

# Bakery Oven

## System of system Description

### Abstract

This is the template for System of Systems Description (SoSD document) according to the Eclipse Arrowhead documentation structure.

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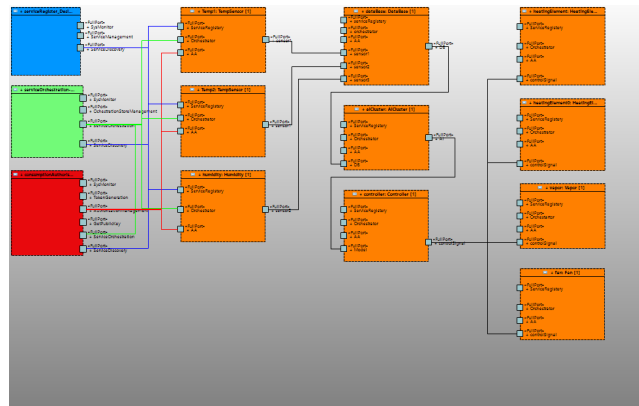


Figure 1: Local cloud design of the Bakery Oven. A SoSD overview.

## 1 Overview

This document describes the Bakery Oven system of systems (SoS). The SoS encompasses everything from the Sensors to the Actuators, This also includes the Database, AiCluster and Controller as well as the needed core services.

The rest of this document is organized as follows. In Section 1.1, we the intended usage of the SoS. In Section 1.2, we describe fundamental properties provided by the SoS. In Section 1.3, we describe de-limitations of capabilities ofn the SoS. In Section 2, we describe the microsystem (abstract level with references to their SysDs) which constitutes the SoS. In Section 3, we describe the security capabilities of the SoS.

## **1.1 How This SoS Is Meant to Be Used**

The Bakery Oven SoS is used to optimize the in house production with the help of a Ai model trained on in house generated data from its sensor systems.

## **1.2 SoS functionalities and properties**

### **1.2.1 Functional properties of the SoS**

The Bakery Oven can generate data connected to the internal sensors. This data can later be used for the production of ai models of different end use cases.

### **1.2.2 Configuration of SoS properties**

As the SoS is constructed right now. The whole process is encased in one local cloud to keep the entire production process encapsulated from outside sources.

### **1.2.3 Data stored by the individual microsystem**

Brief overview of data stored to achive the functionality of the SoS.

### **1.2.4 Non functional properties**

- security, AA security based on x.509 certificate is supported.
- safety, ...
- energy consumption, ...
- latency, ...
- Power saving properties, ...

### **1.2.5 Stateful or stateless**

- More complex operations in the SoS will have their States preserved, both functional and non-functional. Less complex parts will be Stateless to reduce the compute and storage overhead.

## **1.3 Important Delimitations**

The SoS can solve optimization problem related to the internal structure of the SoS. But lacks the operational capacity at the moment of writing to generalize its operation to other optimization problems.

## 2 Services

### 2.1 Produced service

Generally the produced services will come from the sensor systems, DB system, AiCluster system and controller system.

### 2.2 Consumed services

Consumed services will be the core services and the services produced by the system mentioned above.

## 3 Security

Overview of security level chosen for the system

The following bullets are covered

- The system can be started in un-secure and/or Arrowhead secure mode.
- The system can only handle Arrowhead compliant X.509 certificates.

### 3.1 Security model

The following is supported by the system:

- Protocols: HTTP.
- Data protection: TLS.
- System authentication capability: Arrowhead X.509 certificate.
- Produced service authorization checking: Via token from Orchestration system directly via the Authorization system.

## 4 References

## 5 Revision History

### 5.1 Amendments

Revision history and Quality assurance as per examples below

No.	Date	Version	Subject of Amendments	Author
1	2023-08- 10	X.Y.Z		Jerker Delsing
2				
3				

### 5.2 Quality Assurance

No.	Date	Version	Approved by
1	2022-01-10	X.Y.Z	