



Disrupting the Industrial IoT market

The Exploding Digital Industrial Transformation: Industrial IoT provides the enabling information backbone

Smart
Factories

Smart
Supply Chains

Connected
Products

IIoT Backbone sharing industrial data with business applications

Production assets and plant data -
> improve decisions precision and
speed for high productivity, quality,
safety

Production assets data across the
extended supply chains: just-in-
time delivery and right-quality,
linking in real-time Tier-n providers
to the OEM

Products data shared between
owners and makers: create digital
services, create stronger customer
loyalty, create new business models

Creating the IIoT backbone is complex and expensive

IIoT Integration cost is 40% to 80% of any Industry 4.0 project

Industrial Devices

- **Complex Brown field scenario:** thousands of vendors, protocols & technologies to integrate – dozens in the same factory
- Standards (OPC-UA, MTConnect) adoption on few devices, not consistent
- Long equipment replacement time
- Deep retrofit brings long ROI, slow down projects -> projects failures

Digital
Twins

Data Exchange
on the IIoT
Backbone

Business Applications

- **On Cloud & On Premise**
- **Legacy and New**
- Ent. Resources Planning
- Mfg. Execution Systems
- Equipment Monitoring
- Conditional & Predictive Maintenance
- Quality Management
- Integrated Logistic



The Alleantia IoT Software Gateway

The Open Digital Twin Enabler: Faster, Cheaper, No Legacy

Edge Software connecting plug & play nearly 90% of industrial devices, ready to use drivers for 5000+ industrial equipment, Edge Intelligence, many APIs and connectors, reducing IT/OT time and cost for integration by 70% and more.



xPango® drivers

Library of 5.000+ ready to use drivers
10+ free driver creation tools
30+ industrial protocols
50+ PLC/CNC Vendors

ISC Edge Software

Augmenting Digital Twins
Unified Semantic, Data Correlation,
Rule engine. Data Intelligence Creation
+ Third Party Services integration

IIoT Apps

Connecting any platform
10+ out-of-the-box interfaces
to on premise & on cloud platforms
30+ integrated ISVs

Versatile IIoT Edge software running on many platforms

Virtualized, Industrial, hybrid, adapting to customers and Partners



EPC-R3220 (ARM)



UTX 3117 (ATOM)



MIC-1810 (Core i3)



MIC-7900 (XEON)



IR 1120 (ARM)



CGR 1120 (4core AMD)



IC3000 (4core ATOM)



ISR4000 (XEON)



zkEdge 110 (Intel Core I7 - Fault-Tolerant Architecture)



Dell 5000 (ATOM)



PowerEdge (XEON)



Industry 4.0 needs collaboration

Alleantia has the largest 4.0 Partners network



ISV & SaaS adopting Alleantia IIoT for delivering end-to-end Industrial Digital Transformation solutions



System Integrators delivering complete IIoT projects with Alleantia



Global Partners



Internationally recognized IIoT Leadership

Alleantia is among the top IIoT providers since 2016

Gartner[®]



5 x Hype Cycles 2020 reports: Internet of Things, Emerging Technologies, Embedded Software & Systems, Application Services.

Gartner[®]



Reference vendor for Industrial IoT Gateways and Digital Twin Enabling Technology Providers (Market Guides 2020)

Gartner[®]



Vendor to Watch: Digital Twins Providers (Market Trends: Software Providers Ramp Up to Serve the Emerging Digital Twin Market 09.2019)

F R O S T
&
S U L L I V A N



New Product Innovation Award 2020 – Most Innovative European Edge Integration Platform for IIoT (12.2020)

FORRESTER[®]



The only reference vendor for both IoT Gateways and IoT Platforms (Forrester TechRadar Internet of Things 02.2016)

Growing Market Recognition

200+ Customers, 30+ Certified Partners adopting Alleantia IIoT



Automotive

- Integrated production
- Smart manufacturing
- Predictive maintenance

Chemicals (personal wellness)

- Integrated production
- Predictive maintenance

Energy

- Smart manufacturing
- Predictive maintenance

Transportation

- Asset Monitor
- Fuel & Emission reduction
- Integrated Supply Chain

BOSCH VHIT: Top Efficiency through Data

Digital Twins for Operational Efficiency



BOSCH



Target: OEE & productivity increase

- **Phase 1 (Completed):** increase OEE +10% with RT monitoring
- **Phase 2 (Starting):** Increase OEE +8% with AI, ML, Predictive Maintenance
- **Advanced optimisation** in machining process
- **Advanced maintenance** strategies

Brembo: Global Industry 4.0

State of the art Shop-floor Industry 4.0



Targets: No-Stop Production and Costs Reduction

- Embedded **augmented reality** in processes design
- **Deep learning** in machining process
- Advanced **maintenance strategies**
- Total **quality** management

Ansaldo Energia: the I4.0 LightHouse Plant

Predictive Maintenance in high-end discrete production



Targets: Predictive Maintenance, Predictive Quality, Reduction of Operational Costs

- All blading machines production **fully connected**.
- **Deep learning** in machining process for critical components
- Advanced **maintenance strategies**
- Data-driven **real-time quality control**

Pagliari – cosmetics and personal hygiene

The smart packaging for just-in-time production



- Full integration order-to-delivery
- Big Data Analytics of IoT data on SAP HANA on premise
- Advanced production management strategies
- Remote maintenance from machine supplier for higher availability



Connected Ships for Grimaldi Lines

Analytics and Tracking for Smart Transportation



- **150 vessels to retrofit**
- **Energy monitoring and optimization – Hybrid vessels**
- **Advanced maintenance strategies**
- **Advanced tracking for logistic optimization**

What's inside the box ?

Easy to setup, very powerful and versatile IIoT Gateway

Plug&play device & apps connection, zero-code configuration

Devices and system measures

Category: **CNC**
Device: **macchina zzzz**
Model: Heidenhain - iTNC530

Data Alarms

Filter measure:

Measure	Value
<input type="checkbox"/> Active tool	1
<input type="checkbox"/> Execution Block Nr	7
<input type="checkbox"/> Execution Mode	Automatic
Execution Name	TNC:\Programmi CompactMECSPE
Active Program	\01_Sgrossatura_D16.H
Execution Name Selected	TNC:\Programmi CompactMECSPE
Program	\01_Sgrossatura_D16.H
<input type="checkbox"/> First Error: Error Class	FALSE
<input type="checkbox"/> First Error: Error Group	---
<input type="checkbox"/> First Error: Error Number	0
<input type="checkbox"/> First Error: Error Text	0
<input type="checkbox"/> Idle	false
<input type="checkbox"/> InfoAxes Count	0
<input type="checkbox"/> InfoAxes Id 1	0.19
<input type="checkbox"/> InfoAxes Id 2	91.2

Machine
ng n.1

Measure	Cycle Time (ms) (High/Medium/Low priority)	Value
Consumi Energetici		
Energia di riscaldamento	MEDIUM_PRIORITY	4.99
Energia motore	LOW_PRIORITY	4.42
Energia totale	LOW_PRIORITY	9.42
energia totale consumata dopo il reset	MEDIUM_PRIORITY	1,938.21
Energia totale per ciclo	MEDIUM_PRIORITY	9.82
Energia totale per Kg di materiale	MEDIUM_PRIORITY	0
Energia totale per ora	MEDIUM_PRIORITY	1.78
Numero cicli per la determinazione del consumo di energia	MEDIUM_PRIORITY	3
N° cicli dopo il reset	MEDIUM_PRIORITY	135,520
Potenza di riscaldamento	HIGH_PRIORITY	1,737.1
Potenza motore	HIGH_PRIORITY	8.6
Potenza totale	MEDIUM_PRIORITY	1,745.7
Reset visualizzazione energia	LOW_PRIORITY	false

Cloud services

- E-mail and SMS
- Dropbox
- Microsoft OneDrive
- Microsoft IoT Hub
- FTP remote backup
- SQL
- MQTT Service
- aws IoT

Server date and time: 12/8/20 3:41 PM

Large variety of PLC-CNC-Sensors connectivity

30+ different protocols, 100+ automation vendors supported

SIEMENS

FANUC

HEIDENHAIN

COMAU

selca

TRUMPF

MITSUBISHI ELECTRIC

OPC UA

MT Connect

ABB ROBOTS

CNC & Robot Controllers

NEGRIBOSS

EUROMAP
European Plastics and Rubber Machinery

HAAS

MITSUBISHI ELECTRIC EDM

gallus

rexroth
A Bosch Company

EtherNet/IP

FESTO

OMRON FINS

MITSUBISHI ELECTRIC MELSEC

KONIGSBERG

Modbus

Rockwell Automation

Schneider Electric

Allen-Bradley

AUDIO

NEMESIS
Weigh, Select, Label

MQTT.ORG

Data Access Server
OPC

NMEA 0183

SIEMENS

PVI

CSV

PLC, Sensors & other devices

sunways

MASTERVOLT
THE POWER TO BE INDEPENDENT

Fronius

ABB

Plug & Play device connectivity through 'drivers'

If equipment driver is available, 10 secs to connect

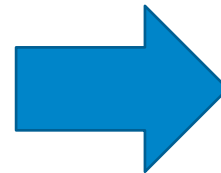
Devices Alarms Alarm History Reports Documents Fanuc Part Programs Heidenhain Pa

Device catalogue

+ Add - Delete

Filter devices:

Supplier	Model	Release	Version
Moxa	ioLogik E1210	1.0	
Negri Bossi	CANBIO ST 180 SM850 ST	1.0	
Omron	KP100L	1.0	
omron	L 1000A	1.0	
Omron	MX2	1.0	
Phoenix Contact	SCK-C-MODBUS	1.0	
Powerone	PVI 10.0	1.0	
Powerone	PVI 12.5	1.0	
Powerone	PVI 3.0	1.0	
Powerone	PVI 3.6	1.0	
Powerone	PVI 4.2	1.0	
Powerone	PVI 5000	1.0	



Devices configuration

Description	Alias	Communication Poi	ID	IP Address	TCP/UDP Port
CNC					
macchina zzzz		Ethernet	1	10.20.30.58	8193
Digital I/O					
name		Ethernet	1	10.20.30.55	502
Meteo					
nome 3		Ethernet	1	10.20.30.50	502
Mould Machine					

Many integration options for partners' and customers' apps

On prem, on cloud, multiple 'broadcasting'



Each interface has selectable data access rights

Full control by End Users on shared data sets and destinations

Rights selection for service MQTT

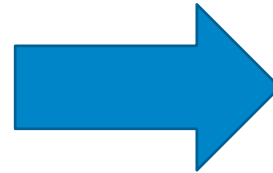
Telemetry variables


- System variables
 - CNC
 - macchina zzzz
 - Digital I/O
 - name
 - Meteo
 - nome 3
 - Mould Machine
 - Moulding n.1
 - Moulding n.2
 - Navigation
 - navig
 - Numeric Controller
 - Turn n.1 FANUC 31i
 - PLC
 - PLC 2

Category: Numeric Controller
Device: Turn n.1 FANUC 31i
Model: Fanuc - 31i Series (Master)

Filter measure:

Global Id	Description	Actual	M
G_2_37	Free memory	<input type="checkbox"/>	<input type="checkbox"/>
G_2_38	Max spindles	<input type="checkbox"/>	<input type="checkbox"/>
G_2_39	Actual feedrate	<input checked="" type="checkbox"/>	<input type="checkbox"/>
G_2_40	Actual rotate speed	<input checked="" type="checkbox"/>	<input type="checkbox"/>
G_2_41	Program number	<input checked="" type="checkbox"/>	<input type="checkbox"/>
G_2_42	Program name	<input checked="" type="checkbox"/>	<input type="checkbox"/>
G_2_43	Processing time	<input type="checkbox"/>	<input type="checkbox"/>
G_2_44	Alarm	<input type="checkbox"/>	<input type="checkbox"/>
G_2_45	System time	<input type="checkbox"/>	<input type="checkbox"/>
G_2_46	Mode selection	<input type="checkbox"/>	<input type="checkbox"/>
G_2_47	Status of automatic operation	<input checked="" type="checkbox"/>	<input type="checkbox"/>
G_2_48	Status of program editing	<input type="checkbox"/>	<input type="checkbox"/>
G_2_49	Status of axis movement	<input checked="" type="checkbox"/>	<input type="checkbox"/>
G_2_50	Status of M,S,T,B function	<input checked="" type="checkbox"/>	<input type="checkbox"/>



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System information
ISC IoT Gateway
Hardware ID (uuid): 43e00e5b1-aa5e-3583-81e3-6998d6089d9a
Broker_0 Service MQTT
26 ottobre 2020

Disconnection management
Enable backup of unsent messages on disk
Max space occupation on disk for saving unsent messages: 64 MB
Actual not yet synchronized messages stored in memory: 0

Messages format
Sending Frequency: 0 hours 0 minutes 1 second e 0 ms
Send messages in format: Normal telemetry
Listen for commands from broker

Telemetry variables
Turn n.1 FANUC 31i

Global Id	Description	Actual	Min	Max	Avg	StdDev	Alarm	Write
G_2_47	Status of automatic operation	✓						
G_2_49	Status of axis movement	✓						
G_2_50	Status of M,S,T,B function	✓						
G_2_51	Status of emergency	✓						
G_2_52	Status of alarm	✓						
G_2_54	Total number of parts	✓						
G_2_55	Number of required parts	✓						
G_2_39	Actual feedrate	✓						
G_2_40	Actual rotate speed	✓						
G_2_41	Program number	✓						
G_2_42	Program name	✓						

The Library of Things: global repository of 'public' drivers

Each user can also have its own 'private Library' of drivers



Home Licenses < Things > Admin !

Supported devices </>

Search [input] [Q] [x]

Supplier

- ABB
- Advantech
- Albatech
- Alleantia
- Allen Bradley
- Aros
- Biesse

Communication protocols

- Biesse
- CSV
- Ethernet IP
- Fanuc
- Fins
- Fronius DATCOM

Image	Name	Protocols	Interfaces	Description	Update
	ABB A41 112 - 100 2CMA170500R1000	Modbus	RS485 / RS422	Single phase meter 80A	[edit] [-]
	ABB A41 212 - 100 2CMA170501R1000	Modbus	RS485 / RS422	Single phase meter 80A	[edit] [-]
	ABB A41 312 - 100 TEST-2CMA170503R1000			Single phase meter 80A	[edit] [-]
	ABB A41 412 - 100 2CMA170505R1000	Modbus	RS485 / RS422	Single phase meter 80A	[edit] [-]
	ABB A41 512 - 100 2CMA100237R1000	Modbus	RS485 / RS422	Single phase meter 80A	[edit] [-]

<https://cloud.alleantia.com>

Got any questions? help.



What's inside a 'XPANGO driver' ?



Communication protocol

Data exchange setup parameters

Data Collection Info (the device data)

On-edge rules (machine / control logic)

Data-driven Alarms and Events

Device User Manuals and Instructions

Driver Generator

Parser Excel, CSV, EDS, EthernetIp, Fins, Melsec, Modbus, S7, MTConnect, OpcDA, OpcUA

Upload

Add in Catalog Save

* Required fields

General

Setup parameters

Communication protocol

Choose the protocol



Device Information

Supplier *	<input type="text" value="Siemens"/>
Model *	<input type="text" value="Evaporatore 1"/>
Category *	<input type="text" value="PLC"/>
Version *	<input type="text" value="22"/>
Language *	<input type="text" value="en"/>
Release Version (major,minor)	<input type="text" value="1"/> <input type="text" value="0"/>

Communication

Protocol *	<input type="text" value="s7"/>
Net folder supported	<input type="checkbox"/>
Serial supported	<input type="checkbox"/>
Ethernet supported	<input checked="" type="checkbox"/>
Delay between requests	<input type="text" value="1"/> ms
Batch read enabled	<input checked="" type="checkbox"/>



Variables



Data Collection Info

\$		Name *	Section	Category	Data Block Num	Memory Area *	Address *	Bit/length String	Da
1		WORD ALLARMI 01			70	Data Block	0		INT
2		WORD ALLARMI 02			70	Data Block	2		INT
3		WORD ALLARMI 03			70	Data Block	4		INT
4		WORD ALLARMI 04			70	Data Block	6		INT
5		WORD ALLARMI 05			70	Data Block	8		INT
6		WORD ALLARMI 06			70	Data Block	10		INT
7		WORD ALLARMI 07			70	Data Block	12		INT
8		WORD ALLARMI 08			70	Data Block	14		INT
9		WORD ALLARMI 09			70	Data Block	16		INT
10		WORD ALLARMI 10			70	Data Block	18		INT

▼ Virtual Variables

\$		Name *	Section	Expression *	Data Type *	Measurement Unit	Scale	Offset	Minimum
32768		Combined Alarm Pressure		$\$11 \text{ gt } 0.5 \text{ and } \1	BOOLEAN				
32769		Average Temperatures		$(\$23 + \$24 + \$25)$	NUMERIC				
32770		Alarm Average Temp		$\$32769 \text{ gt } 400$	BOOLEAN				

On Edge Rules

▼ Alarms

Variable	Section	Delay ON (ms)	Delay OFF (ms)	Description *	Expression *	Remove
Alarm Average Temp				Alarm Temp Avg	$\$32769 \text{ gt } 400$	
Combined Alarm Pressure				Alarm Combined Pressure	$\$11 \text{ gt } 0.5 \text{ and } \$12 \text{ gt } 0.5$	
WORD ALLARMI 03				Alarm 03	$\text{not } \$3$	
WORD ALLARMI 02				Alarm 02	$\text{not } \$2$	
WORD ALLARMI 01				Alarm 01	$\text{not } \$1$	

Data Driven Alarms

Thanks!

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