**41686 – Project in Automation Engineering**

**Project Brief**

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| **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**

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| --- | --- | --- | --- |
| **Date** | **Issue** | **Description** | **Author** |
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* **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**

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| 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 |
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| 27.05.2022 | - | - | Milestone 4: Construction 2 |
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| 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.