**1 Internet of Things**

One of the primary aims of our project is to develop an application of an Internet of Things. The term ‘Internet of Things’ (IoT) refers the resulting network formed between tangible objects and their virtual counterparts, and is the result of linking these two representations via an internet like structure. This is usually done by equipping or embedding objects with sensors, providing them with a unique identifier and thus the ability to communicate without requiring human interaction. [1]

Objects used in an IoT may be anything from household appliances to living creatures. In each of these cases, data from the sensor assigned to an object is transferred over a network and may be accessed in real time, in order to gain insight on temperature, noise levels or other measurable conditions of the object being observed.

**2 Open Geospatial Consortium**

The Open Geospatial Consortium (OGC) is a non-profit international organization, and exists as a medium though which more than 400 organizations worldwide may collaborate to encourage development and implementation of open standards for geospatial services, data sharing and GIS data processing. [2] Founded in 1994, the main focus of the OCG is the creation of a set of technical documents known as OCG Standards. These documents detail encodings, which ensure complex spatial information remains available and relevant to various applications. OCG Standards are developed by a unique consensus process, which ultimately allow geoprocessing technologies to interoperate, thus guaranteeing compatibility between two or more separate products. [3]

2.1 OGC RESTful API

There are two different types of Web Services, the first being Simple Object Access Protocol (SOAP) based, and the second being Representational State Transfer (REST) based. The latter Web Service is a CGI-based application that is similar to using an HTTP form – it was originally described in context of HTTP, but is not limited to it. [4]

To implement our project, we are planning to use the RESTful Web API design model, or RESTful web service. This is an architectural style web API (see section 3 below), implemented using HTTP and REST principles. RESTful requires several necessary aspects, including the media type of the data supported by the Web API, and a set of operations (such as GET, PUT, or DELETE) using HTTP methods as mentioned above. In addition, these aspects should include a base URI for the Web API, and the API should be largely centered on hypertext. [5]

**3 Use of a Common API**

An API (Application Programming Interface) exists to aid developers in writing applications for Web Services such as SOAP or REST. It usually consists of a set of classes that can format and make requests from the Web Service, and thus simplifies the use of the Web Service. [4]

When implementing our project, we will most likely be using multiple devices or sensors. While a unique API may be preferable for a single sensor, [6] this may cause problems when a project requires more than one sensor or dataset. Therefore, we have a need for such a thing as a single, standards-compliant API, common across the entirety of the project.

Linking everything through a common API will facilitate the project in a number of ways: it will centralize and ease the connection process to and from the sensors (this includes reducing connection and execution time of the application, as well as necessary power), it will simplify the code, and finally it will ease the task of maintaining security for one service rather than several. Furthermore, it will be easier for us as the developers to learn one API rather than several during implementation.

Works Cited

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