System Description (SysD) – Fischertechnik Assembly Line

**Abstract**

This document describes a system which is a fischertechnik assembly line consisting of sensors and actuators. The system is integrated with arrowhead cloud to offer services such as: SensorValue and ActuatorValue with OPC UA server as the medium of communication between the fischertechnik assembly line and arrowhead cloud. In addition to these two services the system offers another service “Monitorable” which is responsible for monitoring the availability of the system.

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1. System Description Overview:

This document describes the HTTP/{TLS}/JSON Fischertechnik Assembly line Arrowhead Framework system, which basically acts as a provider system and provides the value read from the 9 sensors and 10 actuators signals present in a fischertechnik factory. In addition to that, the system also allows the consumer to write signal values to the actuators. The factory here is an assembly line with two machining stations controlled with a Siemens S7-1500 PLC as asset via an OPC-UA server and the arrowhead system communicate with the PLC signals through this OPC UA server. This provider system offers a Monitorable service for checking the availability of the application system in local cloud.

1. Application services

This system offers 3 services:

* SensorValue
* ActuatorValue
* Monitorable

# Produced Services

Table 2 Pointers to IDD documents

|  |  |
| --- | --- |
| Service | IDD Document Reference |
| SensorValue |  |
| ActuatorValue |  |
| Monitorable |  |

# Consumed Services

Table 3 Pointers to IDD documents

|  |  |
| --- | --- |
| Service | IDD Document Reference |
| **Service Discovery** by Service Registry System | <https://github.com/arrowhead-f/core-java-spring/tree/master/documentation/service_registry> |
| **AuthorizationControl** & **Token Generation** services are Authorization System | <https://github.com/arrowhead-f/core-java-spring/tree/master/documentation/authorization> |
| **Orchestration** Service | https://github.com/arrowhead-f/core-java-spring/tree/master/documentation/orchestrator |

1. Security

The system is using the HTTPS-SECURE-JSON security interface. Each systems both consumer and provider are using their corresponding client certificate for secure communication. Authorization core system is responsible for the access verification and token generation during the provider and consumer interaction.

1. References

<https://github.com/arrowhead-f/core-java-spring>

<https://github.com/arrowhead-f/sos-examples-spring>

1. Revision history

# Amendments

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| No. | Date | Version | Subject of Amendments | Author |
| 1 | 2020-04-25 | 0.1 | First draft | Aparajita Tripathy |

# Quality Assurance

|  |  |  |  |
| --- | --- | --- | --- |
| No. | Date | Version | Approved by |
| 1 |  |  |  |
| 2 |  |  |  |