

**TECH OFFER**

**Unified IIoT Cloud Platform For Smart Factory**



**KEY INFORMATION**

**TECHNOLOGY CATEGORY:**

Infocomm - Enterprise & Productivity

Infocomm - Internet of Things & Wearable Technology

Logistics - Planning & Order Processing

**TECHNOLOGY READINESS LEVEL (TRL): TRL7**

**COUNTRY: SINGAPORE**

**ID NUMBER: TO174087**

**OVERVIEW**

This technology offer is a full-fledged Industrial Internet of Things (IIoT) platform with a combination of proven technologies – Edge and Cloud Computing. The platform orchestrates the transport of extremely detailed data from industrial devices—anything from the machines in a factory to the engines inside an aeroplane—that are filled with sensors for real-time sharing between machine to machine (M2M) and enterprise to enterprise (E2E) to make processes more efficient and its potential to enable faster and better decision making.

The advent of tiny low-cost sensors and high-bandwidth wireless networks now means even the smallest devices can be connected up, given a level of digital intelligence that allows them to be monitored and tracked, and can share data on their status and communicate with other devices. All of this data can then be collected and analyzed to make business processes more efficient, thanks to the platform, each of its elements are sufficiently mature and cheap enough that projects can be financially viable.

## TECHNOLOGY FEATURES & SPECIFICATIONS

The platform offers off-the-rack end to end IIoT cloud solution with industry best in the class features:

1. Built-in support for OAuth 2.0, open-standard authorization protocol or framework that describes how unrelated servers and services can safely allow authenticated access to their assets without actually sharing the initial, related, single logon credential. In authentication parlance, this is known as secured, third-party, user-agent, delegated authorization
2. Multi-tenant architecture
  - Tenant data is managed and maintained separately and independently
  - Data can be configured for physical separation per tenant (by specific area or by cluster within a specific area on a per multi-tenant object basis)
  - Resources such as database sequences are viewed by the application as a single sequence definition but can be maintained by the database on a per-tenant basis
3. Cloud agnostic IIoT platform
  - Free from vendor lock-in. Choose your own provider
4. In-the-cloud event hub through MQTT over the WebSocket protocol
  - 3rd party systems can publish and subscribe through this secured channel in real-time
5. Micro services
  - 3rd party systems integration through secured REST API.
  - Access services by using HTTP methods, including GET, UPDATE, and DELETE
6. Out-of-the-box edge to cloud connectors
  - MQTT connector
  - OPC UA connector
  - XML connector
  - Other protocols are on development
7. Edge to cloud connector SDK
  - Allows developers to exchange data with platform models
  - The SDK supports a simplified shadow access model to streamline development by only few lines of code
8. Reactive designed web application
  - Multi-platform design to support PC, mobile and tablet devices
  - Standard dashboard and widgets
  - System configuration management
  - Device provisioning

## POTENTIAL APPLICATIONS

There is limitless potential in this solution, which may include:

1. Smart Agriculture
2. Smart City
3. Smart Factory
4. Digital Twin
5. Supply Chain
6. Supervisory control and data acquisition (SCADA)
7. Automation
8. Industrial Control

## MARKET TRENDS & OPPORTUNITIES

The platform is designed to support 3<sup>rd</sup> party system integration. Robust set of APIs that enable integration teams to develop their custom solution. Customers have an option to develop their own business applications, advanced analytics, Digital Twin, AI etc. and just wire up to the platform without additional cost.

1. Access to raw data from a particular edge device.
2. Access to the aggregate data from a group of devices.
3. Provide access to your cloud database to implement custom analysis.
4. Access to the system health and operational parameters.
5. Ability to use data coming from third-party systems as part of your analytics/control mechanisms.

The out-of-the-box web application and its UI elements can be fully customized according to customer's need if required. Pricing is evaluated on case to case basis.

## BENEFITS

1. **Scalability** - One of the greatest advantages of the platform being in a cloud is that it is very easily scalable. The cloud has dramatically simplified scaling problems by making it easier to scale up and out while also making it possible to scale down and in, saves time in configuration efforts to make it run properly
2. **Data mobility** - With your data stored and processed in a cloud server, it can be accessed from almost anywhere in the world, which also means that it won't be bound by any infrastructural or networking constraints
3. **Time to market** - With IoT cloud solutions, it usually takes less time and effort to implement them and significantly lowers the overall cost, but this is achieved at the expense of platform customization. All in all, cloud-based IoT infrastructure turns out to be more profitable when the time to market is a crucial business factor
4. **Cost-effectiveness** - Large initial upfront investments and increased implementation risk in case of an in-house Internet of Things system can be discouraging. Also there is the issue of ongoing costs of hardware maintenance and IT personnel. Significantly reduced up-front costs and a flexible pricing scheme based on actual usage encourages IoT-based enterprises to switch to the cloud. Within this business model, costs are easier to predict and you don't have to bother about hardware failure, which in case of in-house Internet of Things systems may generate huge additional costs, not to mention business losses resulting from service downtimes.