INDUSTRY 4.0 & IIOT
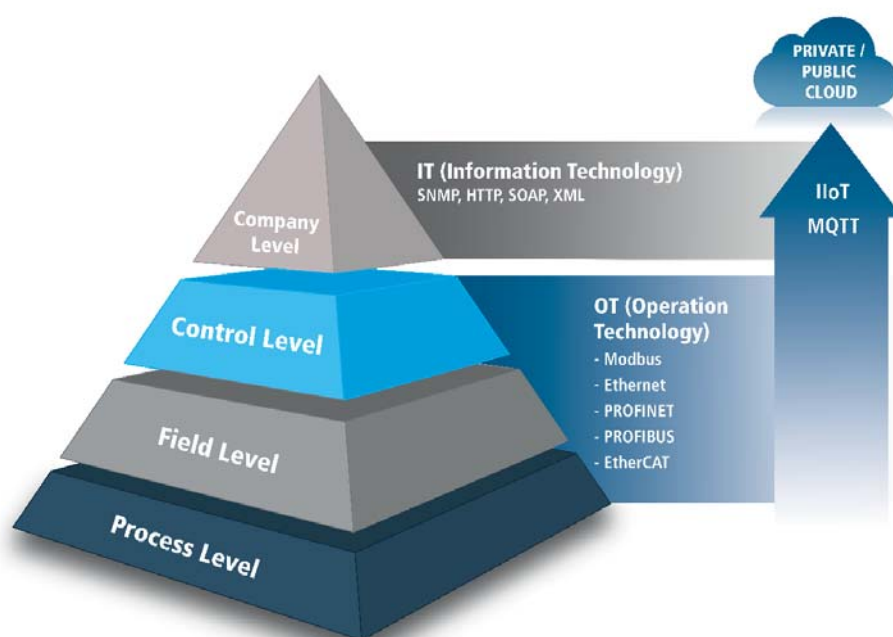
VERSION 2020|1.1

SMART MACHINE DATA
MAKE THE DIFFERENCE

spectra

INDUSTRY 4.0 & IIOT SOLUTIONS – FROM SENSOR INTO THE CLOUD

AUTOMATION MUST OPEN TOWARDS THE CLOUD

Anyone who wants to benefit from Industry 4.0 and IIoT will not evade the opening of Automation.
New interfaces on process, control, up to company level lead to an unprecedented networking.

INDUSTRIALIZATION 1.0 TO 4.0

The steam engine is the symbol of industrialisation. Even though it has long since been overtaken by modern technologies, the principles of Industry 4.0, with the recording and intelligent processing of all process parameters, can also be applied to machines and plants of every industrial generation.
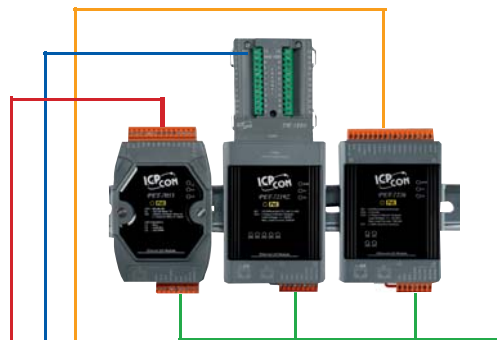
WiFi / 3G / 4G

PRIVATE /
PUBLIC
CLOUD

COMPANY LEVEL
ERP / EMS

IT

OT

OPC UA

MQTT

WiFi

CONTROL LEVEL
IPC / PLC / HMI

Ethernet

MODBUS

ETHERNET

FIELD LEVEL
Fieldbus I/O
modules

PROFINET

PROFIBUS

ETHERCAT

V

PROCESS LEVEL
Sensor / Actuator

°C

U/min
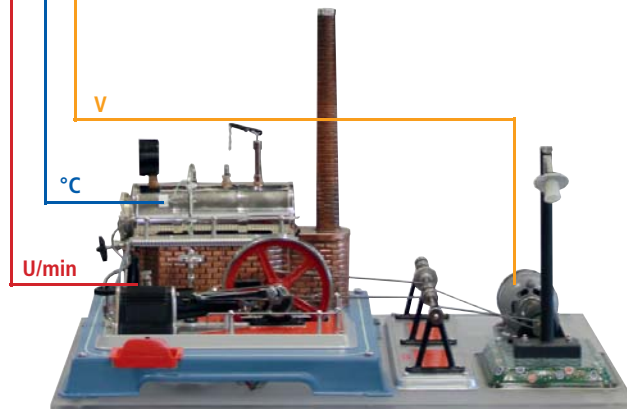
INDUSTRY 4.0 & IIOT –
FROM VISION TO SOLUTION

PRIVATE / PUBLIC CLOUD

Business Intelligence

IIoT Gateway

User

Sensor   Motor   Kamera

Data / Control
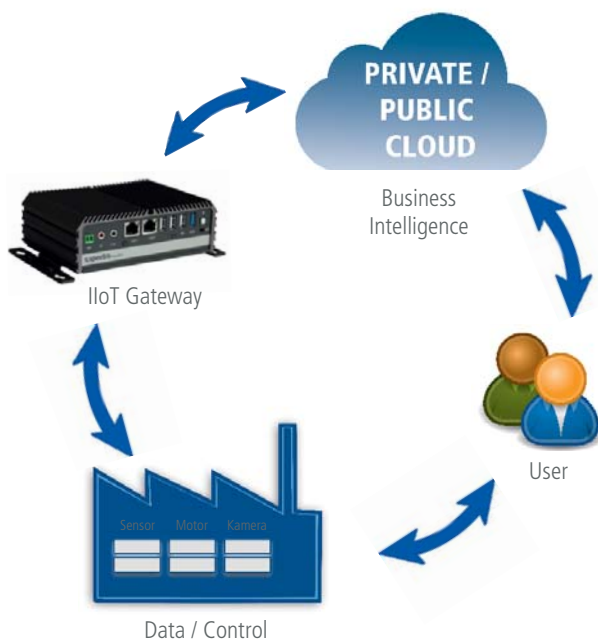
PROJECT REALIZATION FROM A SINGLE SOURCE

We accompany you on your way to Industry 4.0 and IIoT -
from the sensor into the cloud.
For this we offer you a complete package:

1. CONSULTATION
2. HARDWARE
3. SOFTWARE
4. REALISATION

For your personal view on the data, your "user experience",
via app or website we offer - also together with partners - the
following services for device configuration and programming.

We develop a solution with you from the vision.

1. CONSULTATION

You have some initial ideas for the start of digitization, but no integrated concept yet, no concrete plan for implementation? An open discussion with a consultant who reflects the ideas neutrally often helps to identify the individual topics more clearly and to get to the heart of unspecific ideas. This is the important first step towards an Industry 4.0 & IIoT solution.

The next step is the realization of the project, either linearly along traditional specifications or iteratively using agile methods.

2. HARDWARE

For years we have been serving the market with products and solutions in the fields of industrial PC, automation and industrial network technology. These products also play a decisive role in the field of Industry 4.0 & IIoT. New and of central importance are IIoT Gateways, IIoT Controllers, Edge and Fog PC at the interface of OT and IT. They form the link to public or private cloud services. You specify - we set it up. IP addresses, communication parameters, access rights, default values. On request, we deliver your devices preset with your specific settings.
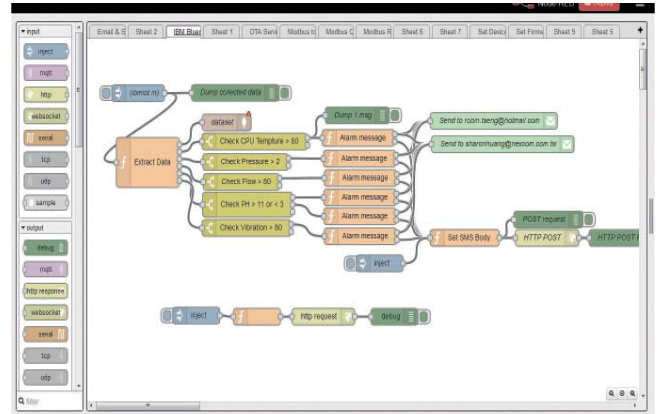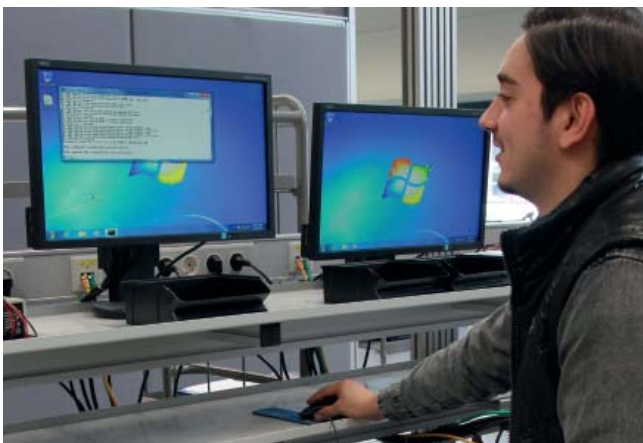
3. SOFTWARE

Pre-processing of data, visualization on the web, apps for smartphones, tablets or PC - ask us for software solutions or connections to web services such as Microsoft Azure or IBM Bluemix.

With graphical programming systems such as Node-RED from IBM, the data flow from machine-oriented raw data to compressed, meaningful plant or operating data is modelled.

The same development environment and the same look and feel on the IIoT Gateway as well as within the Bluemix cloud portal considerably simplify the software development of a IIoT project.
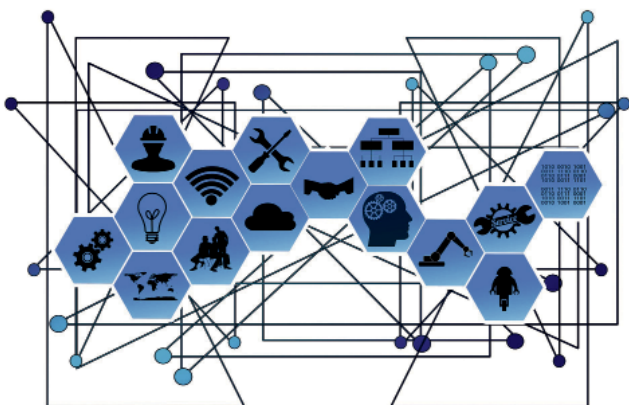
4. REALISATION

Industry 4.0 and IIoT projects require team players and partners in addition to the interaction of different hardware and software components.

Our experienced employees support you with their know-how on all levels - from vision to solution.

INDUSTRY 4.0 & IIOT –
COLLECT AND VISUALIZE DATA

The analysis of the machine data provides valuable information on potential savings. For example, operating costs can be saved in productions with high energy input or downtimes can be avoided by timely indication of the degree of wear of components (predictive maintenance). Specialized gateways and smaller edge PC help to feed this data to the fieldbus level for joint evaluation at the company level with manageable effort. They act as a link between machine data and the higher company level and prepare different fieldbus formats (PROFIBUS, EtherCAT, etc.) for standard ethernet communication.

Via IoT protocols such as MQTT (Message Queue Telemetry Transport) or OPC UA (Open Platform Communications Unified Architecture), the data is then transmitted to a cloud platform (private or public), merged and processed.

COMPANY LEVEL / VISUALIZATION & ANALYSIS
Spectra Panel-PC as HMI / User Interface

For the visualization and analysis of the data in the company's level displays and Panel PC are used. DB clients and analytics agents establish the connection to the data in the private/public cloud. The data is displayed via browser.

Spectra-Panel Silent-wDL 21402 | Article N° 145732

· Fanless Panel PC with 21" industrial display with widescreen and P-CAP touchscreen, all around IP65
· I/O interfaces can be lead out individually
· USB 2.0 service socket, waterproof
· Front panel: Touch surfaces for brightness, volume, app-key, integrated RFID / NFC reader

CONTROL LEVEL / DATA PROCESSING
Spectra Mini PC as Edge PC between OT and IT

An Edge PC is equipped with intelligence. Installed IIoT programs like Node-RED collect the data from the field level (OT) and send it preprocessed and compressed into the private/public cloud (IT).

Spectra PowerBox 100-IoT-J19 | Article N° 151874

· Fanless Edge PC for data processing and routing into private / public Cloud
· SoC Intel® Celeron® J1900 / 2,0 GHz
· Thin, hardened Linux® OS
· Easy Administrator Web-Surface
· Node-Red development environment for IIoT-application

FIELD LEVEL / DATA PREPARATION
Multi-function I/O modules for sensors and aktors

The acquired process level data is converted into a fieldbus protocol using multi-function I/O modules of analog or digital signals.

ET-7000 / WISE-7000 SERIES

· Analog and digital inputs/outputs
· Thermocouple, Pt100/Pt1000, thermistor, counter, frequency, encoder
· Ethernet: 1x LAN or 2x LAN (Daisy Chain), models with PoE (PD)
· Protocol: Modbus/TCP
· Web-surface for setup and diagnosis
· Local IF-THEN-ELSE logic (only WISE)

PROCESS LEVEL / DATA ACQUISITION
Modern sensors and actuators on the machine

Condition and process data form the basis for the efficiency assessment of a plant or the timely reporting of maintenance cases or wear phenomena.
These data are recorded at the process level by modern sensor technology.

powered by individuality

Spectra GmbH & Co. KG
Mahdenstr. 3
72768 Reutlingen
Germany
Phone +49 (0) 7121 1432-10
E-Mail spectra@spectra.de
Web www.spectra.de

Spectra GmbH & Co. KG
Gewerbepark Ost 1
4621 Sipbachzell (Wels)
Austria
Phone +43 (0) 7240 20190
E-Mail info@spectra-austria.at
Web www.spectra-austria.at

Spectra (Schweiz) AG
Flugplatzstr. 5
8404 Winterthur
Switzerland
Phone +41 (0) 43 27710-50
E-Mail info@spectra.ch
Web www.spectra.ch

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