

Accelerate IoT with Tietoenvry Connect

Overview Tietoenvry Connect IoT Accelerator



Core Functionality

Tietoevry Connect (TEC) is an enabler and an accelerator framework for various data focused projects:

- wide range of available services
- configuration only



Focus on
use case



Reduce time
to market



Azure PaaS Only



Numerous renowned international as well as Austrian industrial companies already benefit from Tietoevry Connect. Architecture of our solution in many projects successfully supported by Microsoft.

A lot of modules already available!

- Dashboards
- Masterdata mapping
- IoT data translation
- IoT product templates
- IoT auto-signal recognition
- IoT Namespace discovery
- Device management
- IoT edge container handling
- Rules & actions
- Real Time Data quality check
- User and Access Management
- and many more!





In a nutshell

Tietoevry Connect functions as an accelerator framework, that focuses on use cases like responsive dashboards, master data management, mapping tables, IoT data translation, IoT device management or data pipeline monitoring. On this basis new solutions and services can be created easily.

We provide the fitting feature for each individual use case on a modular basis.

The accelerator is developed on the basis of angular, .net and Microsoft Azure PaaS services. It can run directly in Azure cloud (CSP or existing enterprise subscription).

The solution consists of a graphical (Connect), interface part (Connect API) and configured Azure PaaS services.

Tietoevry Connect core features

Data integration

- Secure cloud connection
- Open integration possibilities
- IoT offline data caching
- 'Machine Learning on the Edge' Device management & edge container handling
- Namespace discovery
- Gateway management



IoT translation & masterdata

- IoT data translation
- API access to real time data
- Data and functional access
- Install base definitions
- Multi tenant
- DAMA data quality in real time
- Service quality dashboard
- Azure datalake integration out of the box



Use case foundation

- API data exposure
- Event based data exporter
- Role targeted dashboards
- Notifications
- Responsive & adaptive
- AI integration in IoT pipelines
- Reporting
- Active Directory integration



Value areas

Machines Production Lines Equipment

- Device or Machine
- Sensors
- Gateways, IPCs,
Edge compatible

→ Asset Managers (OT)

Corporate Units Global Roles

- Masterdata
- Global hierarchy and fleet
- Device management
- Data translation
- Trend analysis

→ Fleet Management
→ Corporate view

Business Consumers

- Status
- Quality or condition checks
- Inspections
- Archive
- Reports

→ Service management
→ Digitation or
→ Optimization roles

Tietoenvy Connect



Easy & quick
onboarding
Real time insights

Fully configurative
Extendible, scale
Central, translated data

Get more value out
of data

Modules and features included in the accelerator



Authentication

- Custom JWT Authentication provider
- Azure AD Authentication with Group Mapping



User Management

- User and group handling
- Language
- Timezone support
- Personal profiles



Access Management

- Access per functionality
- Access on data
- API, SignalR services
- AD mapping possible



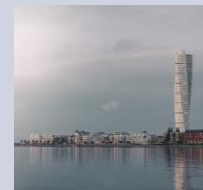
Dashboard

- Dashboard manager
- Pre-defined widgets
- Responsive dashboard



Masterdata

- Masterdata / tag handling
- Inherited Types
- User and access management
- Configurable dashboards
- Auto-generated nodes
- Mapping tables



General

- Multi-language
- User Profile properties (extendible)
- Responsive
- “Terms of Use” acknowledgement
- Application parameters

Modules and features included in the accelerator



IoT Accelerator

- IoT channel configuration
- Inherited channels
- Auto-signal recognition
- Push data
- Real-time status views



IoT Accelerator

- Device Management
- Device and data pipeline monitoring
- Bi-directional communication
- Azure IoT Hub integration
- Namespace discovery



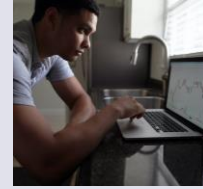
IoT Accelerator

- IoT data pipelines & routing (IoT to SQL, IoT to Azure datalake, API ...)
- API data access
- User based notifications
- Browser and e-mail notifications



Rule Engine Smart Actions

- Listen on Stream Data
- Take Actions, integrate 3rd Party Applications
- Event Log, API-Action, SMS, E-Mail, Browser Notifications ...



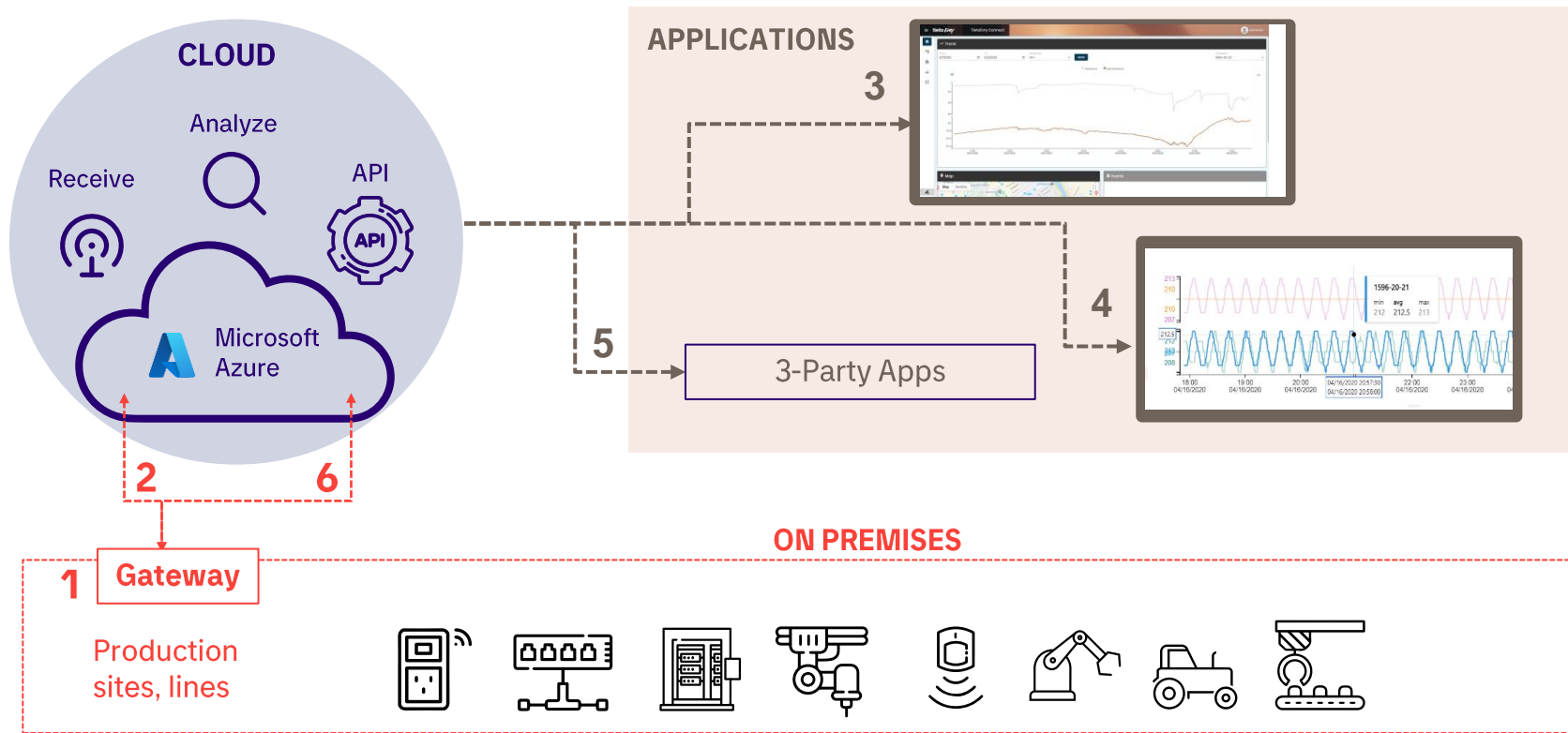
Reporting

- PowerBi Embedded
- Report per Group

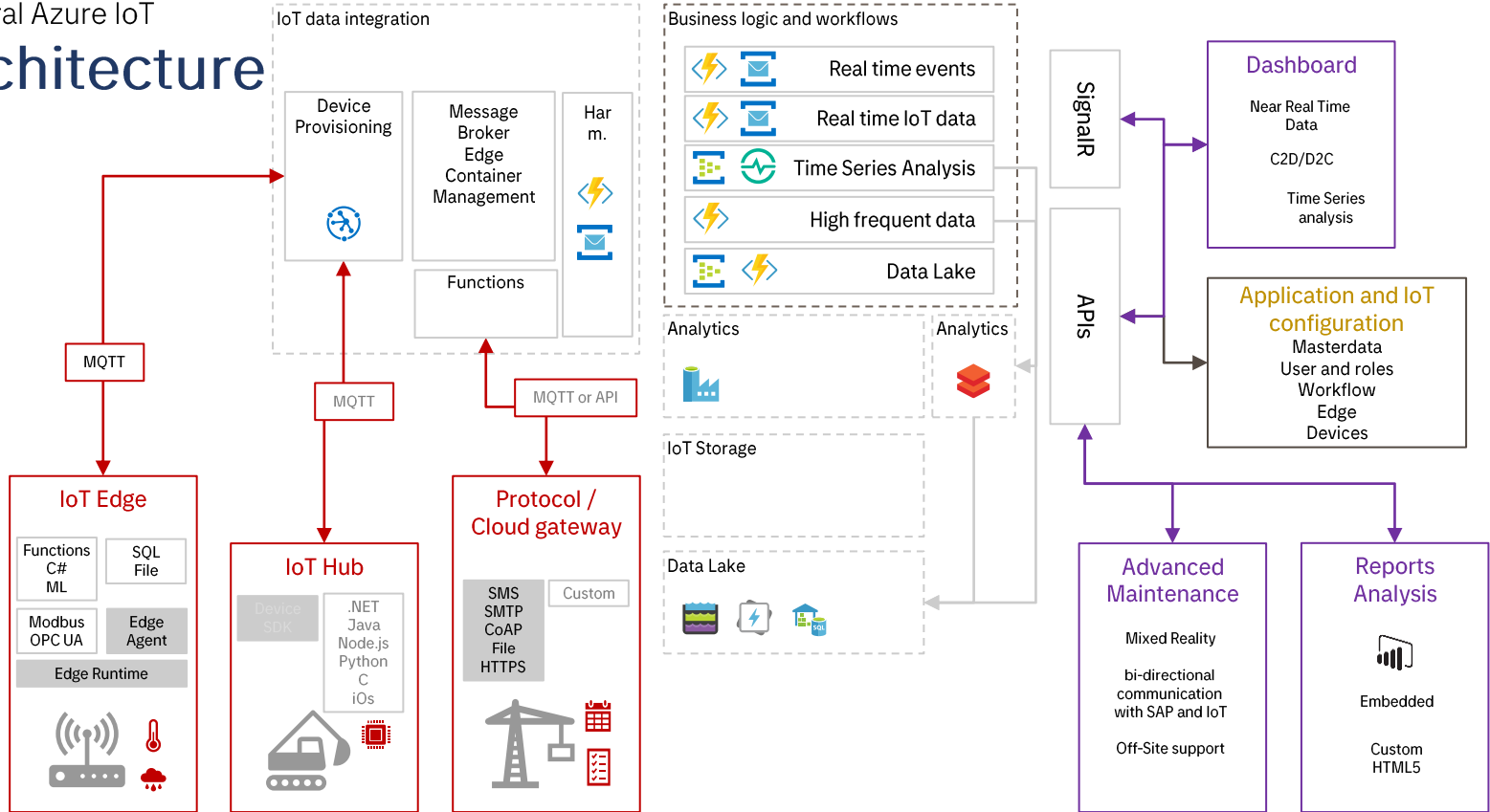


... and many more ...

Templatized: Sensor > Device > Cloud > Application



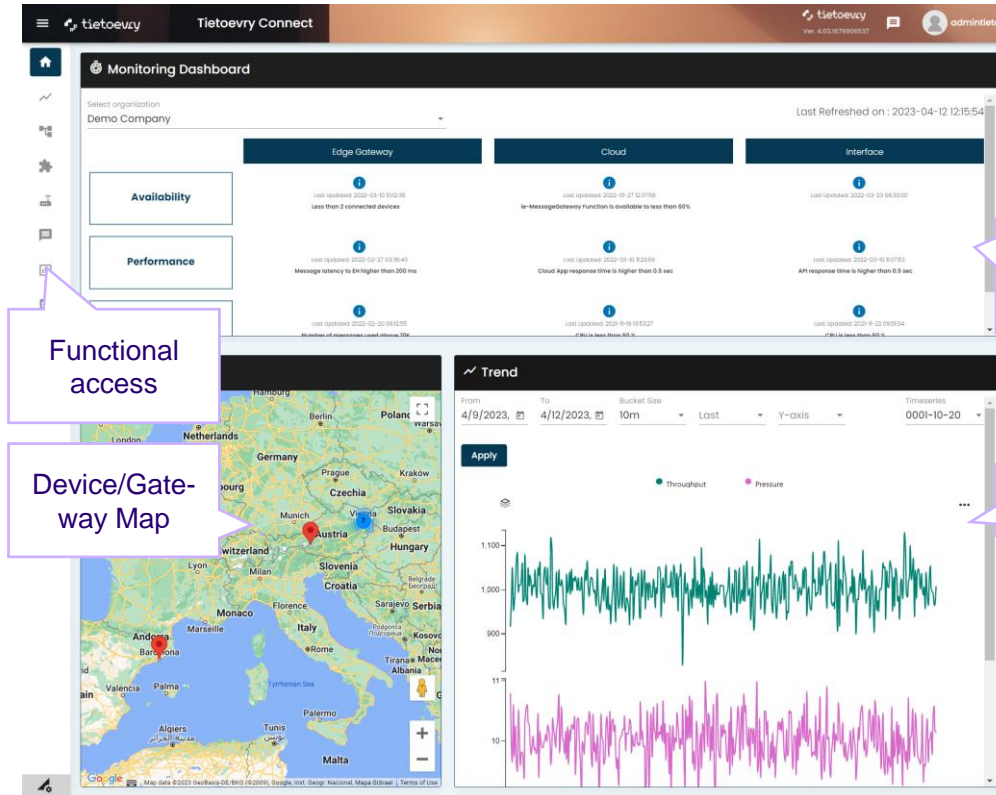
General Azure IoT Architecture



Tietoevry Connect examples



Dashboards – role targeted dashboard



Functional access

Device/Gate-way Map

Azure service quality

IoT Trends

Plant details – Metadata, IoT data and trends

Metadata

Pumpstation 02			
General Element information			
Description	Pumpstation 02	Parent	ATTH-Extrusion
Type	Line		
Additional Metadata			
Name		ExternalId	Line22
Machine Vendor	Salvagnini	Department	Glueing
Lot/bulle	482406982	Longitude	16.3865731
Zoomlevel	14		

IoT data in real time

Channels	Basic	Status
Pumpstation 02		
Energy - Cumulative	23.0620348 kWh	a few second...
Pressure 1	305.579533 bar	a few second...
Pressure 2	896.294732 bar (Warning)	a few second...
temperature 1	28.8183953 C	a few second...
temperature 2	25.68 C	a few second...
temperature 3	52.616 C	a few second...

Individual Notifications

Energy - Cumulative: a few second...
Pressure 1: a few second...
Pressure 2: a few second... (Warning)
temperature 1: a few second...
temperature 2: a few second...
temperature 3: a few second...

IoT Trends

From: 2/10/2022, 14:41:55 To: 2/7/2022, 14:41:55 Bucket Size: 30m Apply Timeseries: Line22

Temperature 3, Pressure 2

Details – Metadata, IoT data and trends

The screenshot displays the TietoEVRY Connect interface. A modal window titled "Edit Notification" is open, showing configuration for "Pumpstation 02". The modal includes fields for "Single Node", "Channel", "Set your notification" (with a rule name and warning text), "Alert me when Pressure 2 is" (with a value of 985.8 bar), "Through" (with options for SMS, E-mail, and Browser), and an "Enabled" toggle. The background shows a table of "General Element Information" and "Additional Metadata" for "Pumpstation 02".

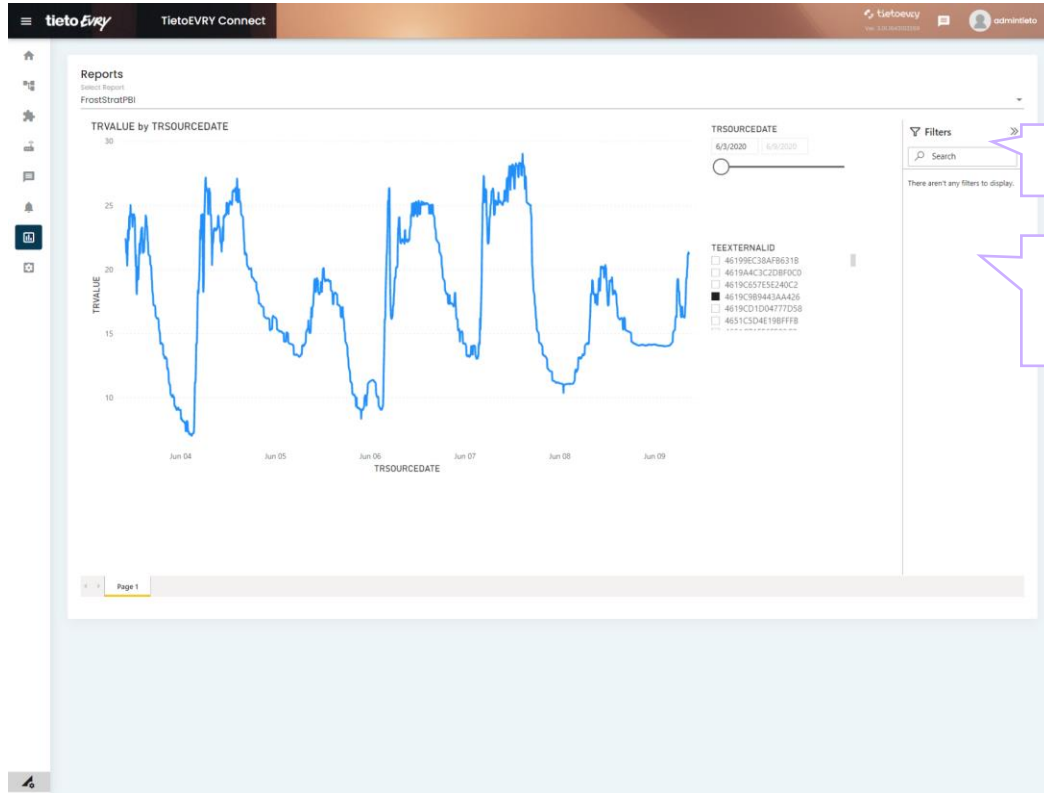
General Element Information			
Description	Pumpstation 02	Parent	ATTI-Extrusion
Type	Line		

Additional Metadata			
Name		ExternalId	Line22
Machine Vendor	Salvarini	Department	Glueing
Latitude	48.2406982	Longitude	16.3865731
Zoomlevel	14		

Four callout boxes highlight specific fields in the modal:

- Notification Level**: Points to the "Single Node" dropdown.
- IoT Channel**: Points to the "Channel" dropdown.
- Notification Text**: Points to the "Set your notification" rule name and warning text.
- Action**: Points to the "Through" section, specifically the "Browser" option.
- Condition**: Points to the "Alert me when Pressure 2 is" value and unit.

PowerBI integration



Power BI interaction

Available Reports per Role

Manage Gateways

The screenshot shows the 'Device Management' page in the TietoEVRY Connect application. The interface includes a search bar, a table of device details, and various action buttons. Callouts highlight specific features:

- Device listing**: Points to the table of device entries.
- Real time device status**: Points to the 'Connection State' column.
- Connected production line**: Points to the 'Connected Node' column.
- Device operations**: Points to the 'Service Health' and 'Service Log' columns.
- Edge Support**: Points to the 'Monitor Device' and 'Manage Modules' columns.
- C2D support**: Points to the 'C2D Message' column.

Connection State	Device Name	OEM Id	Connected Node	Edge	Last Activity Time	Check Service Health	Service Health	Service Log	Monitor Device	Manage Modules	Set Namespace	Set SAS Token	Update	Reboot	C2D Message	Active
offline	fhjogel40i	c6030-0050	Printing, Mill	No	2021-07-16 0	🟢	🟡	🔄	🔍	🛠️	📄	🔑	🔄	🔄	📧	👤
offline	MXChip-Dev			No	2019-09-16 1	🟢	🟡	🔄	🔍	🛠️	📄	🔑	🔄	🔄	📧	👤
offline	myfirststid			Yes	0001-01-01 0	🟢	🟡	🔄	🔍	🛠️	📄	🔑	🔄	🔄	📧	👤
offline	serverroom			No	2020-02-28	🟢	🟡	🔄	🔍	🛠️	📄	🔑	🔄	🔄	📧	👤
offline	testClientCo		Line 2, Wet Et	No	0001-01-01 0	🟢	🟡	🔄	🔍	🛠️	📄	🔑	🔄	🔄	📧	👤
online	testraspberr	c6030-0050	Pumpstation	No	2022-02-11 0	🟢	🟢	🔄	🔍	🛠️	📄	🔑	🔄	🔄	📧	👤
offline	MXChip-Dev			No	2020-03-09	🟢	🟡	🔄	🔍	🛠️	📄	🔑	🔄	🔄	📧	👤
offline	bb-vm1			No	2019-01-31 4	🟢	🟡	🔄	🔍	🛠️	📄	🔑	🔄	🔄	📧	👤
offline	MXChip-Dev			No	2019-07-15 4	🟢	🟡	🔄	🔍	🛠️	📄	🔑	🔄	🔄	📧	👤
offline	ie-pune-din			No	2020-03-03	🟢	🟡	🔄	🔍	🛠️	📄	🔑	🔄	🔄	📧	👤
offline	CX_Energie			No	0001-01-01 0	🟢	🟡	🔄	🔍	🛠️	📄	🔑	🔄	🔄	📧	👤
online	testpumpstac	c6030-0050	Pump 10	No	2022-02-11 0	🟢	🟢	🔄	🔍	🛠️	📄	🔑	🔄	🔄	📧	👤
offline	Dell-Edge-G			Yes	2019-08-06	🟢	🟡	🔄	🔍	🛠️	📄	🔑	🔄	🔄	📧	👤
offline	MXChip-Dev			No	2019-06-05	🟢	🟡	🔄	🔍	🛠️	📄	🔑	🔄	🔄	📧	👤
offline	Advantech-v	Advantech-v	Line 1	Yes	2020-07-17 1	🟢	🟡	🔄	🔍	🛠️	📄	🔑	🔄	🔄	📧	👤
offline	SimulatedSe			Yes	0001-01-01 0	🟢	🟡	🔄	🔍	🛠️	📄	🔑	🔄	🔄	📧	👤

IoT configurations

Auto recognition

Import and Export

Configuration of IoT features

Icon	Key	Display Name	Unit	Group Name	Inherit	Enabled	Show in Map	Edit	Delete	Status
	30-10	Pressure 1	bar	Basic	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>			
	Energy Status	Energy Status	Status	Status	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>			
	10-30	Pressure 2	bar	Basic	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>			
	Energy - Cumulative	Energy - Cumulative	kWh	Basic	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>			
	10-10	Temperature 1	C	Basic	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>			
	10-20	Temperature 2	C	Basic	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>			
	10-40	Temperature 3	C	Basic	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>			

Configurations

Deep functional access

Fully configurable

Edit Functional Access

Organization: Demo Company

Role: Plant Admin

Pages: Dashboard, Hierarchy Browser, Hierarchy Management, Configuration, Masterdata Types, Data Management, IoT Features, Dashboards, IoT Time Series, Device Management

Widgets: Dashboard - Trend, Hierarchy Browser - Map, Hierarchy Browser - Tree, Hierarchy Management - Hierarchy Management List, Dashboards - Dashboard List, Dashboards - Dashboard Configuration

Component	Grant All Permissions	View	Edit
Dashboard - Trend	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Hierarchy Browser - Map	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Hierarchy Browser - Tree	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Hierarchy Management - Hierarchy Management List	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Dashboards - Dashboard List	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Dashboards - Dashboard Configuration	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
IoT Features - IoT Feature List	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Masterdata Types - Master Type List	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Data Management - Data List	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
IoT Time Series - IoT Time Series List	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Device Management - Device Management List	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
IoT Groups - IoT Group List	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Event Types - Event Types List	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Events - Event Management List	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Events - Event Subscription List	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
API	<input type="checkbox"/>		
Reports	<input type="checkbox"/>		

Thank you

Thomas Tropper

 tietoevry

