ThingWorx™

A PTC® Business

What is ThingWorx?

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What Can ThingWorx Do For You?

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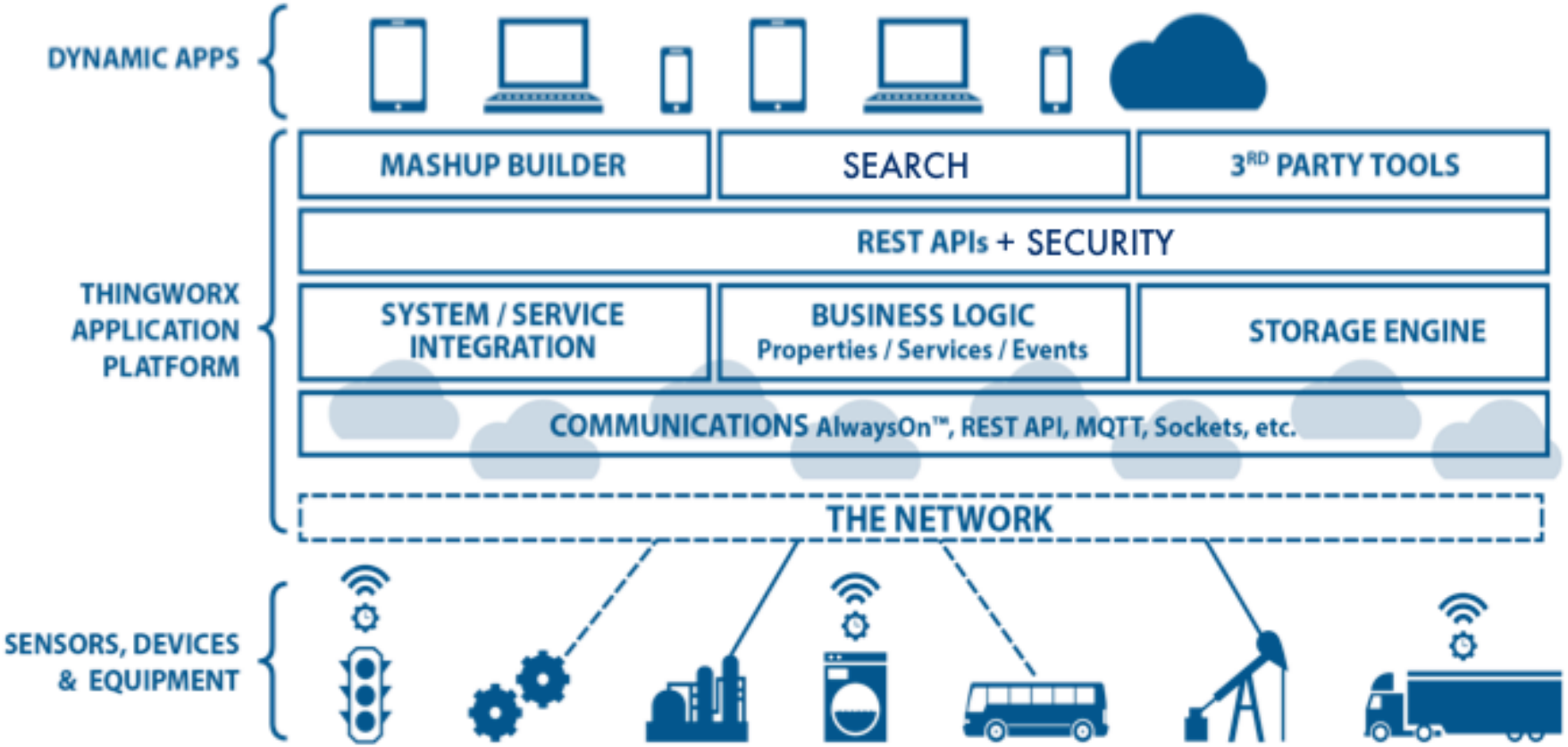
- **Provide a compelling web interface for your device**
  - Graph data for analysis
  - Configure your device
  - Share your data as a web
  - Integrate your device with external resources

- **Collect and Store Data from Your device**
  - Provide a data modeling and development environment
  - Collect acquired data for future use
  - Monitor and alert you when conditions occur
  - Manage Multiple Devices

- **Simplify communications between you and your device**
  - Real time communications from your device to the server
  - Fast, firewall friendly and encrypted connections

The ThingWorx Stack



Building Rich Clients

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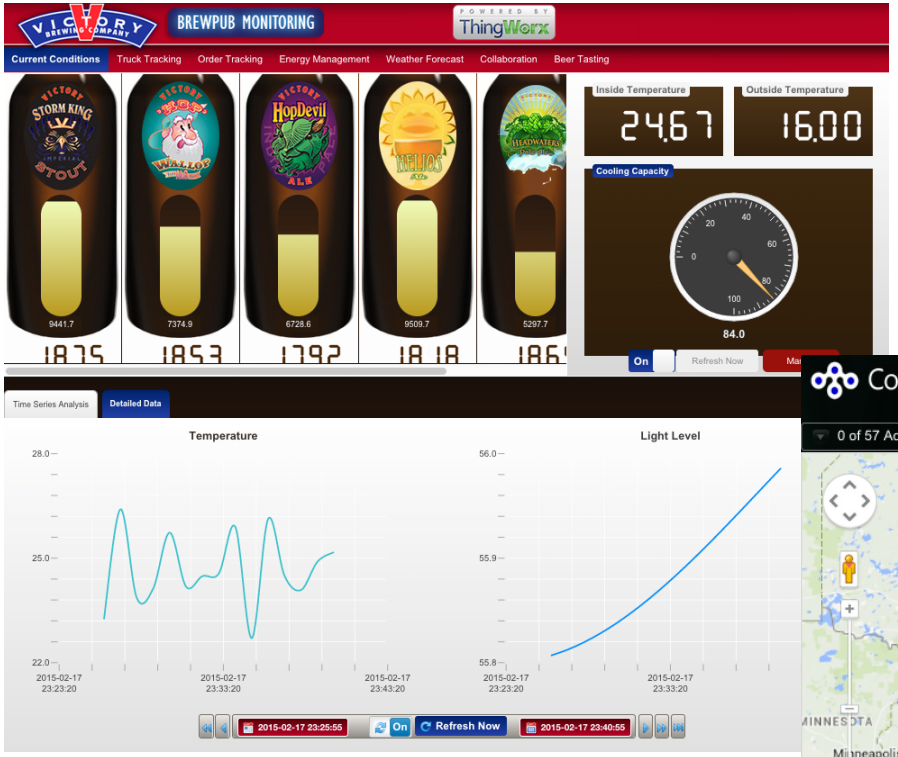
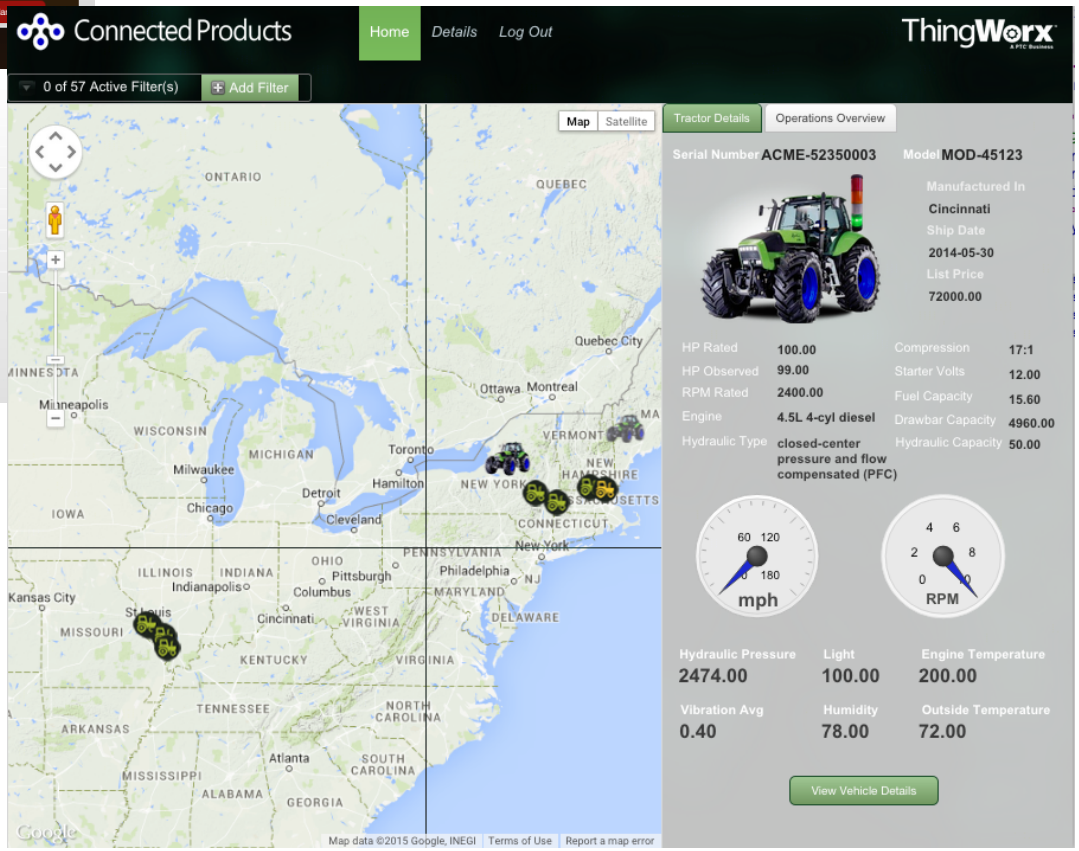


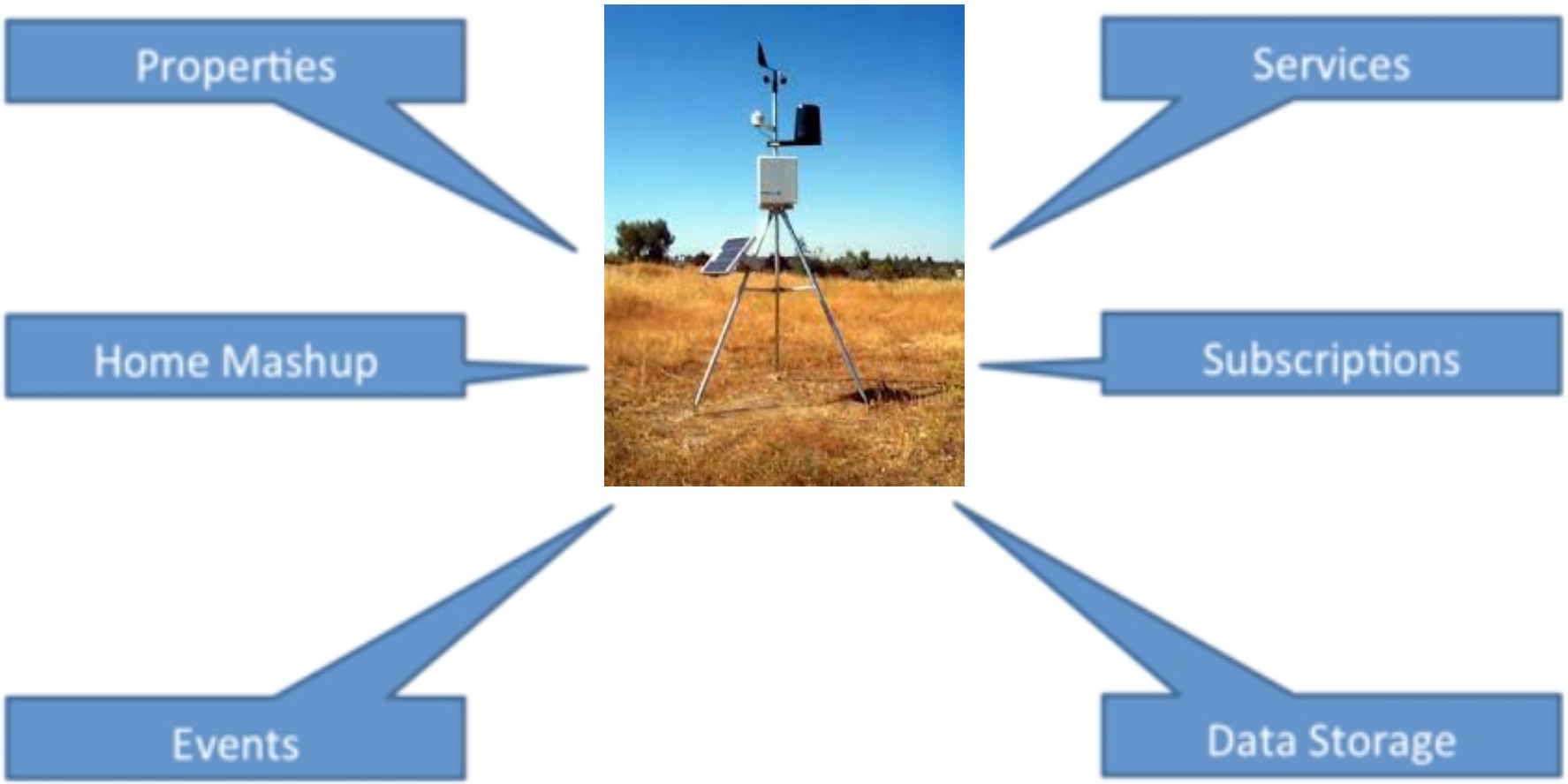
- Web Applications without HTML
- Data Modeling & High Performance Storage without SQL
- External Integrations



- Rich Library of Widgets
- Browser Based Development
- User Authentication and Security Built In

Some ThingWorx Terminology

- A **Thing** represents a device, physical asset, system or business process
- An example of a **Thing** could be this Portable Weather Station….



A Few More Terms…

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- **ThingTemplates –** Like base classes in a Object oriented language
- **Edge Micro Server (EMS)** – A device embeddable service providing a real time data channel to the ThingWorx server.
  - Available in C, Objective C, Java, and .NET versions
- **The Composer** – A Web Based Modeling and Development Environment
- **MashUps** – Web Pages constructed with **Widgets** that know how to connect with data on the ThingWorx server
- **Streams** – Fast data storage used to capture the **Properties** of your Things as they change over time.

My Three Weather Stations

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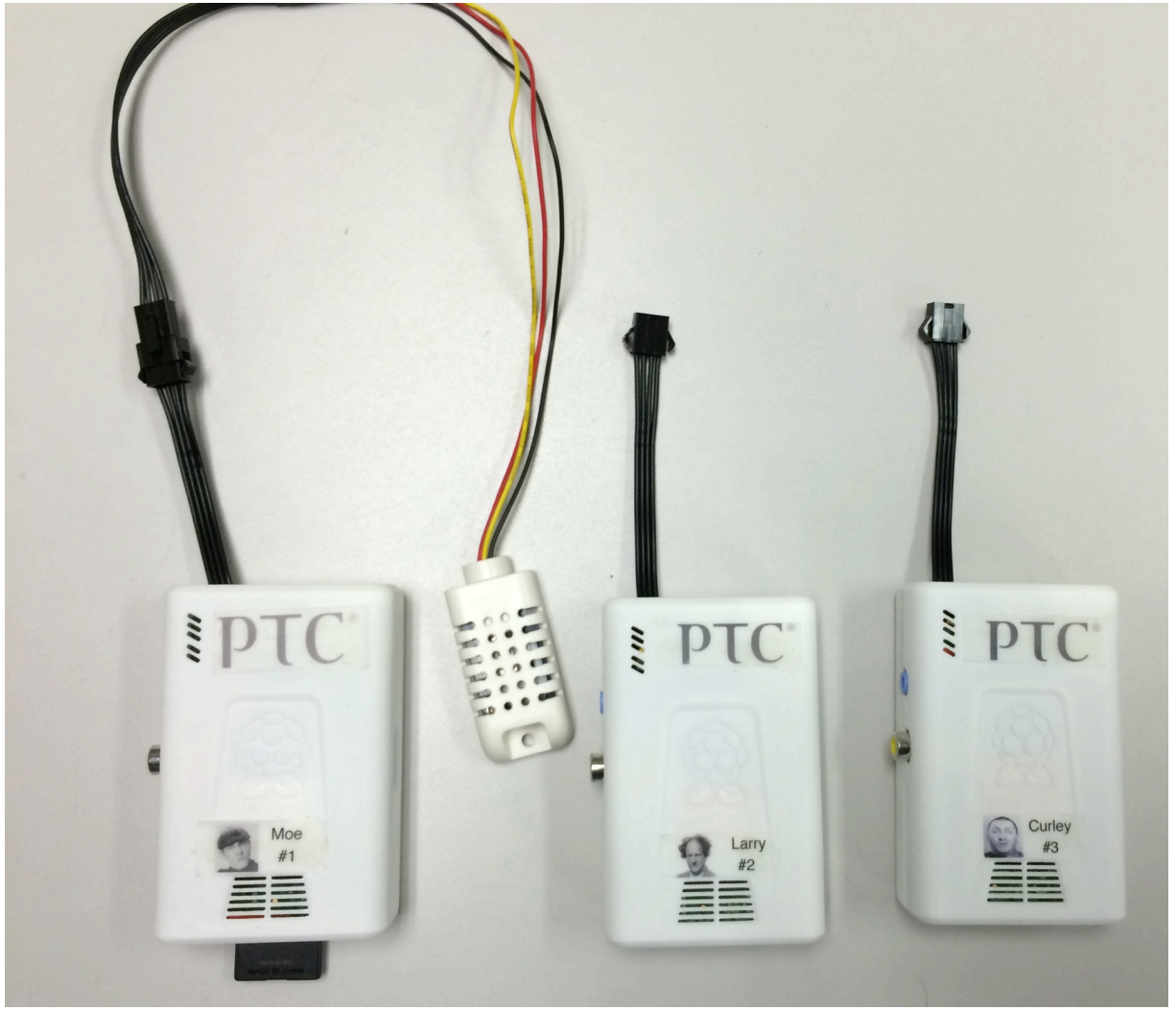
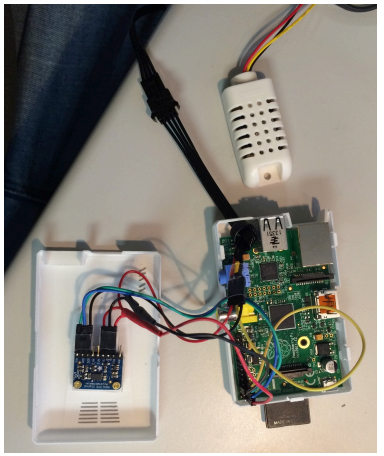
- Meet Moe, Larry and Curley



Lets Build Something…



- A Simple Weather Station consisting of:
  - A Raspberry PI with:
    - A Temperature & Humidity Sensor
    - An Edge Micro Server (EMS)
  - A ThingWorx Server
    - A Data Model (Thing) representing the Station
    - A Stream Recording Its Readings
    - A Single Page Mashup Displaying These Values

EMS Demonstration

- **Java Based EMS Running on as Raspberry PI**
- PI has an AM2302 temperature & Humidity Sensor
- Communicates with the PI over the I^2C Bus

- Source Code for this EMS Available at http://www.thingworx.com/academic_content/r-pi-weather-app/

Edge Server Setup Demo

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- Review Java Edge Server Code
- Discuss Properties and How they are collected
- Discuss deployment and setup on the PI

Creating The Mashup

- Discuss Composer
- Import WeatherStationTemplate ThingTemplate
- Create WeatherStationLog Value Stream
- Create MoeWeatherStation Thing
- Build Mashup

Temperature C

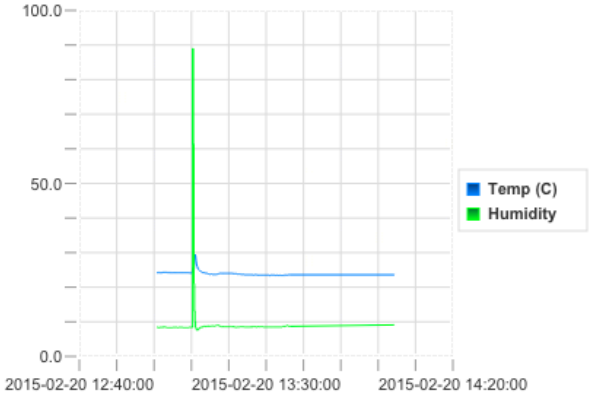
23.70

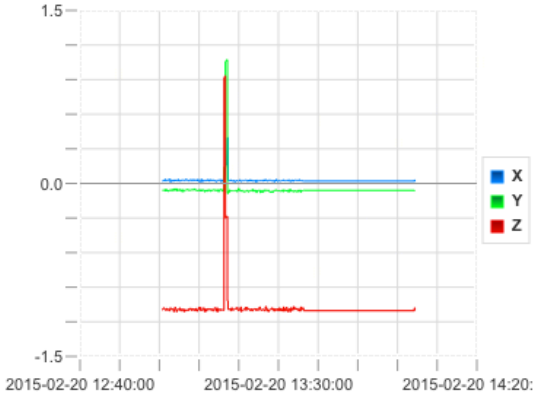
Humidity

9.10

On

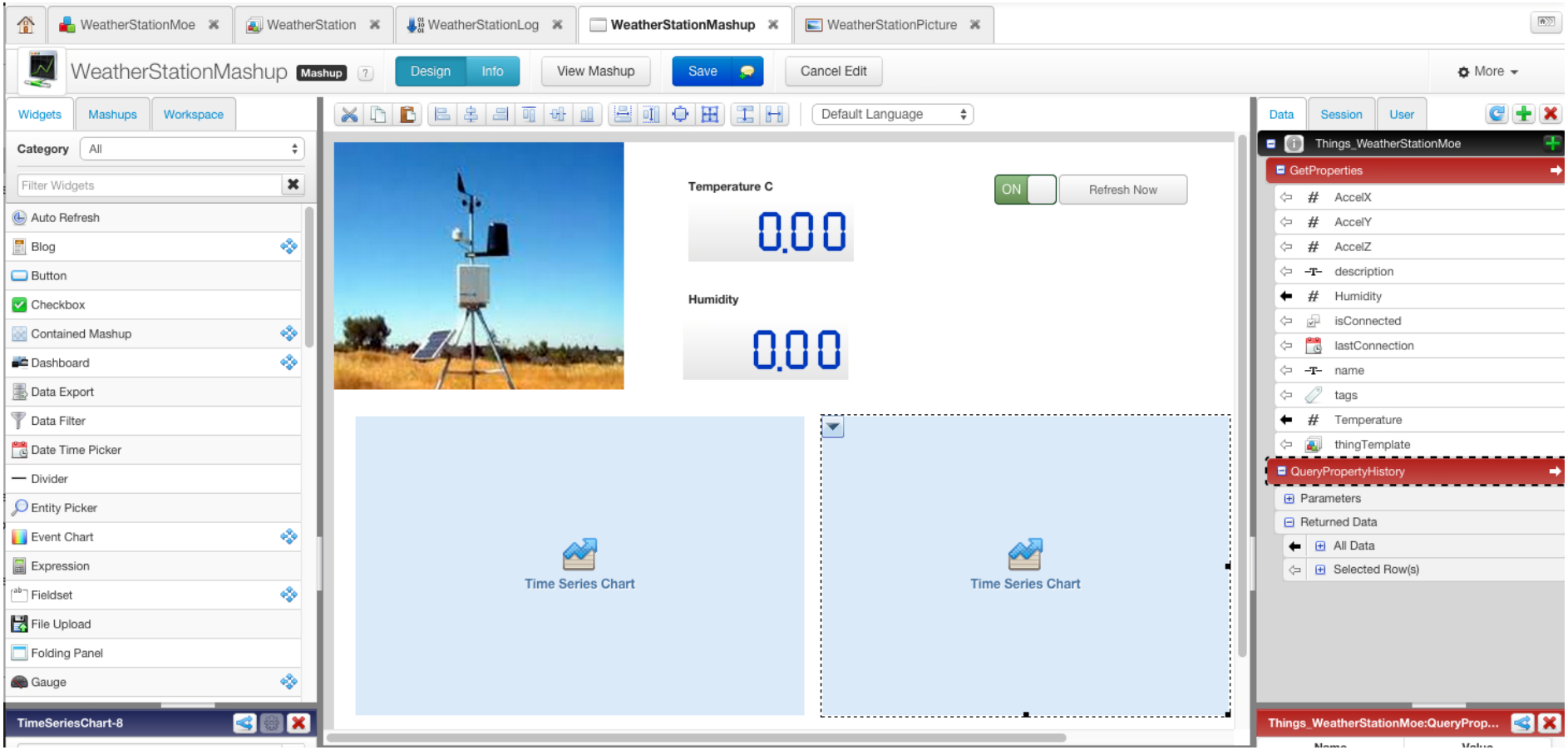
Refresh Now





Using the Composer

- In the composer we Bind Widgets to Services



Learn More

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- **Students?** – Schools can register to use ThingWorx in their programs at no cost with the ThingWorx Academic Program http://www.thingworx.com/academics/

- **FIRST Robotics Teams and Individuals?** – ThingWorx is available at no cost for all teams and select Makers through the ThingWorx Academic Program http://www.thingworx.com/academics/

- **Businesses** – See if the ThingWorx Platform is right for you by requesting a Self Guided Experience Tutorial along with a 15 day free trial of the product at http://www.thingworx.com

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