

Giant Clouds, Tiny Computers

Salesforce.com Meets the Raspberry Pi

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SELL. SERVICE. MARKET. SUCCEED.

Where to find stuff:

- <http://developer.force.com>
- Github: ReidCarlberg
 - LAB-Wireless-Sensor-Network
- SlideShare: ReidCarlberg
- Twitter: @ReidCarlberg
- LinkedIn: ???????



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Our Mission: Cloud Computing Driver, Catalyst and Evangelist

Mainframe



Client/Server



Enterprise
Cloud Computing

No Hardware/Software
Subscription Model
Automatic Upgrades
Constant Innovation

1960s

1980s

Today

salesforce®

The World's #1 Cloud Platform for Building Apps



The Fastest Path From Idea To App



Open: Access Your Data Anywhere, Anytime

Any Data Salesforce API



API: Nearly
50%
Of All Transactions

Simple, powerful & secure API's
SOAP, REST, Bulk, Metadata, Apex &
Visualforce

Any Device Salesforce Touch



HTML5 app runs on any device (iPad today)
Intuitive interface built for users on the go
Optimized for touch – tap, scroll, swipe

Trusted: Our Highest Value

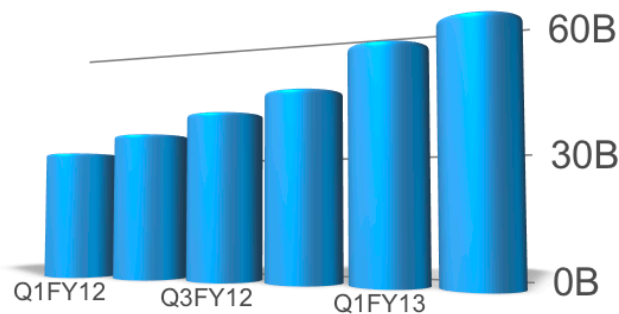
Trust.salesforce.com

North America Instances								
Instance	Current Status	Sep 21	Sep 20	Sep 19	Sep 18	Sep 17	Sep 16	Sep 15
<input type="checkbox"/> NA0 (SSL)	✓	✓	✓	✓	✓	✓	✓	✓
<input type="checkbox"/> NA1	✓	✓	✓	✓	✓	✓	✓	✓
<input type="checkbox"/> NA2	✓	✓	✓	✓	✓	✓	✓	✓
<input type="checkbox"/> NA3	✓	✓	✓	✓	✓	✓	✓	✓
<input type="checkbox"/> NA4	✓	✓	✓	✓	✓	✓	✓	✓
<input type="checkbox"/> NA5	✓	✓	✓	✓	✓	✓	✓	✓
<input type="checkbox"/> NA6	✓	✓	✓	✓	✓	✓	✓	✓
<input type="checkbox"/> NA7	✓	✓	✓	✓	✓	✓	✓	✓
<input type="checkbox"/> NA8	✓	✓	✓	✓	✓	✓	✓	✓
<input type="checkbox"/> NA9	✓	✓	✓	✓	✓	✓	✓	✓
<input type="checkbox"/> NA10	✓	✓	✓	✓	✓	✓	✓	✓
<input type="checkbox"/> NA11	✓	✓	✓	✓	✓	✓	✓	✓
<input type="checkbox"/> NA12	✓	✓	✓	✓	✓	✓	✓	✓
<input type="checkbox"/> NA13	✓	✓	✓	✓	✓	✓	✓	✓
<input type="checkbox"/> NA14	✓	✓	✓	✓	✓	✓	✓	✓

Updated 10/8/12 11:47:15 PM UTC

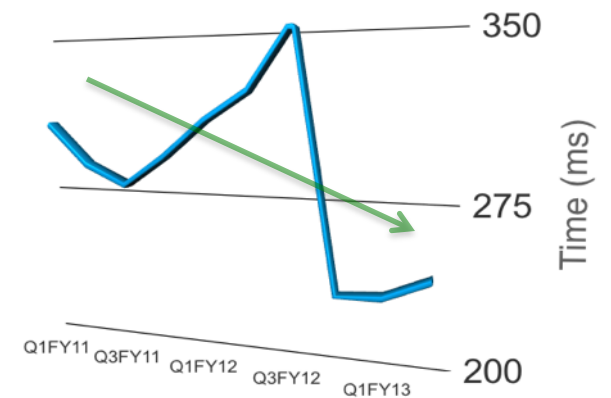
Transactions per Quarter

59B Transactions
69% YoY Growth



Average Page Time

FY12: 306ms
FY13: 241ms



Toyota Connects People, Cars, Dealerships, and Manufacturers using Social



Built a product social network that allows your car to be your friend

Car console provides access to information directly to the driver

Toyota Friend app connects owners to dealers, manufacturers, and friends via one environment



<http://www.youtube.com/watch?v=9falmVgjq6o>

GE Share



General Electric & Salesforce.com Leveraging Machine to CRM Integration

<http://www.youtube.com/watch?v=OFmsP7qAhQI>

salesforce

Connect Your **Products** Into the Salesforce Platform



The Social Machine® Powered By Etherios
Machine to Machine (M2M) Connectivity into the Salesforce Platform
★★★★★ (No Rating)

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The Social Machine® is a strategic and transformative solution that enables organizations to connect their products with the Salesforce Platform. Gain a strategic advantage with The Social Machine.

RELEASED
4/19/2013

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CATEGORIES
Field Service

Watch a Demo

Active Alarm Events

Age	Alarm Event Name	Alarm Type	Device Type	Device Group	Serial Device	Occurrence Date	Acknowledge Date
9 seconds	Alarm-20020	High Temp	Unlabeled Device	Southern Region	100008-100000	4/10/2013 7:45 AM	
9 seconds	Alarm-20027	High Temp	Unlabeled Device	Eastern Region	100009-100000	4/10/2013 7:45 AM	

Device Groups

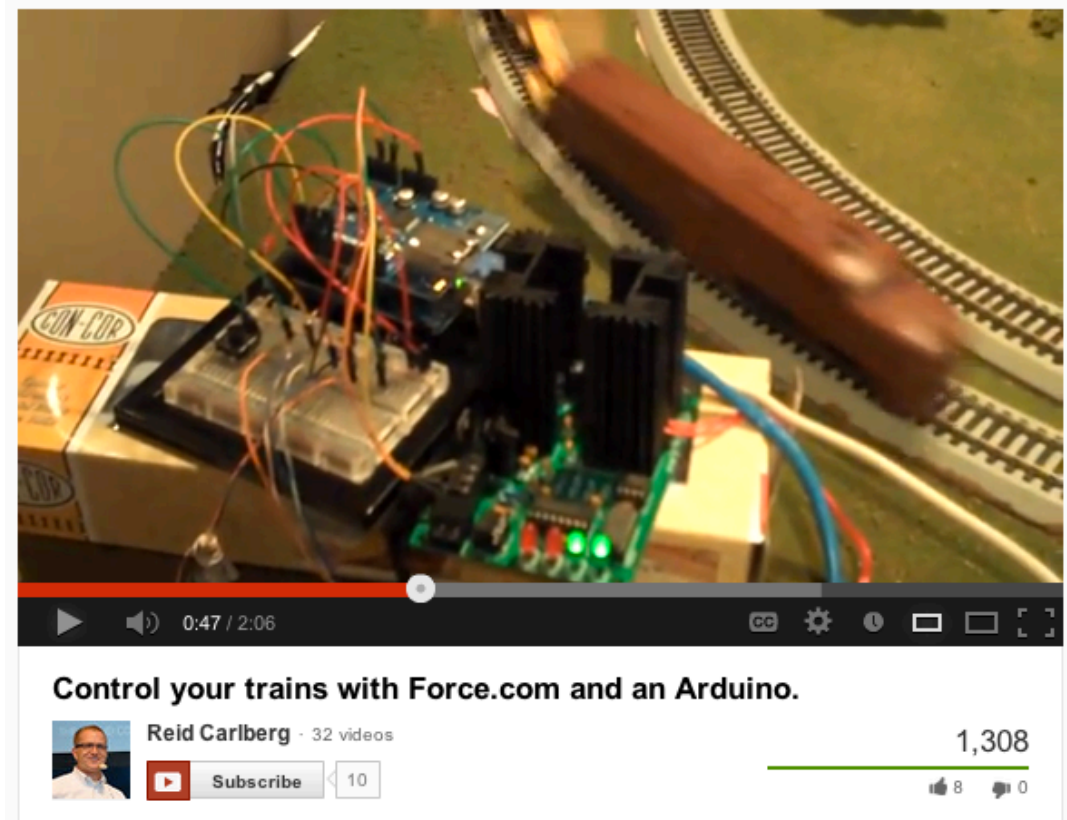
Name	Sub-Groups	# Devices	# Active Alarm Events
North	0	0	0
Eastern Region	0	34	1
Southern Region	0	33	1
Western Region	0	33	0

TSM Device Cloud Home Screen



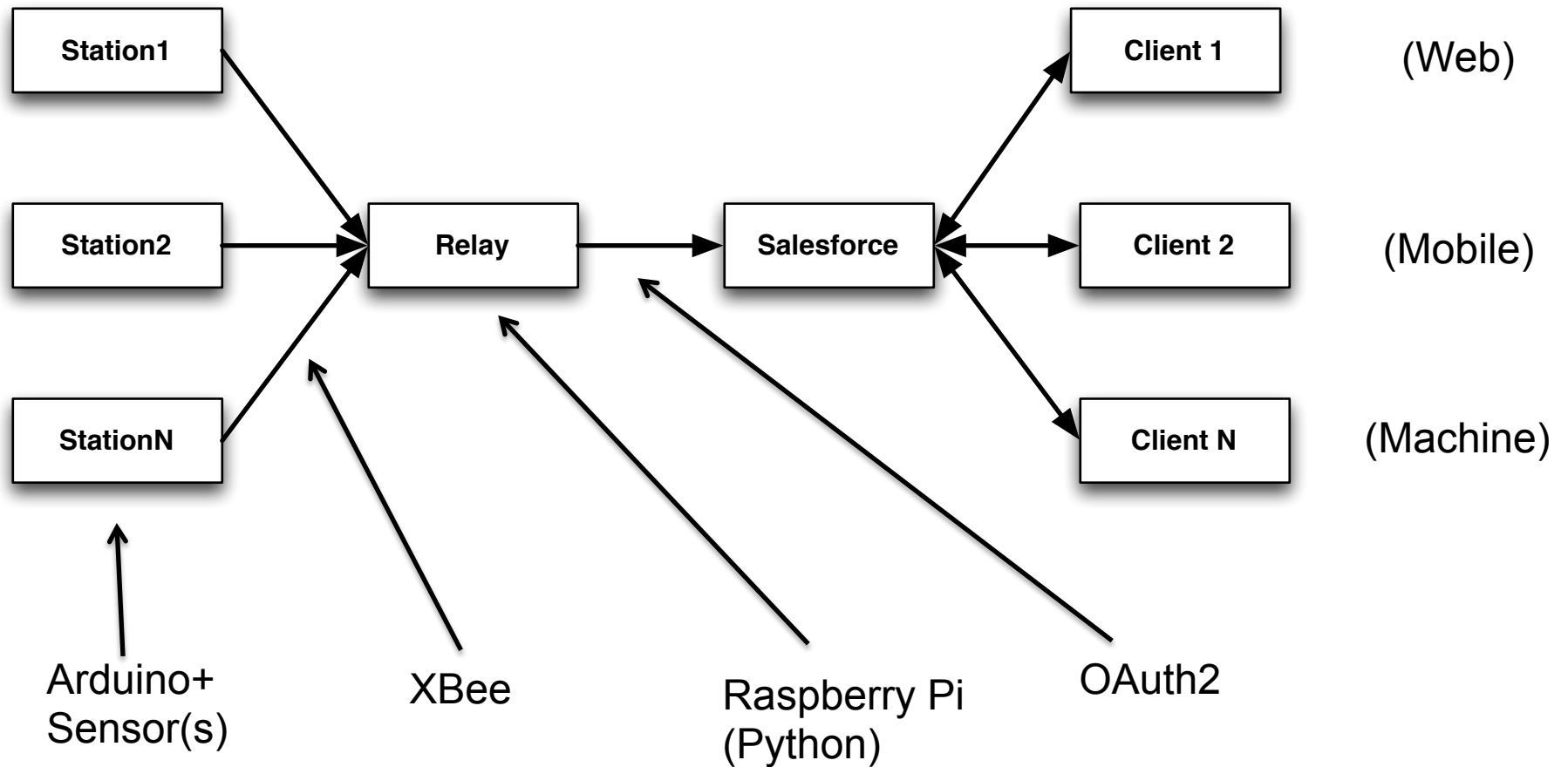
Round 1: Model Train Control

- Arduino
- Ruby Proxy
- Salesforce



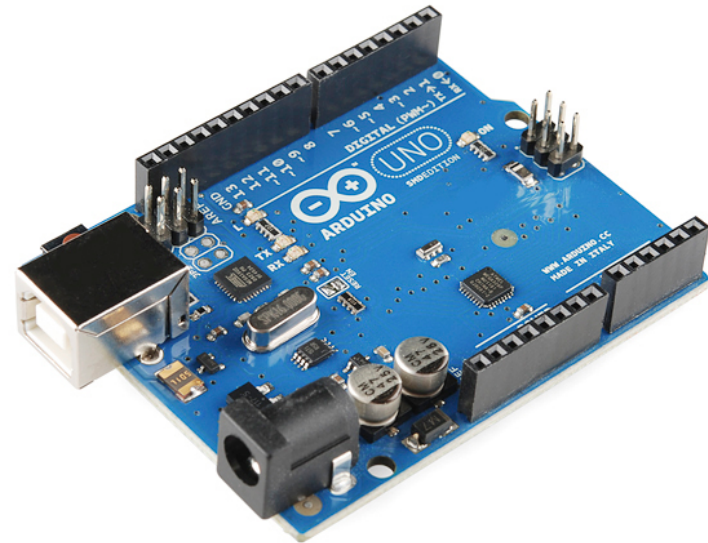
<http://www.youtube.com/watch?v=i7iLeN27zfA>

Round 2: Wireless Sensor Network



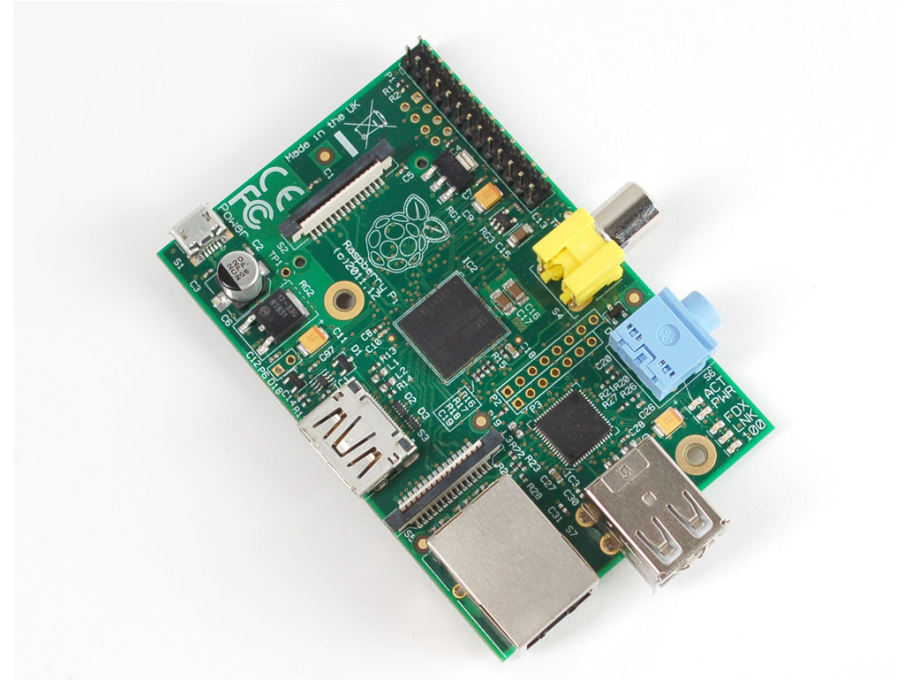
Arduino

- ~\$30
- Built in Analog to Digital Converter
- Lots of Device Support
- HTTP Support
 - Ethernet / WiFi
- No SSL



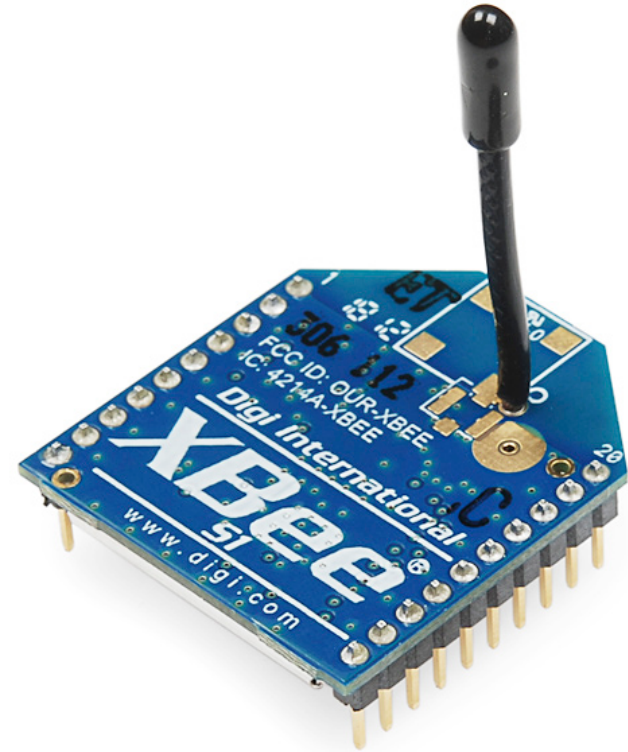
Raspberry Pi

- ~\$40
- Linux
- Python (+whatever)
- USB
- Ethernet
- HDMI Output
- `/dev/ttyama0`
- No Analog to Digital Converter



The XBee

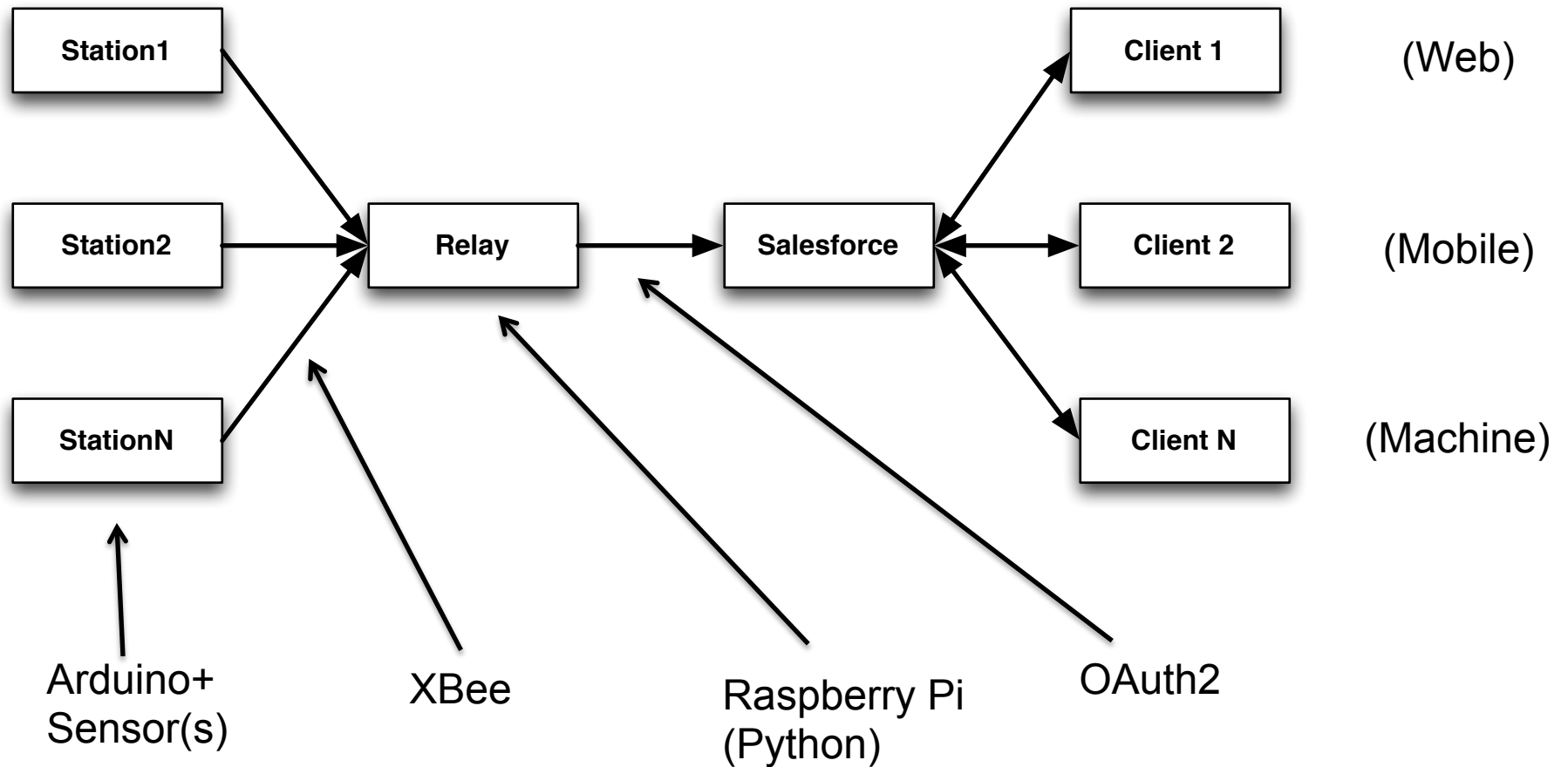
- ~\$22
- ~300ft / 100m range
- Serial communication
- Arduino: connects to serial port via shield
- Raspberry Pi: connects to serial port via wires
- (Made by Digi)
- (Who bought Salesforce partner Etherios last year)



Arduino / RPi / XBee Notes

- XBee shield prevents Arduino programming – be sure to flip the switch!
- RPi's GPIO board Serial Port is in use by default.
 - Edit inittab and command.txt to remove TTYAMA0 references
- RPi's GPIO access requires SUDO by default, TTYAMA0 does not.
- Temperature sensing – I need to do more work here.
- Soldering sucks! (But it's easier with thinner soldering wire.)

Round 2: Wireless Sensor Network



Salesforce & OAuth2

- Point & Click Configuration
- Autonomous Client / Username & Password flow

RemoteStationMonitoring

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Version	1.0
Status	Unpublished Changes (Publishing is supported only for chosen.)
Description	
Developer Name	RemoteStationMonitoring
Created Date	4/20/2013 12:55 PM By: Reid Carlberg
Contact Phone	
Contact Email	reid.carlberg@salesforce.com
Last Modified Date	4/22/2013 9:21 AM By: Reid Carlberg

▼ Basic Information

Info URL

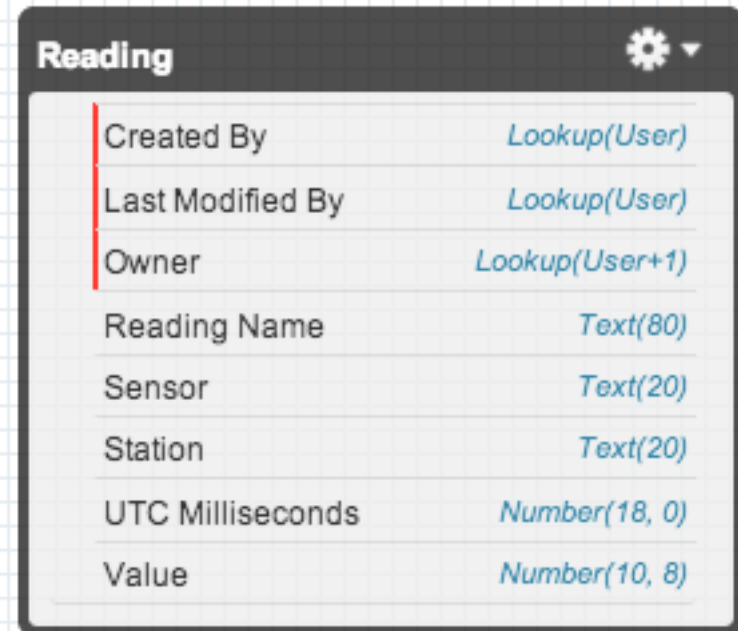
▼ API Integration

Consumer Key 3MVG9y6x0357Hlecs3NUZJhV6Llxv0zUhiOdO.Yw4eH3c1KqYYihl9w6.4w4Vv63giAMsD35owc_MJ6jjKBXa

http://wiki.developerforce.com/page/Digging_Deeper_into_OAuth_2.0_on_Force.com

Salesforce & Your Data

- Point & Click Configuration
- Used a minimalist object
- Robust possibilities
- Highly performant



The image shows a screenshot of a Salesforce table named "Reading". The table has a dark header bar with the name "Reading" and a gear icon for settings. The table body contains eight rows, each representing a field definition. The first three rows ("Created By", "Last Modified By", and "Owner") are highlighted with a red vertical bar on the left. The fields are defined as follows:

Field Name	Field Type
Created By	Lookup(User)
Last Modified By	Lookup(User)
Owner	Lookup(User+1)
Reading Name	Text(80)
Sensor	Text(20)
Station	Text(20)
UTC Milliseconds	Number(18, 0)
Value	Number(10, 8)

Salesforce & Your API

- Automatic REST & SOAP APIs
- Governor Limits
- Custom endpoints

```
1 @RestResource(urlMapping='/StationReading/*')
2 global with sharing class ReadingResource{
3
4     @HttpPost
5     global static String doPost(String Station, String Sensor, String Value) {
6
7         LABR_Reading__c newReading = new LABR_Reading__c();
8         //station
9         newReading.Station__c = station;
10        //sensor
11        newReading.Sensor__c = sensor;
12        //value
13        newReading.Value__c = Double.valueOf(value);
14        //timestamp in milliseconds (useful for graphing)
15        newReading.UTC_Milliseconds__c = DateTime.now().getTime();
16
17        insert newReading;
18
19        return 'processed';
20    }
21 }
22 }
```

<http://www.salesforce.com/us/developer/docs/apexcode/index.htm>

Salesforce & Storage

- Optimized for customer & business data
- Store what's customer & business relevant
- Heroku has great options for massive data



Salesforce Notes

- Use a free Developer Edition – they're FREE & easy
 - <http://developer.force.com/signup>
- OAuth Client IDs take a few minutes to propagate
 - If you see an unknown client id error, grab a coffee
- If you want a Mobile Client, check out our Mobile Packs
 - <http://www2.developerforce.com/mobile/services/mobile-packs>
- If you see server error (500) responses, clear old data
 - Click the “System Overview” link in your Setup area.
- Your Security Token Is Your Friend
 - Setup > My Information > Security Token

Demo!



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