**Smart Plant System - Abstract**

**Background to the paper (brief and client) and aim of project**

We were tasked with producing a plant monitoring system utilising IoT and web based technologies. The brief called for the use of a microcontroller with attached sensors that would provide pertinent data on the plant being monitored. The data to be collected consisted of light levels, temperature and humidity readings and the moisture content of the soil. This data then had to be stored within a database, which in turn would be accessed by a website which would display the data in a variety of graphical formats.

The client was looking to expand into the emerging Internet of Things market, having built up an already successful gardening company. The client wanted us to design and build a device that could be used by anyone, not only to appeal to their existing customer base but also to “tech obsessed Millennials who care about the environment but don’t keep any plants in their home”. The idea to merge contemporary technology with the age old art of plant keeping appealed to us as it would provide a unique challenge.

The aim of the project was to provide an easy to use device that required no expert knowledge to operate and maintain. Essentially, we wanted to produce a ‘plug and play’ device that would begin operation as soon as the end user registered the device on the companion website. After registration, the device would start to collect data which would then be displayed via the website, as well as via a built in LCD screen. The user could then use this data to ascertain if their plant was receiving enough water and sunlight

**What we did and how**

In order to achieve the aim of the project, we began concurrent development of the hardware system and the website. We assigned team members according to their strengths and broke the work down using the Sprint methodology. This allowed us to set clear targets and goals over the course of the development, meaning we could track our progress over time. Regular meetings were held [see attached minutes] to ensure the project was progressing as expected, the workload was distributed fairly and gave team members a chance to air any problems they may be having with a certain task.

The website was developed using HTML, CSS and JavaScript. The data visualisations were rendered using the ?????library/plugin/?????.

The physical device is made up of an Arduino Uno to process the data received from the attached sensors. A WeMos board is used to provide a connection to the database via a Wi-Fi connection. The data held in the database is then accessed by the website to provide the basis for the data visualisations. It was important to consider the manner that this data was displayed in as it had to be intuitive and useful to the end user.

**What we found and what you conclude from findings**