41686 – Project in Automation Engineering

Project Brief

Project name:	Virtual Workbench for Industrial Equipment Diagnostics
Customer:	SCIENT-IoT
Team members:	Coordinators: Pedro Fonseca (pf@ua.pt) David Lopes (david.lopes@scient-iot.com) Other team members: Andrea Domingos (andrea.domingos@ua.pt) Diogo Vieira (diogoscsv@ua.pt) Gil Viegas (gilviegas@ua.pt) Leonardo Lucas (leonardo.lucas@ua.pt) Rodrigo Ferreira (rodrigo.ferreira@ua.pt)
Date:	March 31st, 2022

Revision History

Date	Issue	Description	Author
18/04/2022	Revision	Revision and expansion of the document for the Elaboration Milestone. The Project Architecture and Risk Analysis are included in complementary documents the accompany this document.	All team members

- ## Project description

Our project aims to build a portable data collecting device, that's compatible with a wide range of sensors and that's easy to install (plug-and-play). This device would serve as a virtual bench for the collection and treatment of data in real time. The existence of such a tool would allow the detection of eventual malfunctions or equipment damage, which would be very useful to a maintenance team.

- ## Deliverables/Outcome

The end goal of the project is an IOT2040 based system that can collect data from various

types of sensors in industrial scenarios and that stores this data in a local database. This data would be accessible through a computer, which can connect to the IOT2040 via an Ethernet connection. The system would also raise some form of alarm when it detects some problematic values in the data.

- **Customer / End users / Market**

  The end users of his product would be the maintenance departments in the industry.

- **Budget**

  We estimate the following costs:

  - IOT2040 + I/O Module: 300€ + 60€
  - 24V Power Supply: 35€
  - Box: around 20€

  To these values, we can add about 120 hours of work for each of the five team members, totaling 600 hours.

- **Project Timeline**

Start Date	Expected End Date	End Date	
18.03.2022	-	-	Milestone 1: Inception
18.03.2022	-	in progress	Get familiar with Node-Red
18.03.2022	12.04.2022	08.04.2022	Acquire a sensor for testing
18.03.2022	12.04.2022	08.04.2022	Connect IoT2040 to the internet
08.04.2022	12.04.2022	10.04.2022	Install Node-RED packages on the IoT2040
12.04.2022	-	-	Milestone 2: Elaboration
12.04.2022	17.04.2022	in progress	Acquire data from the testing sensor
12.04.2022	17.04.2022	in progress	Create database on SD card
17.04.2022	15.05.2022		Expand to other sensor types
17.04.2022	15.05.2022		Sensor configuration interface
17.04.2022	15.05.2022		Graphs for data processing
17.04.2022	15.05.2022		Programming of problem detection algorithms (alarms)
06.05.2022	-	-	Milestone 3: Construction 1
27.05.2022	-	-	Milestone 4: Construction 2
17.06.2022	-	-	Milestone 5: Transition

- **Success Criteria**

We can declare the project successful if we have a working prototype of the above mentioned system that is compatible with the more common sensors.

- **Notes and Comments**

The risk analysis for this project is done through a matrix in a complementary spreadsheet document to this document. Similarly, there is another complementary document with the project architecture developed.