

## **Lab Center – Hands-On Lab**

Session 1239 - IBM Think2020 IoT Lab -

Hyper Localized Weather and Crop prediction using Watson

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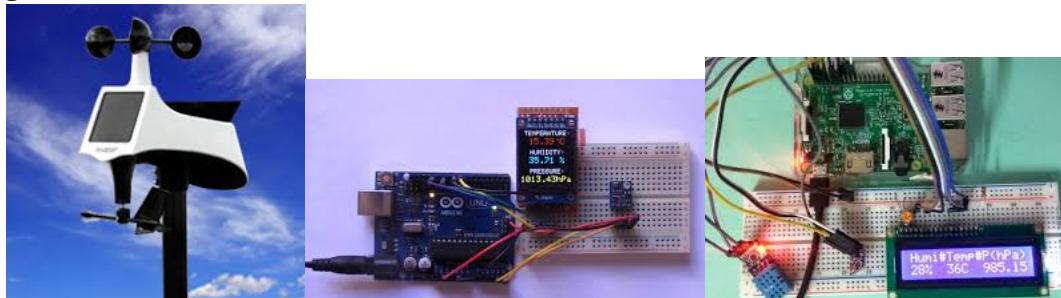
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## 1 Introduction

This Lab will use local weather information from a simulation of a personal weather station (using weather data provided by The Weather Company/Wunderground) or from a Raspberry pi/Arduno with sensors to predict long-term weather for the next two months. We will then use this information -- including temperature, precipitation, UV index, etc -- to select vegetables that are suitable to plant in our local garden.



Note: Please use the github to get detail instruction for the lab and code.

<https://github.com/markusvankempen/ThinkLab1239>

This document is just a high level description of the LAB

### 1.1 Prerequisite

There are a couple of things you will need to sign up for.

- An IBM cloud account - <https://cloud.ibm.com/registration/standard2>
- An TWC apikey - <https://weather.com/swagger-docs/call-for-code>
- A LABid/Number which to access your environment (see <https://github.com/markusvankempen/ThinkLab1239> for more information)
- Determine your geo location / latitude Longitude <https://gps-coordinates.org/>

Ideally you will sign up ahead of time but the Lab will allow time for those who did not.

### 1.2 Skills

In the Lab we will be using a couple of different tools like Node-RED, Watson Studio, Jupyter notebooks - Skills in Python, Javascript and HTML are beneficial.

### 1.3 Environments

We will be using Node-RED instances that are preconfigured (see <https://github.com/markusvankempen/ThinkLab1239> for more information).

However, you will need to create a Watson Studio instance using your credentials.

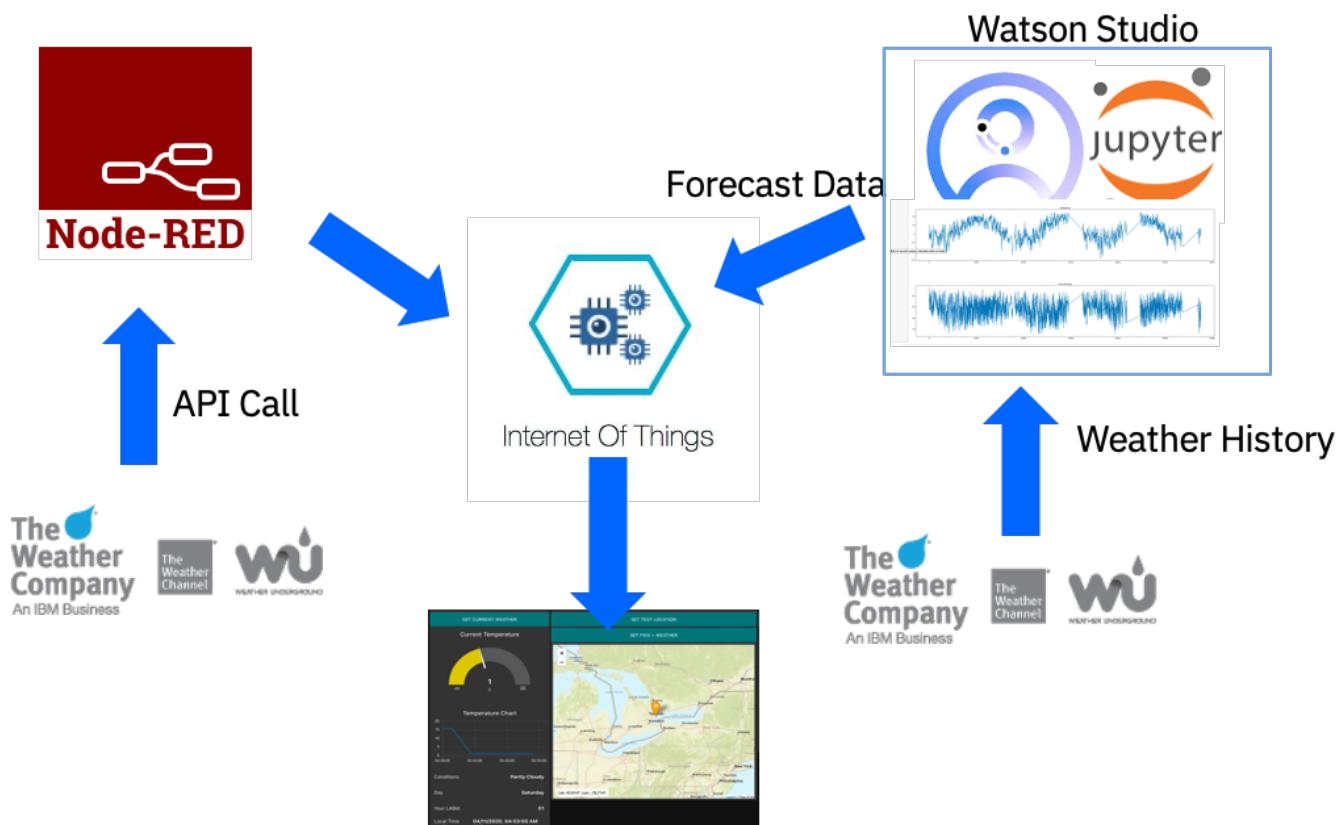
### 1.4 Lab Structure

The Lab will be a guided tour. We will show you the environments, set up some data connections, and explain some basic functions of the Tools dashboard. We will give you some exercises and there will be time to explore and play with the setup as well.

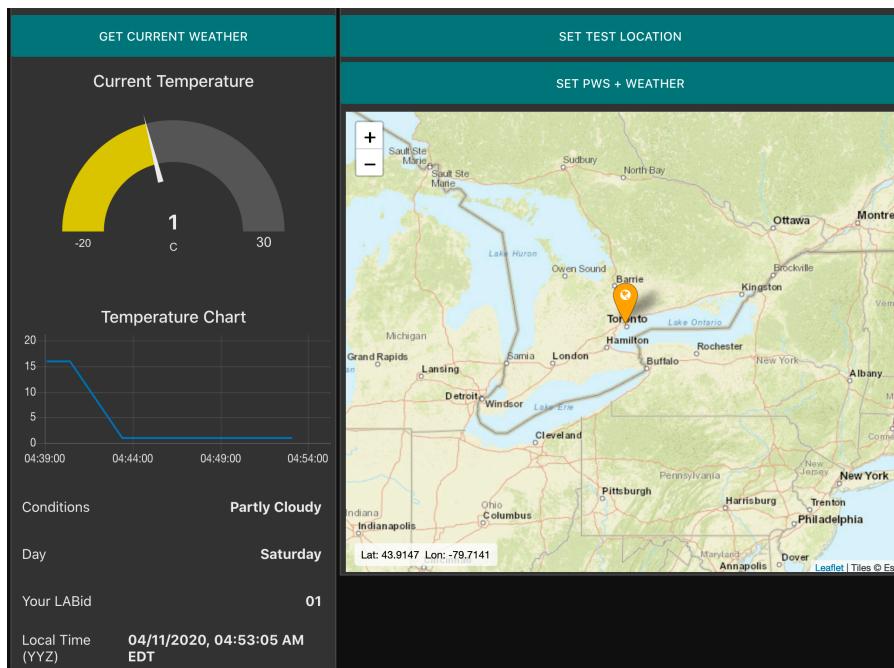
Here are the main activities:

- 1) Setup your Personal Weather Station (PWS) and Dashboard
- 2) Setup Watson Studio with Jupyter notebook
- 3) Explore weather dataset and predict temperature
- 4) Pull the weather prediction back into the PWS Dashboard
- 5) Mashup the weather prediction with the Vegetable dataset
- 6) Build a Dashboard to display the Vegetable and weather information

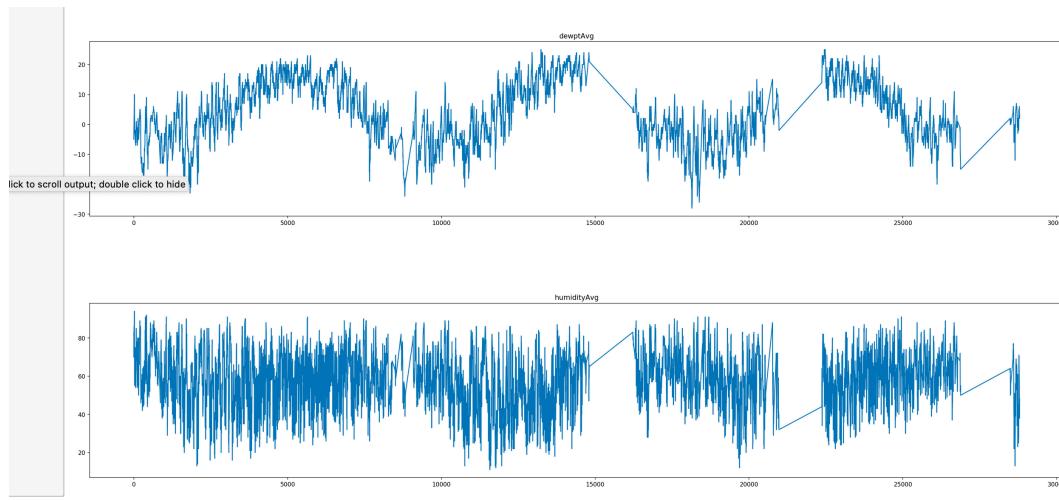
### 1.5 High Level Architecture



### 1.5.1 PWS Dashboard Example



### 1.5.2 Watson Studio/ Python Notebook example



Please visit

<https://github.com/markusvankempen/ThinkLab1239>

to get started with your LAB

Cheers

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