionNavi



Gauge



Inspection



Guidance



Identification



Platforms and Systems



Frame Grabber Cards

GiGE
VISION

USB
VISION



Industrial / Smart Cameras

Advantech Machine Vision S/W Architecture

Value Proposition



Traceability



Efficiency



Flexibility



Accuracy



Quality

Applications

• Trace & Trace

• Guidance

• Gauge

• Inspection

• Identification

Application Software

VisionNavi

Algorithm



- Alignment
- Code Reading
- OCR & OCV
- Recognition
- Measuring
- Comparison
- Inspection

Script

- Conditional operator
- Arithmetic
- Logical Operation
- Comparison operation
- String operation

Image Preprocessing

- Filtering
- Color extraction
- Color conversion
- Mirroring, Rotation
- Scaling
- Calibration
- Shape correction

G.U.I

- Graphical, Flow chat
- Development & Run-Time

Communication

- Ethernet
- PLC

Database & Storage Services

- CSV
- Image archive

Image Aca.

- GigE Vision
- USB Vision

Edge Computing

HMI



- TPC-B500
- PPC6151C

Industrial PC



• MIC-770



• AIIS-3410



• UNO-2482

Automation Controller



- WISE-5580

Smart Camera



• ICAM-7000



Sensing



• QCAM, 2.0MP, Mono



• QCAM, 5.0MP, Mono



• QCAM, 2.0MP, Color



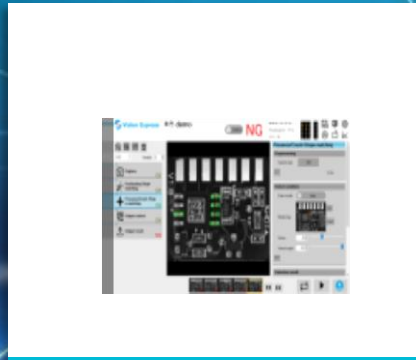
• QCAM, 5.0MP, Color

Advantages of Advantech's Machine Vision Solution



Complete Solution

Sensor, software, and platforms, delivering a one stop shop solution.



GUI APP. S/W

Menu-Driven GUI, support script and conditional operators

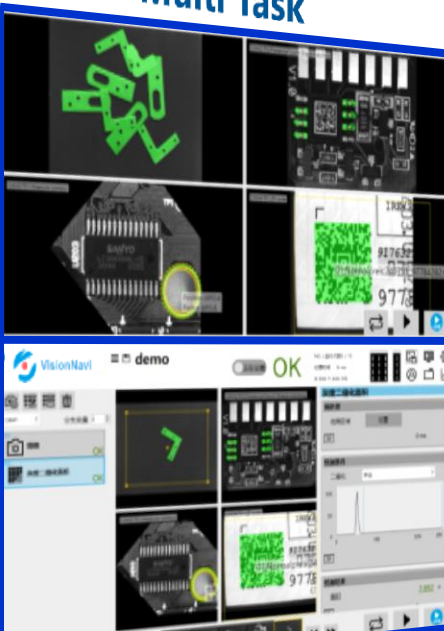


Full Spectrum

Scalable Atom to Xeon CPU, versatile form factor for a variety of applications

VisionNavi Features

Multi Task



VisionNavi

demo

Setting

NG

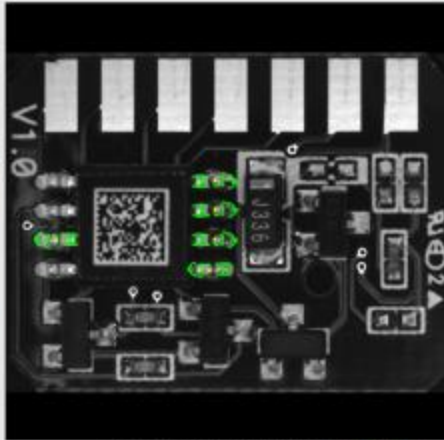
NG/Elec. run: 20/20

Processing time: 87ms

K 6 V -181

CAM2 Variable

- Capture OK
- Positioning-Shape matching OK
- Presence/Count-Shape matching OK
- Output control OK
- Output result NG



Presence/Count-Shape matching

Preprocessing
Search area Set 0ms

Detect condition

Enter model Start

Model img Set Load

Score 40%

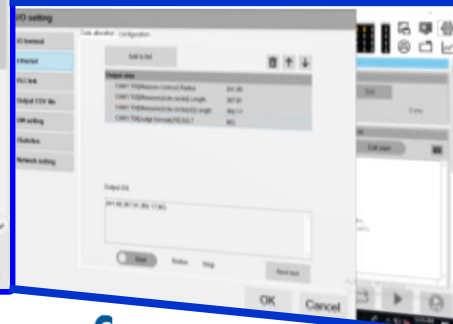
Search angle 180°

Detection result

Preprocessing



Multi Language



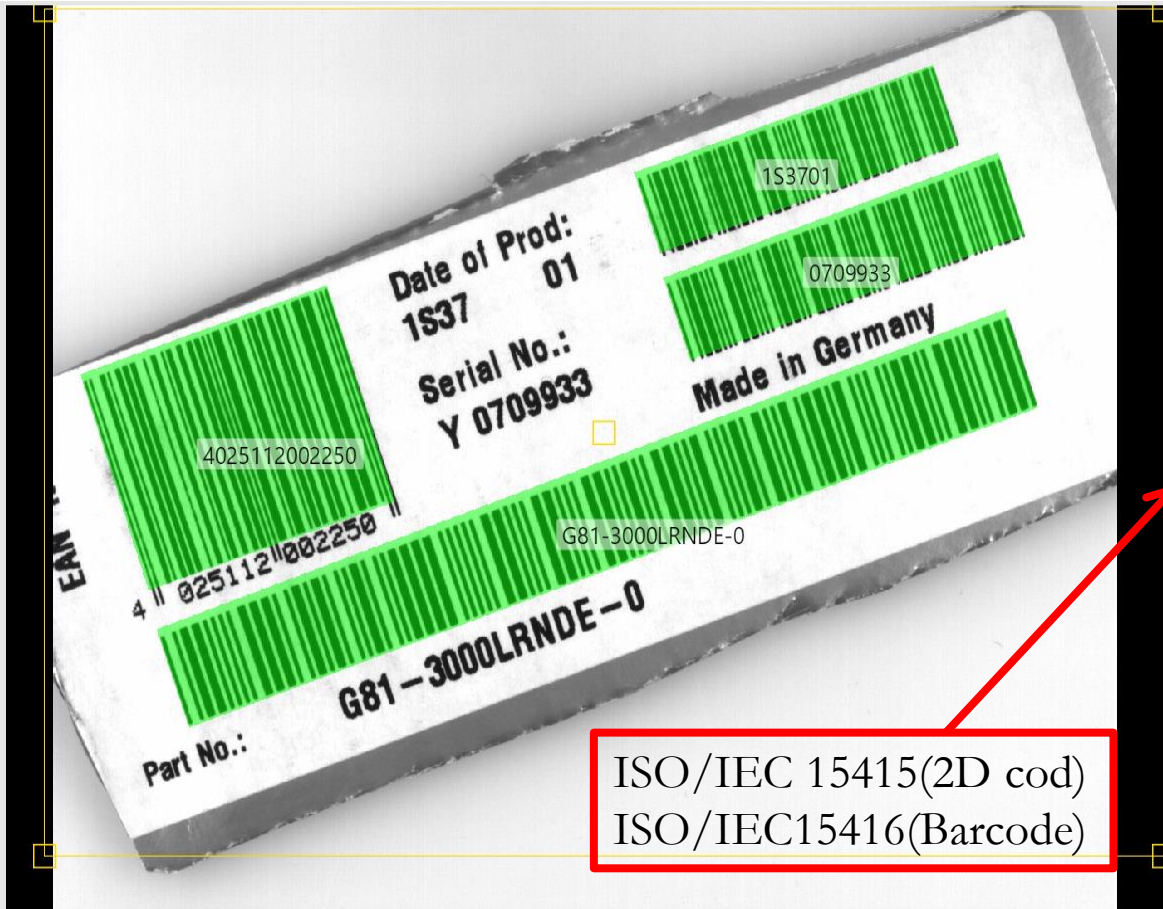
Communication



CAM1 分支变量 0

TO1 摄像 OK

TO0 条形码 OK



条形码

预处理

检测区域 设置 0 ms

检测条件

码种类 auto

前景背景类型 黑色对象、白色背景

检测结果

字符串 G81-3000LRNDE-0

印刷质量 3

对比度 4

未使用的纠错 (UEC) 0

14 ms

判定阈值 - 字符串

text

ISO/IEC 15415(2D cod)
ISO/IEC15416(Barcode)

标准图像 0

SET
LOAD



Tutorial Videos

How to set up
positioning function?



How to set up
gauge function?



How to set up
inspection function?



Co-Creating the Future of the IoT World



AI Inspection Solution Software

Agenda

1. Overview, Architecture
2. Selling point
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Dec., 2019

Jesse Chen, SMA Soft

ADVANTECH**XNavi****AINavi**

AI Defect Inspection Powered by WISE-PaaS



AI Model Training

WISE-PaaS/AFS
AI Framework
Service



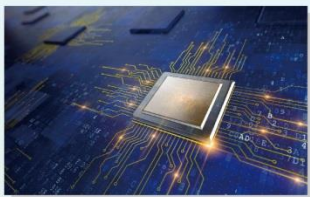
AI Inference System



Compact Fanless System
MIC-770



AI Inference System
MIC-730AI



Semiconductor



Passive Component



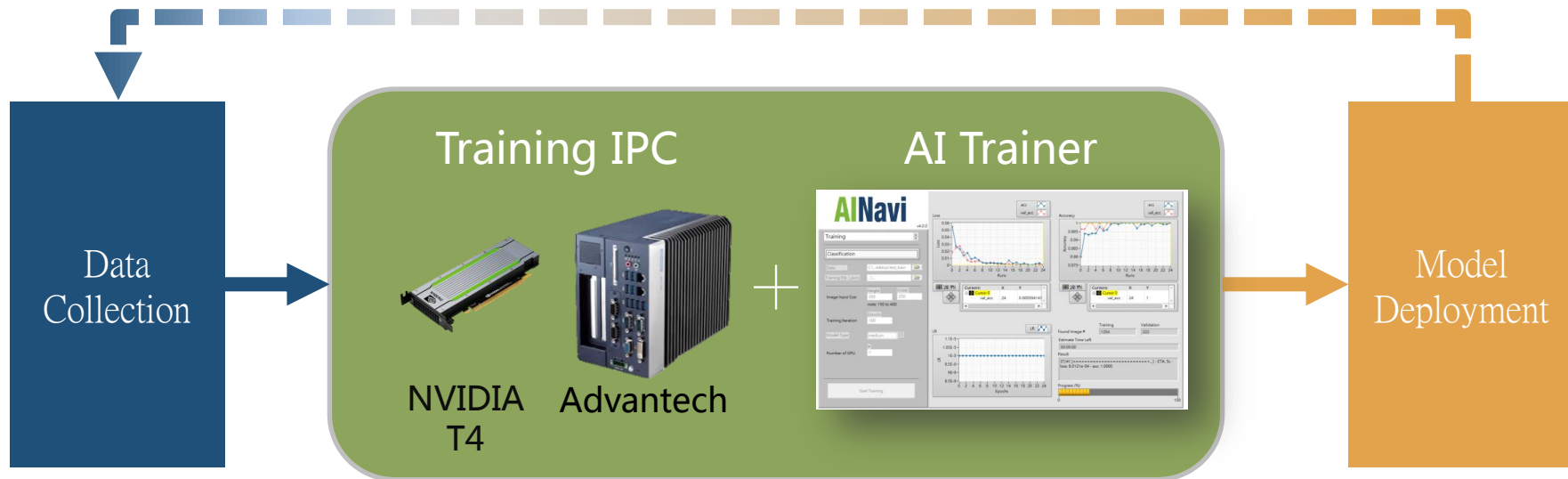
Molded Plastic Component



Traditional Manufacturing

AI Inference Architect

AINavi

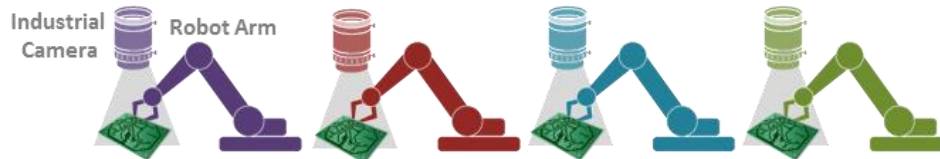
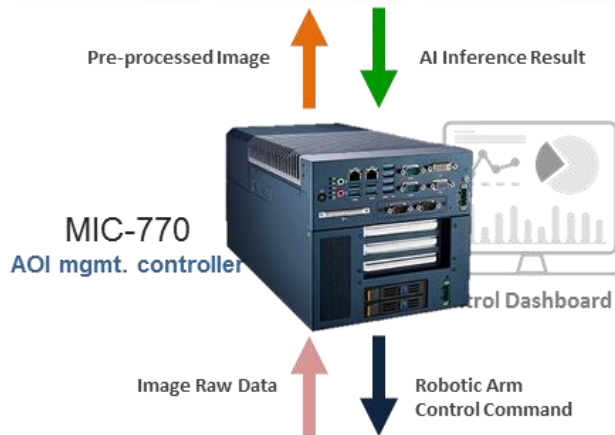


- Trainer IPC
 - NVIDIA T4
 - Advantech MIC-770 + MIC-75M20
- AINavi Trainer

AI Inference Architect

AINavi

MIC-730AI
Edge AI system



| Feature, Ability and Benefit



Feature

- AI defect inspection software with an intuitive graphic interface.
- Functions includes passive component inspection and semi-conductor inspection based on deeply industrial experience

Advantage

- Robust AI AOI solution with no compromise between AI computing speed and AI inference accuracy
- Multiple AI models in a single system to make AOI cost effective for various target products

Benefit

- Integrated AI AOI system from AI model training, deployment to inference in a single software

Co-Creating the Future of the IoT World



Machine Condition Monitoring Solution

Agenda

1. Overview, Architecture
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Ian Shen, IIoT Advantech

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DAQNavi



Cloud Connectivity



Intelligent Inspection



Machine Monitoring



Oscilloscope



Feature Extraction

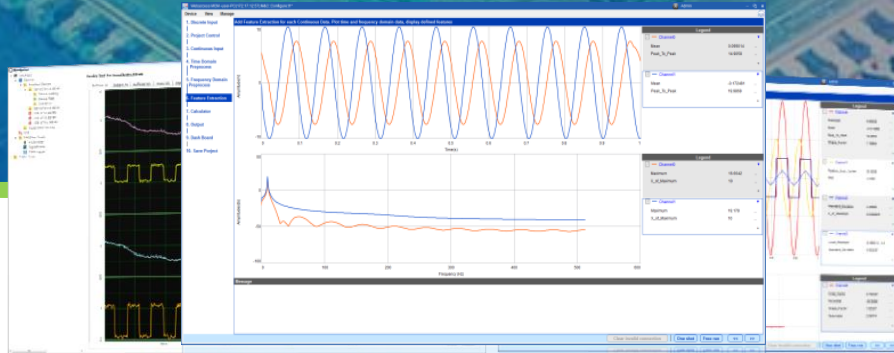


No Coding Required



Real-Time Monitoring

MCM



SDK



Easy-to-Use Utility



Multiple Programming Languages

DAQNavi



Thread Safety



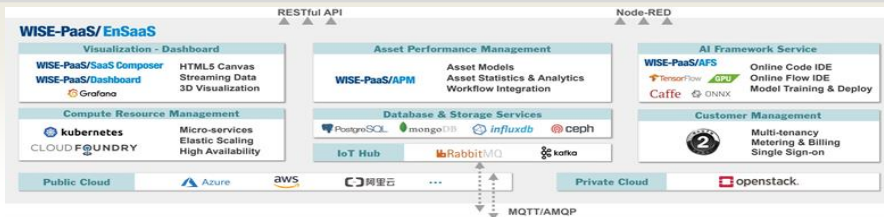
Cross Platform

ADVANTECH

DAQNavi Product Positioning

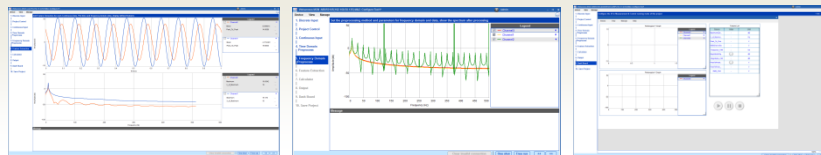
Cloud Computing

WISE-PaaS



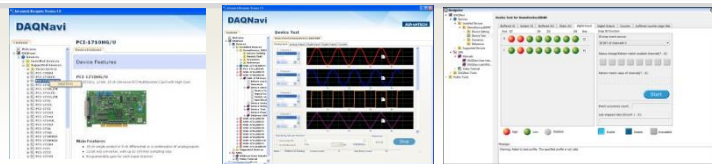
Edge Computing

DAQNavi/MCM

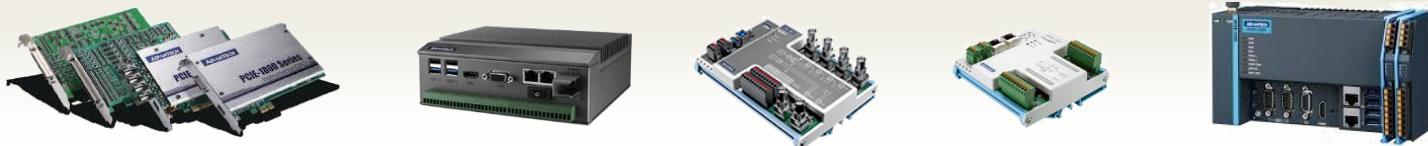


Driver SDK

DAQNavi/SDK



DAQ H/W

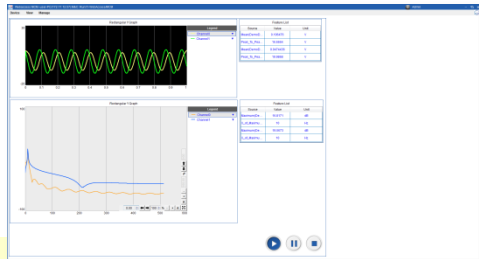


Sensors



DAQNavi/MCM Application Modules

Run Time



Condition Monitoring

Application Mode 1

Continuous Condition Monitoring

- ✓ Dynamic signal monitoring – FFT, filters ...
- ✓ Alarm through DO/AO/Modbus
- ✓ Data upload



Intelligent Inspection

Application Mode 2

Trigger-Run Inspection

- ✓ Software/Hardware Trigger
- ✓ Output control – DO/AO
- ✓ Data upload

A n a l y s i s

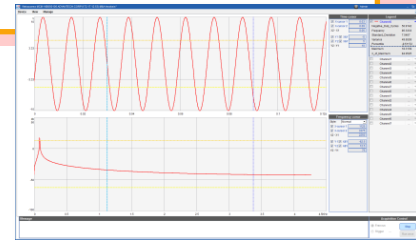


Oscilloscope

Analysis tool

Applied when the early stage of the project.

- ✓ Real time analysis – simulation of the real case
- ✓ Cursor – a standard tool measuring the value



D a t a S a v i n g



Catcher/DataLogger

Saving Feature/Raw Data

For post analysis/review purpose

- ✓ Remote/Local logging
- ✓ Logging strategy setting – storage saving

DAQNavi and Supported Devices

PCI/PCIE DAQ and IO Card
PCI-1700, PCIE-1700/1800

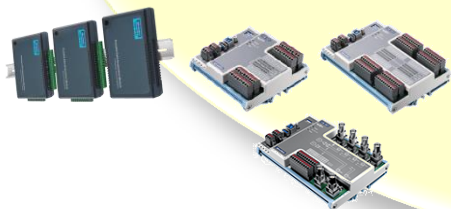


Embedded DAQ Platform
MIC-1800



DAQNavi

USB 2.0/3.0 DAQ and I/O
USB-4700/ USB-5800

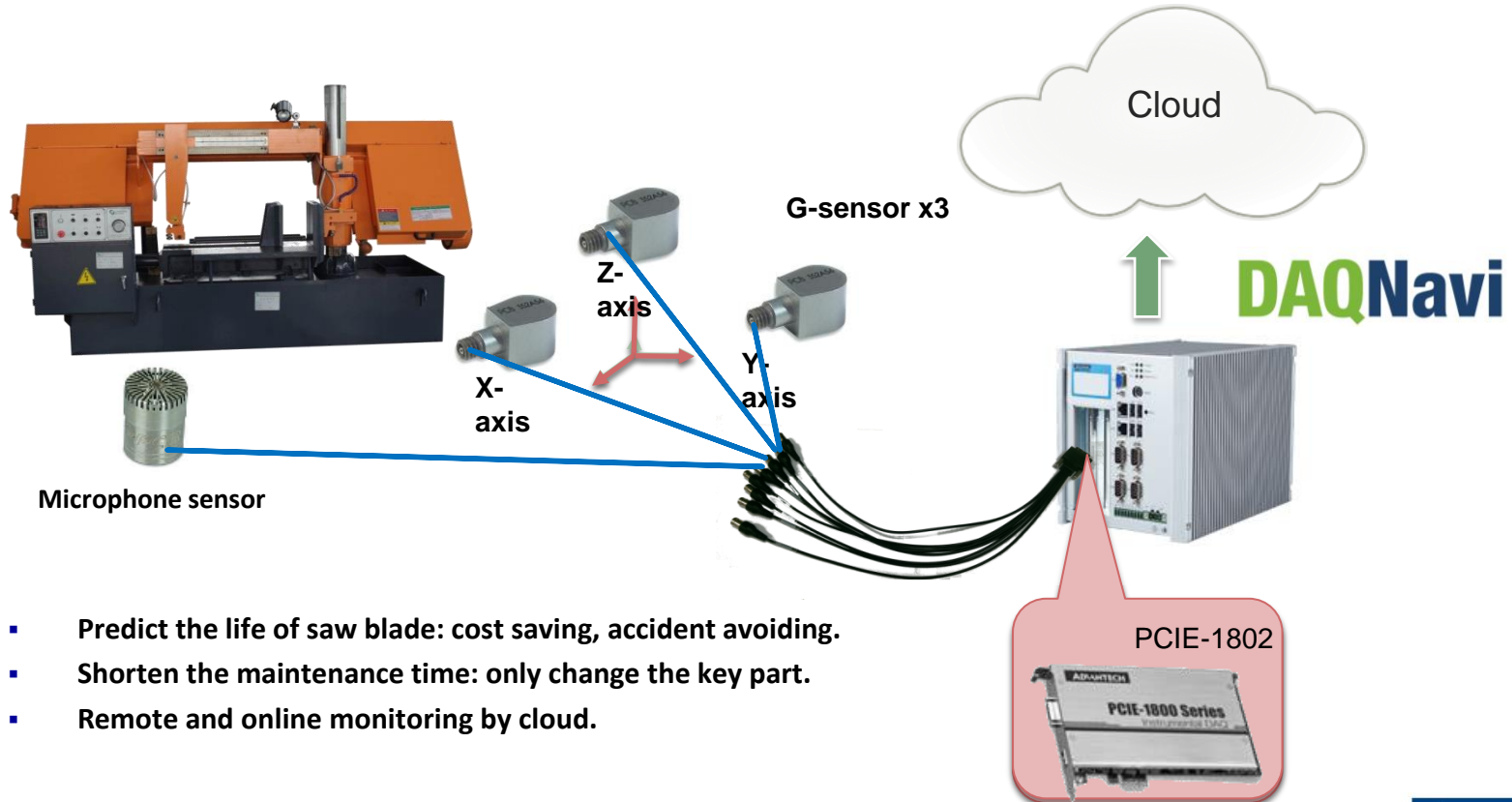


PC104 mini PCIE I/O and Comm.
PCM-3000, PCM-2000



App. Story:

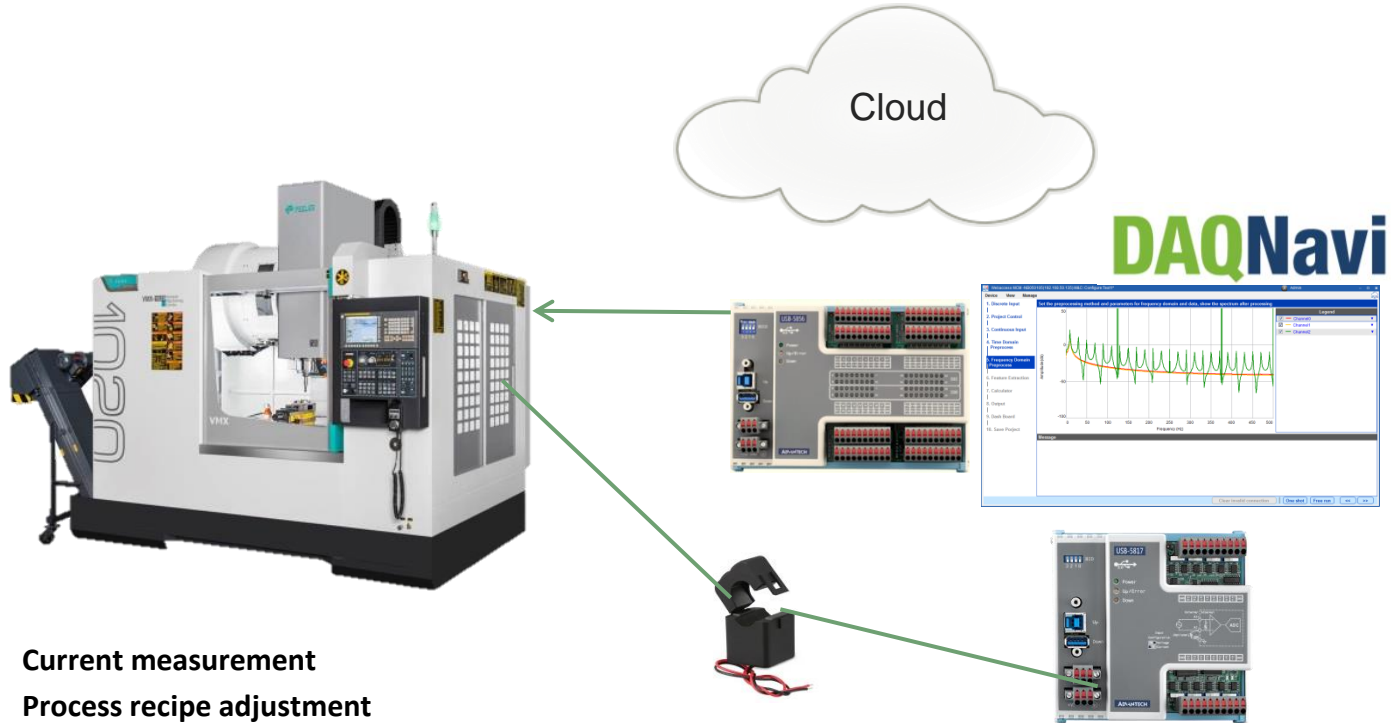
Band saw machine predictive maintenance



- Predict the life of saw blade: cost saving, accident avoiding.
- Shorten the maintenance time: only change the key part.
- Remote and online monitoring by cloud.

App. Story:

Machine tool spinning speed adjustment



- Current measurement
- Process recipe adjustment
- Datalogging

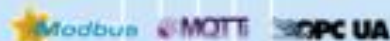
Co-Creating the Future of the IoT World



Real-time SoftPLC & SoftMotion Controller



- ✓ One Open Controller for all Control System with Real-Time Fieldbus
 - ✓ Control
 - ✓ Reduce Equipment Downtime with Powerful Visualization Management
- Variety Database Connection for Flexible Management Integration



Ethernet/IP

EtherCAT

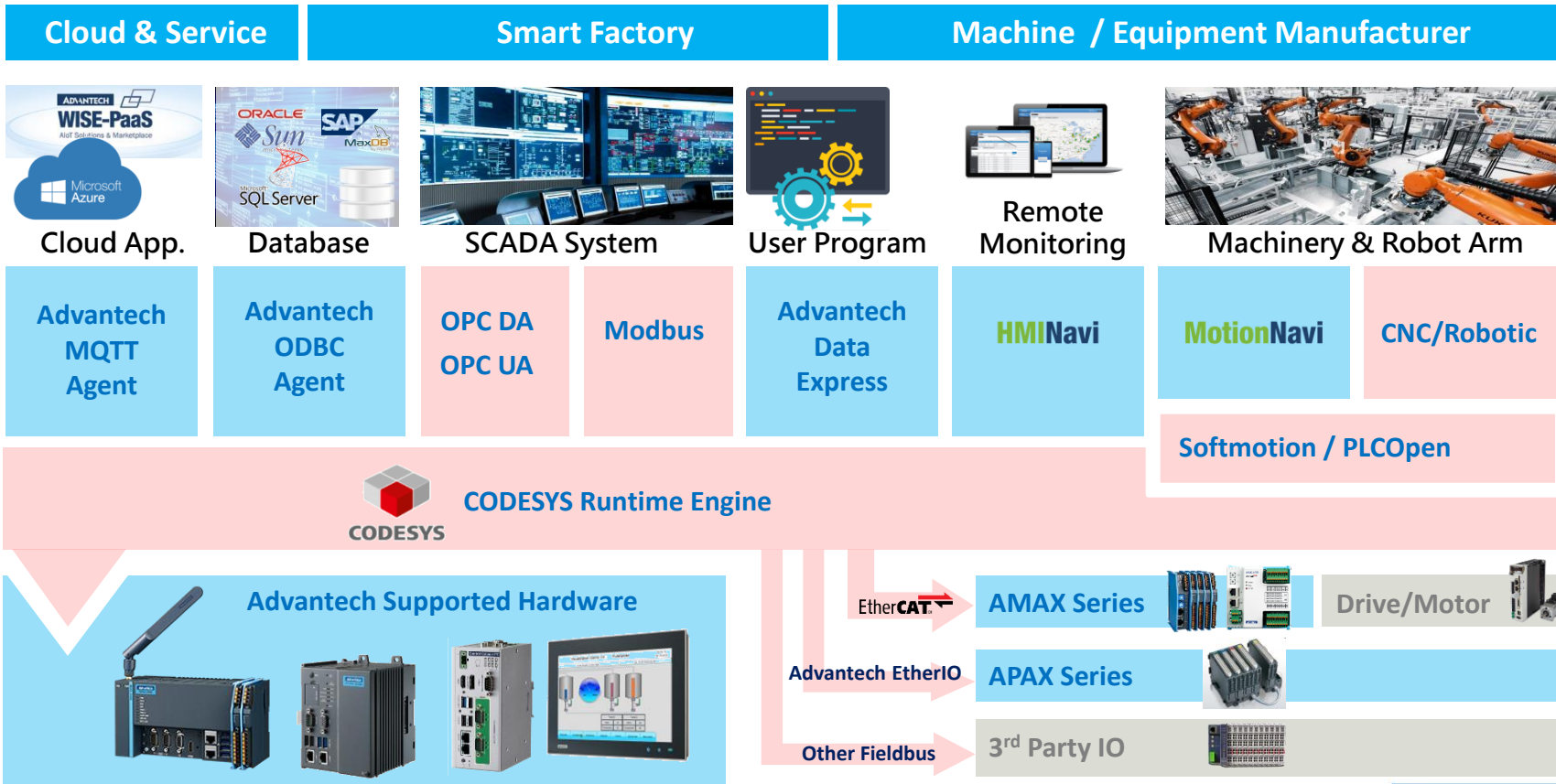
CANopen

Modbus

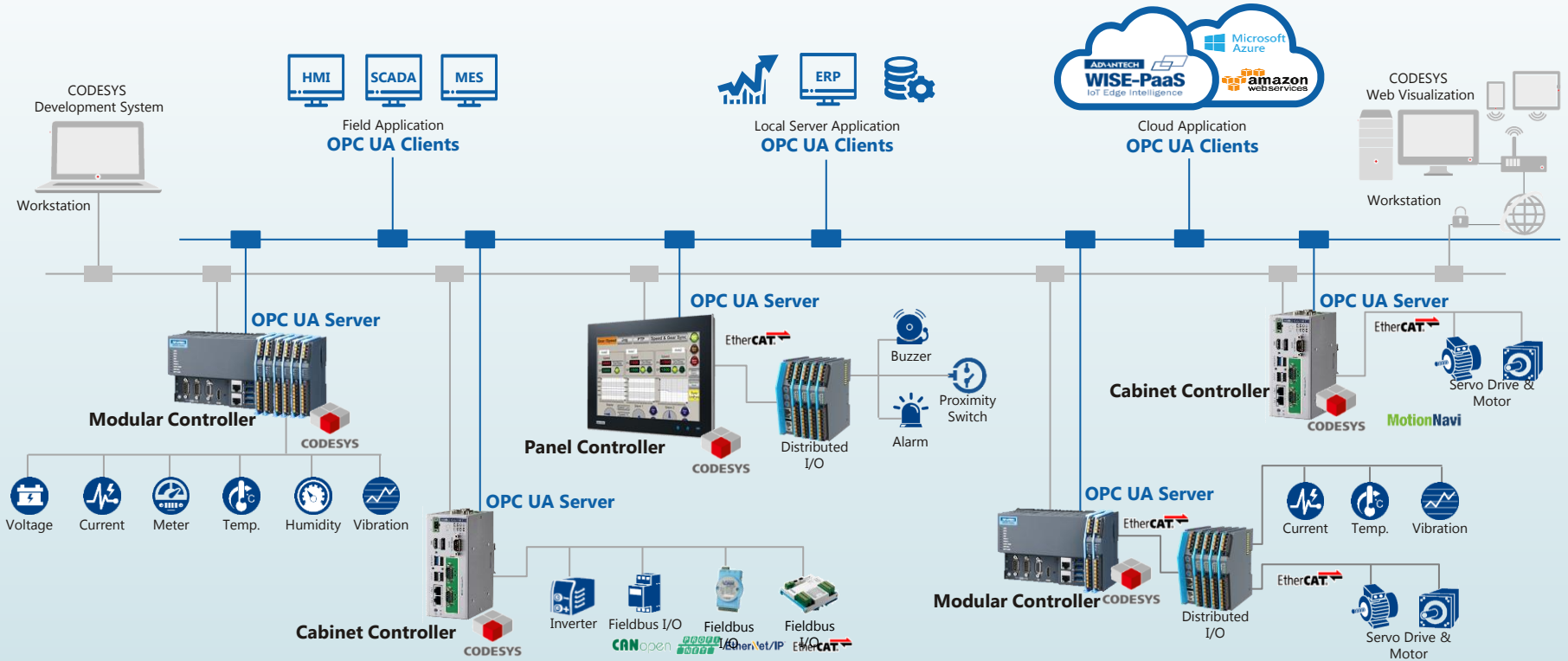
CODESYS

MotionNavi

Value Added Modules Base on CODESYS



Edge Controller Field Application Architecture



Co-Creating the Future of the IoT World

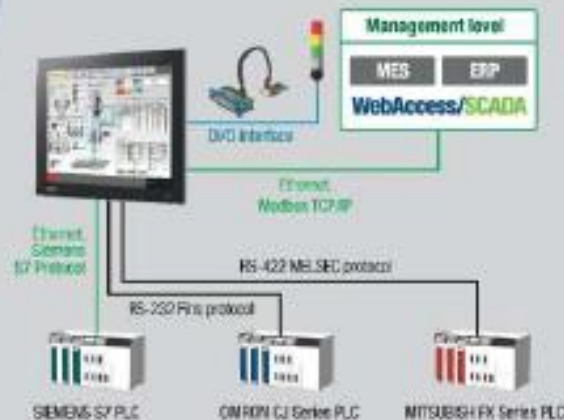




Open HMI Solutions

One Efficient and Integrated Solution Ready for Various HMI Applications.

HMINavi



Description:

MES production system, collecting dynamic information of production process, optimizing the production allocation, to reach the goal of advanced manufacturing, also can trace the production process of products. Furthermore this production process information can be monitored remotely.

On-site HMI connecting to remote SCADA system across OT/IT field via Ethernet translate local machinery data to managerial message for MES/ERP analysis. Successful applications in Advantech production factory: on-site production of electronic billboards, abnormal warning systems, intelligent production planning and field operations interactive platforms.

Equipment Connectivity for Machine Visualization

Powerful Driver Support for Comprehensive PLC Connection



HMINavi



STEP 1

Create New Project & Link

- New Project initiate.
- Create new PLC link.
- Link type selection.(Serial/Ethernet)

STEP 2

Select your PLC Model

- Select PLC brand.
- Select PLC type/model.

STEP 3

Parameter Setup

- Baud Rate/PLC Address setup
- IP Address/Port setup.
- Sub-Link setup.

Over 450 PLC Drivers for 90% global PLC Controller/Device

Siemens

S7-200
S7-300
S7-1200
S7-1500

Allen Bradley

Micrologix
CompactLogix
ControlLogix

Mitsubishi

Melsec-FX2N
Melsec-FX3U
Melsec-FX5U
Melsec-Q series

Omron

Sysmac CV
Sysmac CS/CJ
Sysmac CP
Sysmac NJ

Panasonic

FP Series
MINAS Series

Keyence

KV-1000
KV-3000
KV-5000
KV-7000

Others

ABB, Delta, Fuji, GE,
LG, Hitachi, Koyo,
Yaskawa, Honeywell

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