Windmill Arrowhead local cloud

System-of-Systems Design Document

**Abstract**

This document describes the main features of the proposed Windmill Arrowhead local cloud.

It describes the concept used for the provider and consumer implemented. It also gives an idea about the architecture

1. Introduction

The local windmill cloud should be able to accept an parse data from a multiple of sensors located on the wind turbine.

It is necessary that this can happen as close to real time as possible since the data gives critical information about the wind turbine’s performance and health.

The data collected also needs to be stored in order to have good historical and statistical capabilities in order to prevent and predict when and where the critical components of the wind turbine starts degrading.

2. wm-data service

A wm-data service is the service that provides the sensor data from the windmill.

It implements a simple REST api to allow other actors to get the next data point from the data the service has.

The service also need to employ a way to keep the history of all the sensor data that has been fetched from the service. This is done by the use of the DataManager’s historian service.

This historian service is consumed each time a data point is fetched from the service. It results in that every data point fetched is stored in the DataManager’s database.

Example of a data point represented as JSON when sent by the service:

{“timeStamp” : 0.002435123,

“speed” : 754.0,

“acceleration” : 0.0243123,

.

.

.

“acceleration” : -0.0434123

}

3. Security

The data needs to be handled securely even though it is only in a local cloud.

Therefore the service utilizes HTTP over TLS.

The Arrowhead local cloud also ensures the security by utilizing one of its core systems, the Authorization system which ensures that the consumer have the proper credentials to access a resource.

However there is no extra payload encryption implemented right now.