Connect IoT (Equipment Integration)

Provides MES equipment integration for different type of communication interfaces

Overview

There are many drivers for improving the degree of automation in manufacturing operations. Typically, there are three types of equipment in the shop floor that can be integrated: process equipment, metrology equipment and logistics equipment. The logistics equipment includes not only automated material storage and retrieval equipment, but also transport equipment, such as Automatic Guide Vehicles (AGVs) and Autonomous Intelligent Vehicles (AIVs). The primary goal of equipment integration is to abstract the equipment idiosyncrasies and to provide a standard interface with the MES.

At its most basic level, equipment integration is used for automatic data collection. At a higher level of integration, equipment integration is used for process automation and equipment control. For example, when a carrier is detected at a load port of a particular equipment, the system can automatically validate the carrier, and can initiate the processing of the material resolving the recipe and any other information required for the process job.

Different communication protocols, different equipment capabilities and different levels of job control require an equipment integration solution that is modular, flexible and extensible to accommodate a big variety of equipment integration scenarios. Furthermore, because in a production environment, the roll-out of changes must be well controlled, it's critical to provide good change management tools.

Connect IoT is a distributed equipment integration module that can be used to connect virtually any equipment or device that provides some type of connectivity

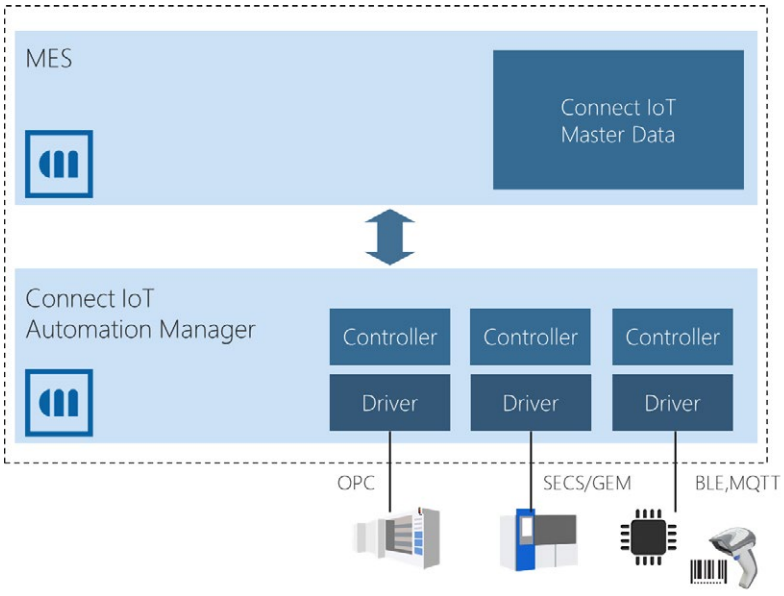

Figure 1 Connect IoT architecture

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Key Features

- Centralized configuration and administration of all integrated equipment and devices
- Version controlled Driver and Controller definitions
- Visual workflow designer for the Controller
- Two types of workflows supported: Data Flow and Control Flow
- Integrated visual workflow debugger
- Extensible, modular architecture which allows the creation and addition of new drivers and workflow tasks
- Distributed multi-platform execution of the Controllers and Drivers
- Provision of a self-update mechanism using a software repository
- Out of the box native integration with IoT Data Platform
- Re-usable Automation Drivers and Controllers, with the capability to extend global Controllers
- Business Scenarios that can be created interactively just by answering some questions using the chat bot
- Supports equipment controller updates and other operations automatically without equipment downtime
- Off-the-shelf drivers for the following interfaces:
  - Bluetooth Low Energy
  - CSV Files
  - Databases (Microsoft® SQL Server™ and MySQL™)
  - Fuji Nexim™
  - IPC-CFX™
  - MQTT
  - OIB™
  - OPC DA
  - OPC UA
  - PanaCIM™
  - Raw Files
  - REST (Server and Client)
  - SECS/GEM
  - Serial Communication (RS-232)
  - TCP/IP Socket
  - USB Keyboard Wedge

Benefits

- Improved operational equipment effectiveness
- Better equipment utilization
- Reduction of downtime
- Reduction of scrap and rework
- Reduction of costs

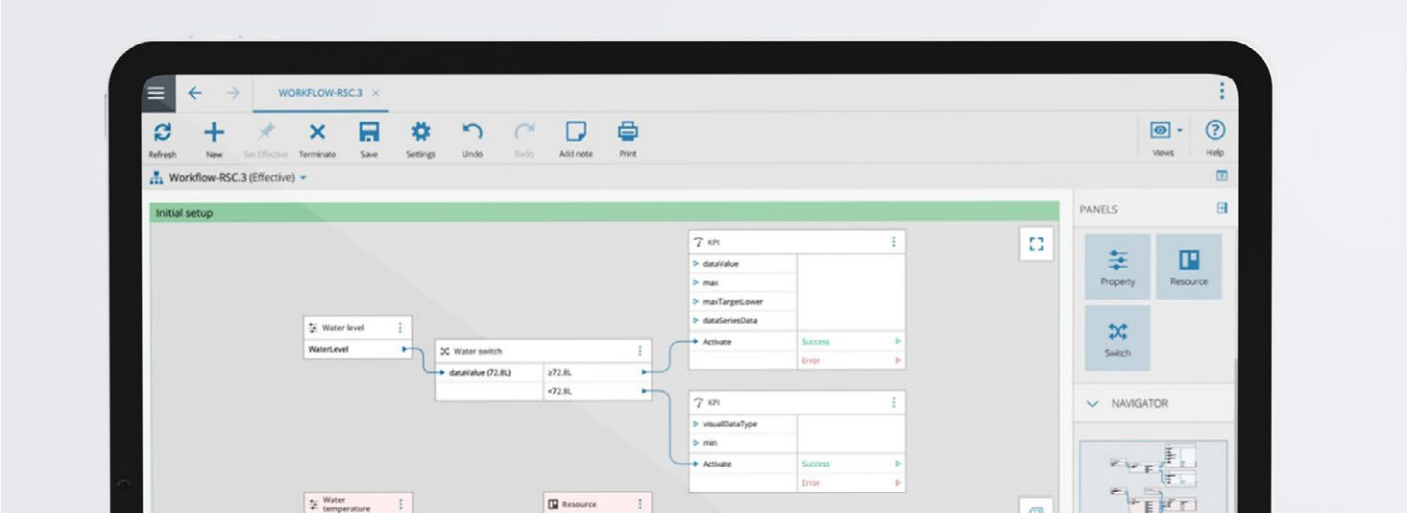

Figure 2 Connect IoT Automation Controller workflow editor

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