Project Initiation Document

Group 1 Software Engineering

Transmitter Temperature Measurement

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# Background

Arqiva operate the terrestrial broadcast TV and radio network of transmitters in the UK. These transmitters are controlled and monitored from a central location in Yorkshire. High power VHF transmitters are tested by connecting them to a 'test load' instead of an aerial. The transmitter functions at full power, but the radio frequency energy is sunk in a test load instead of being transmitted. Operating at full power can cause the test load to become extremely hot. Currently the temperature of the test load is calculated using a thermostat locally.

The vision for the project is to create a mechanism to allow the temperature to be measured using a thermocouple and reported remot

# Objectives and Benefits

The project will need to achieve the following to meet its goals:

* Develop a process to change the glass thermometers for ‘calorimetry’ power measurement at high power VHF sites on the Test Loads, using two-input digital thermometers, thermo-pockets and suitable temperature probes.
* Chosen temperature probes should have a temperature range – 0 – 100C not -300C to +3000C and a differential, not absolute, accuracy of 0.05C would be acceptable.
* The digital thermometer will be required to do the temperature difference calculation T1 – T2.
* Testing will be required to prove it is immune from VHF interference and checked against known good glass thermometers.

*It has been advised to use commercially available parts, with industry standard probes. If plugs/sockets are used, they must be reliable so that means good quality and probably capped/sealed (either with two handheld meters, one per ‘side’, or the meters could be permanent).*

# Scope

The functional requirements within the scope are as following:

1. Gather thermocouple readings from sensors
2. Gather flow-rate reading from the flow-rate sensors
3. Transmit sensor readings
4. Store thermocouple readings
5. Store flow-rate readings
6. Calculate the power from stored sensor data
7. Visualisation of power output for each antenna
8. Have secure logon for raspberry pi’s
9. Have a secure login system to database
10. Require sign in to Grafana dashboard

Whereas the non-functional requirements of the project are as following:

1. Simulate thermocouples
2. Have a test harness
3. Alerts for changes in power/temperature/no connection

# Key Stakeholders

## Team

|  |  |
| --- | --- |
| Name | Role |
| Mark Hartop | Project Owner |
| Matthew Dear | Scrum Master |
| Matt Brook | Front End Lead |
| Kieron Gillingham | Communication Lead |
| Klea Cengu | Documentation Lead |
| Joahua Alsopp-Barrell | Back End Lead |

## Other Stakeholders

|  |  |
| --- | --- |
| Name | Role |
| Peter Katic | Sponsor |
| Craig Gallen | Mentor |

# Plan

## Approach

The proposed intention is to create custom software for Arqiva to ensure that they will be able to report remotely.

* *Include software that we intend to use*

Diagram

Description automatically generated

## Assumptions

Some assumptions for the project include:

* The team will be available for the required period 01/02/2021 - 21/05/2021
* Key stakeholders will be available for the required oversight/governance
* Team have the necessary technical skills

## Constraints

Some limitations are as following:

* Completion of the project
* Working remotely, we can’t physically attend site

## Schedule

The project milestones and tasks are displayed in the table below:

Table

Description automatically generated

# Governance and Controls

*Provide a link to the location of project documentation incl.:*

*Project plan*

*Project registers (incl. risks, issues, actions etc.)*

*Other phase/workstream/team/supplier specific documentation folders*

*Briefly describe how project governance will work (e.g. weekly team meeting to review schedule, risks and issues), and how project reporting will work (e.g. weekly project status report in standard PMO format to project sponsor and team).*

*Only if it they are non-standard, briefly describe how risks, issues, changes and quality will be managed.*

# Initial Risks

*Provide an initial view of project risks. The purpose of this is to promote discussion amongst the team, and to ensure that the approach and schedule mitigate significant risks.*

*It is likely that not many risks will be known at this stage, but describe the ones that you can, and transfer them to the main project risk log.*

*Below is an example format.*

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| # | Description | Impact | Probability | Actions |
| 1 |  |  |  |  |
| 2 |  |  |  |  |
| 3 |  |  |  |  |