Building a connected app….

Building a device-connected app….

While it's connected device is also being built
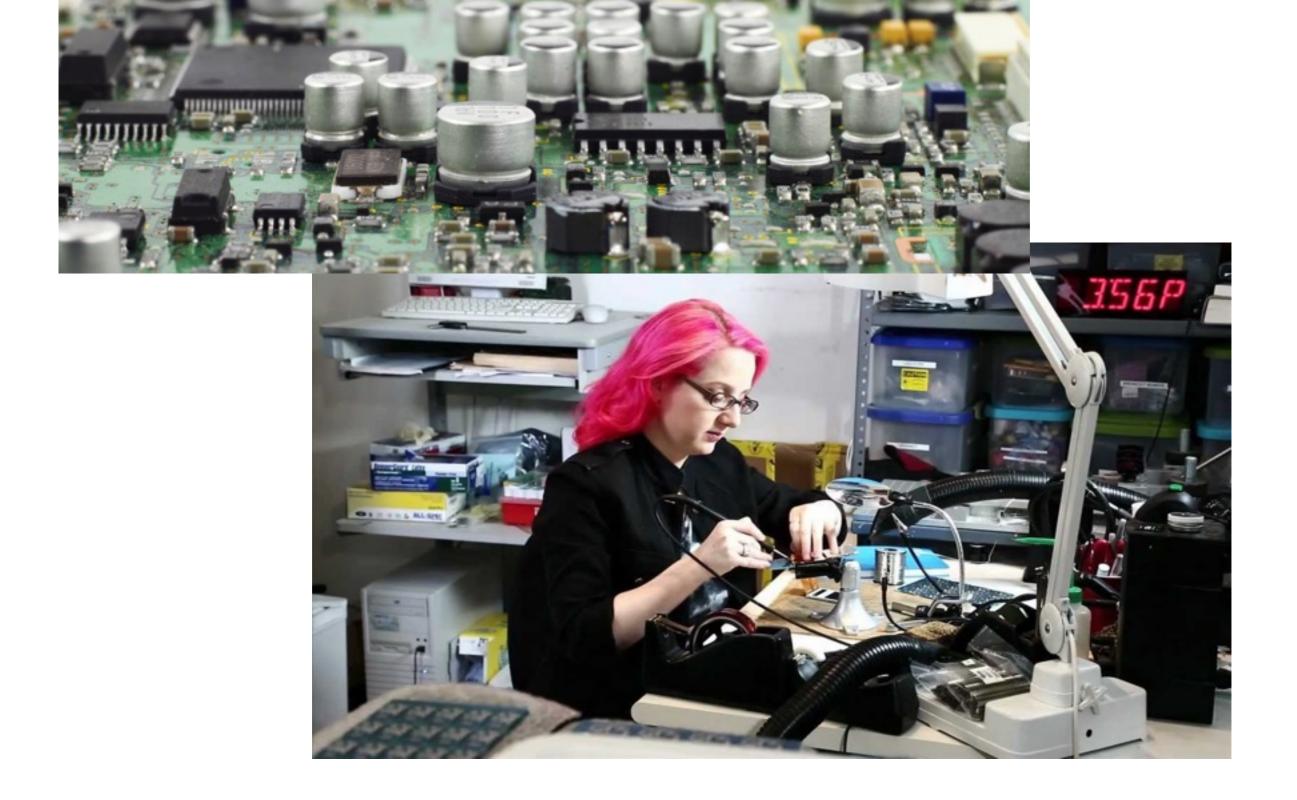
Hardware Startups

CoreBluetooth
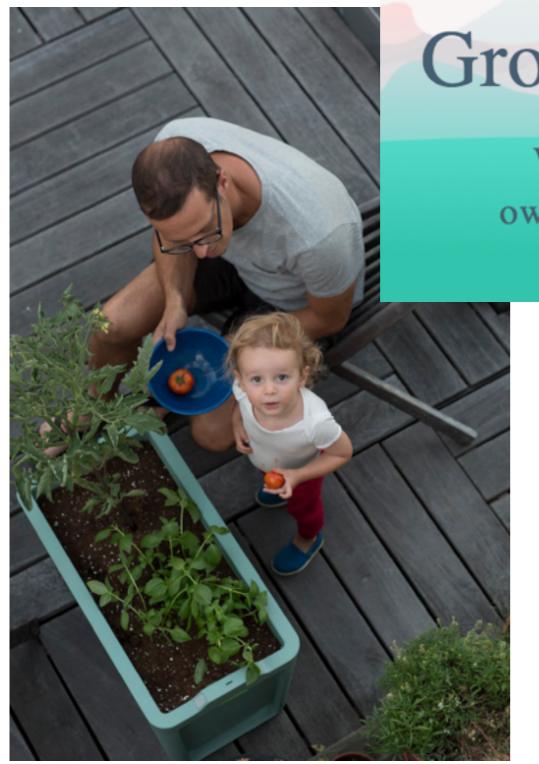
Grow

Growing made dirt simple

We believe the benefits of growing your
own food should be accessible to everyone.
Our aim is to make that happen.

This Talk

Universal Goals

Universal Goals

Product/Business
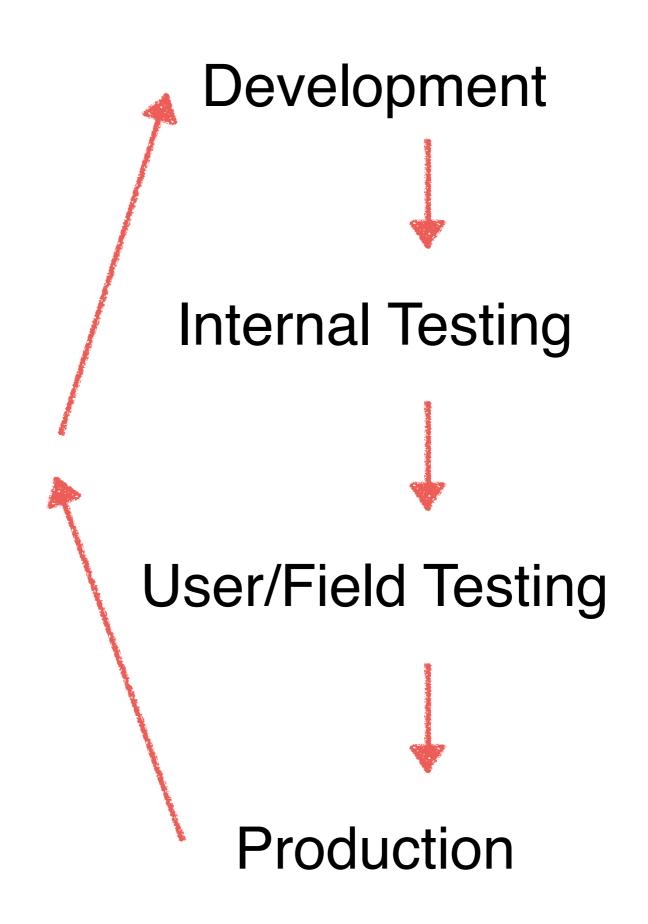Success

Universal Goals

Product/Business Success

Delight Customer

Universal Goals

Product/Business
Success

Engineer Effectively
& for Longevity
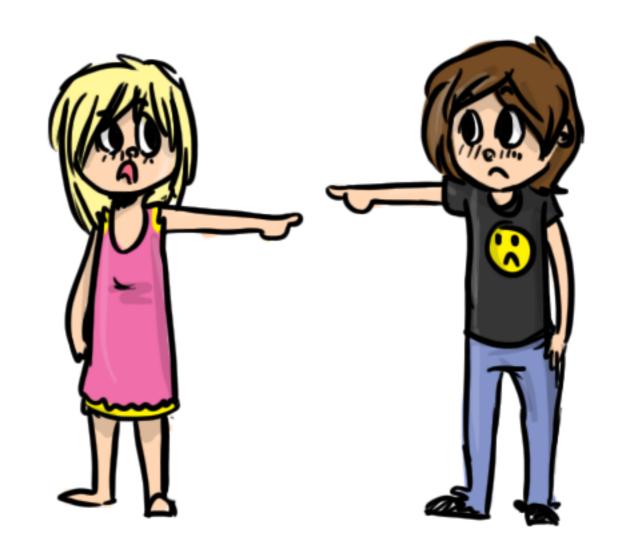
Delight Customer

Typical
Pipeline
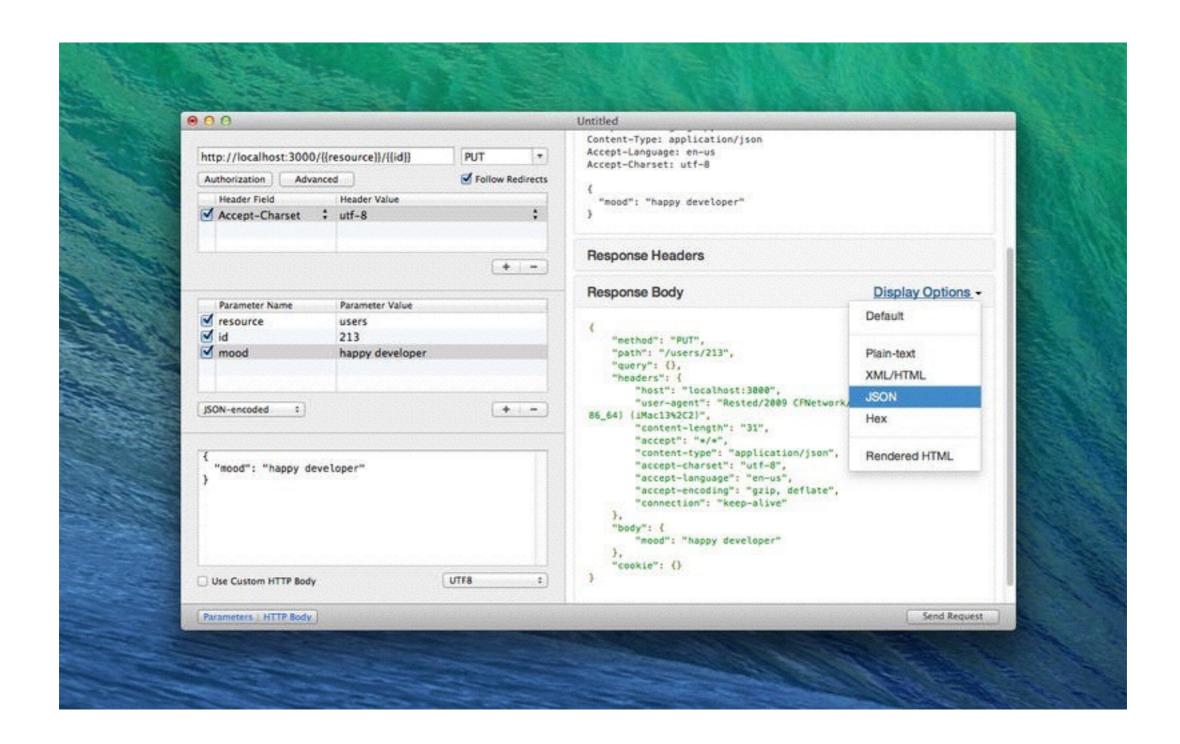
Development
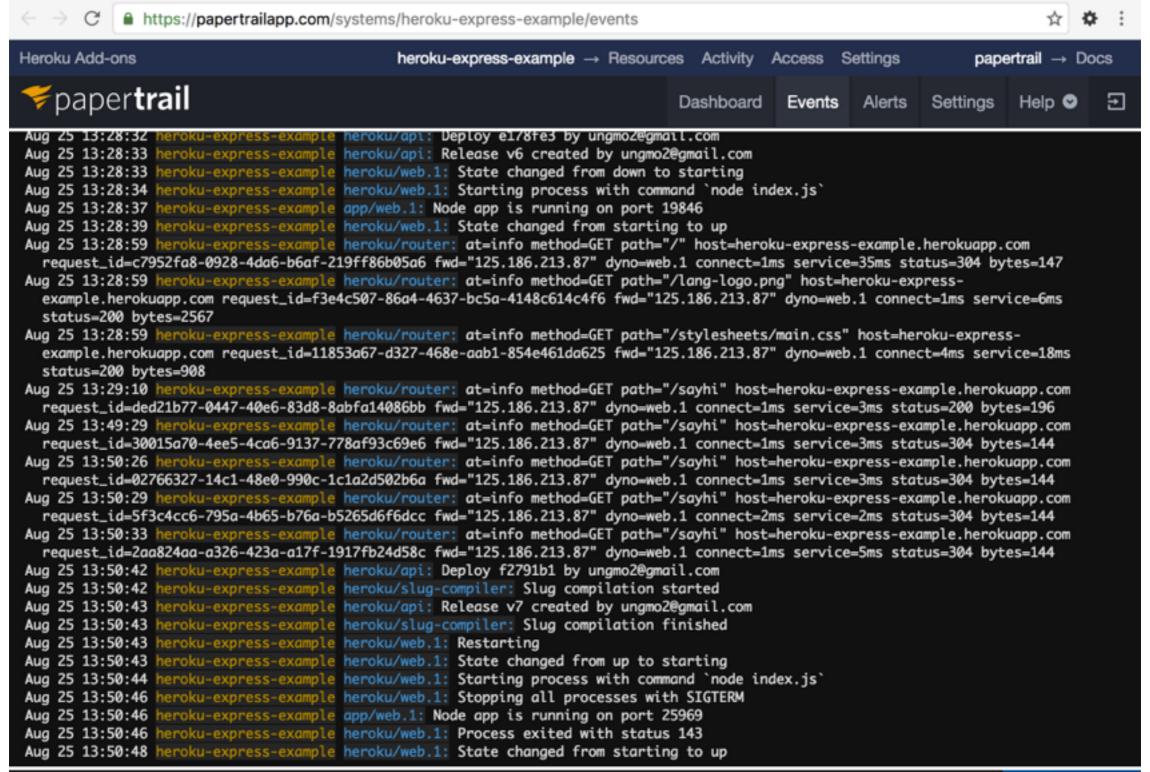
Internal Testing

User/Field Testing

Production

Development

Standard Approach

Standard Approach

Standard Approach
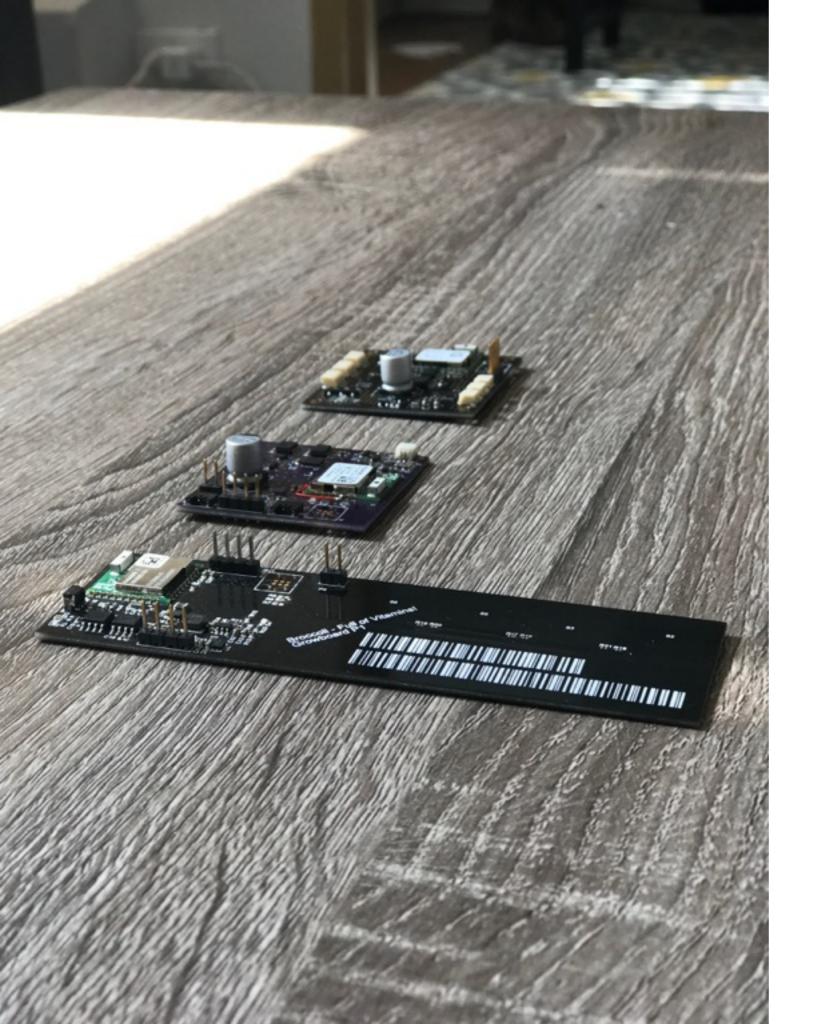
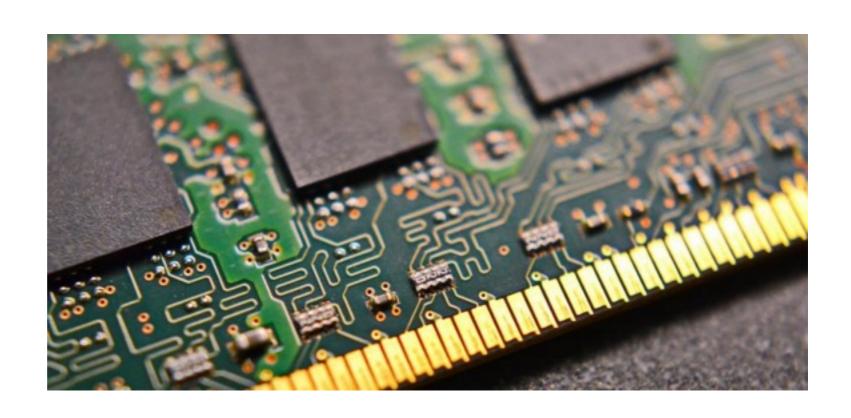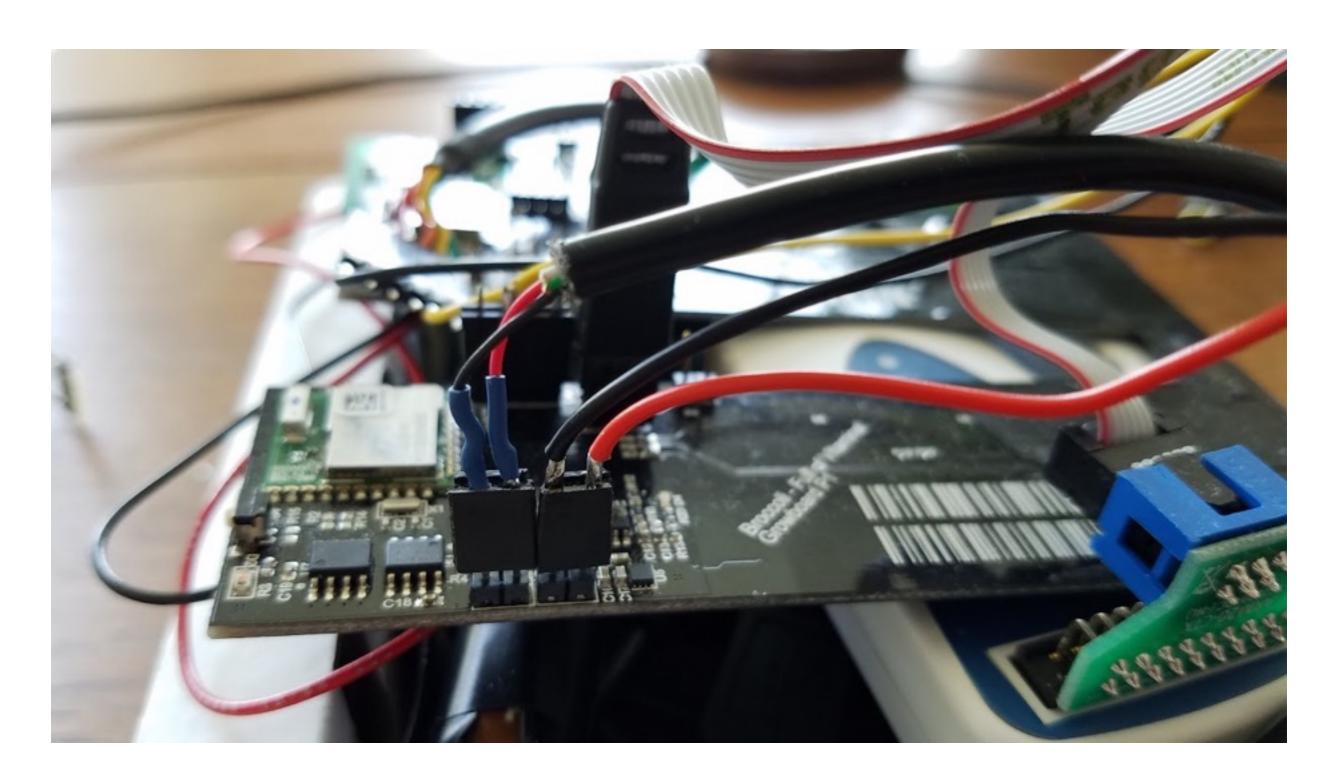# What's Different w/ Hardware

Isolated
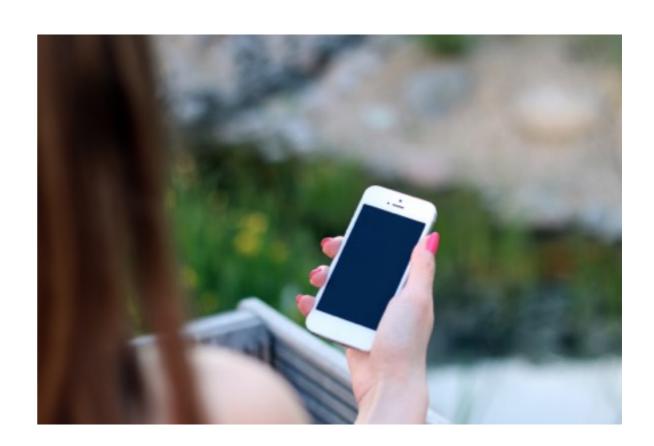Device

Logging Limitations

Actual Firmware Dev Approach

In steps the App!

Lab/Field Testing

Grow's Model

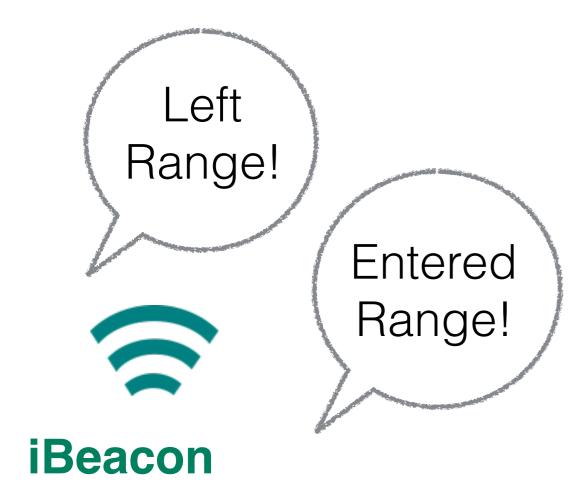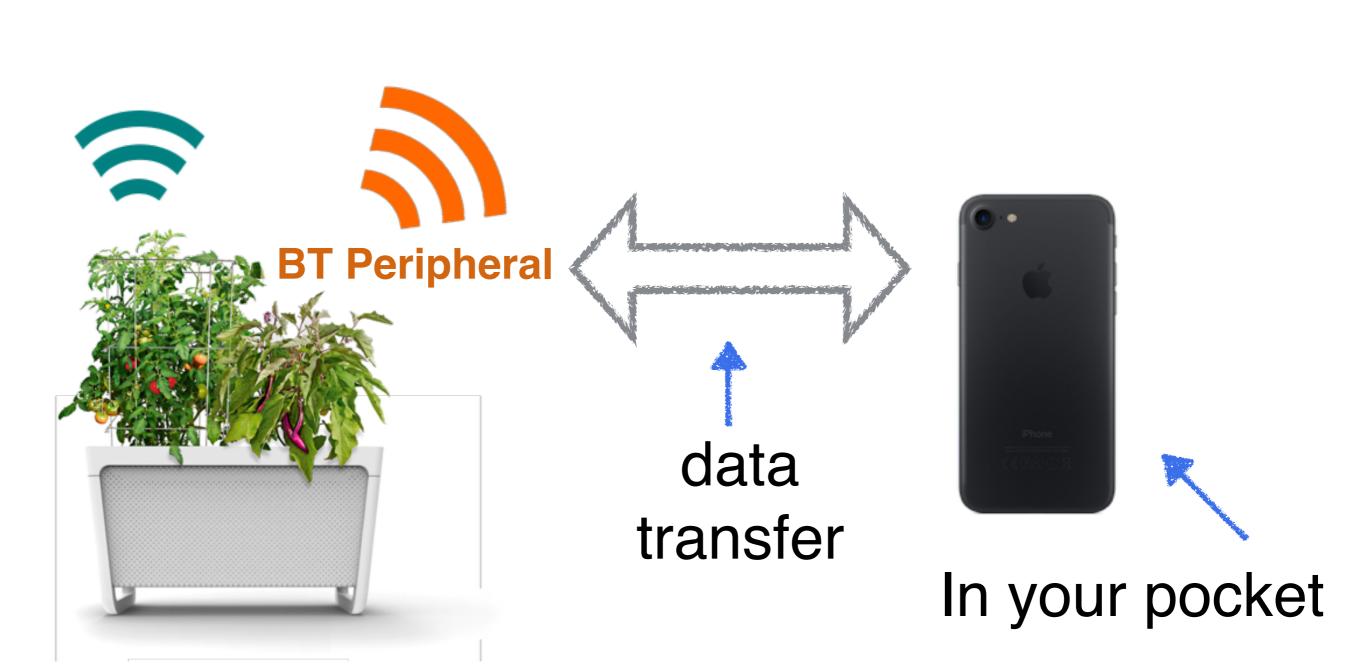# Grow's Model

iBeacon

In your pocket

BT Peripheral

data
transfer

In your pocket

HEROKU

amazon web services™ | **S3**

BT Peripheral

data transfer
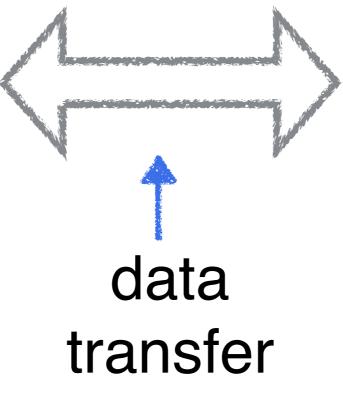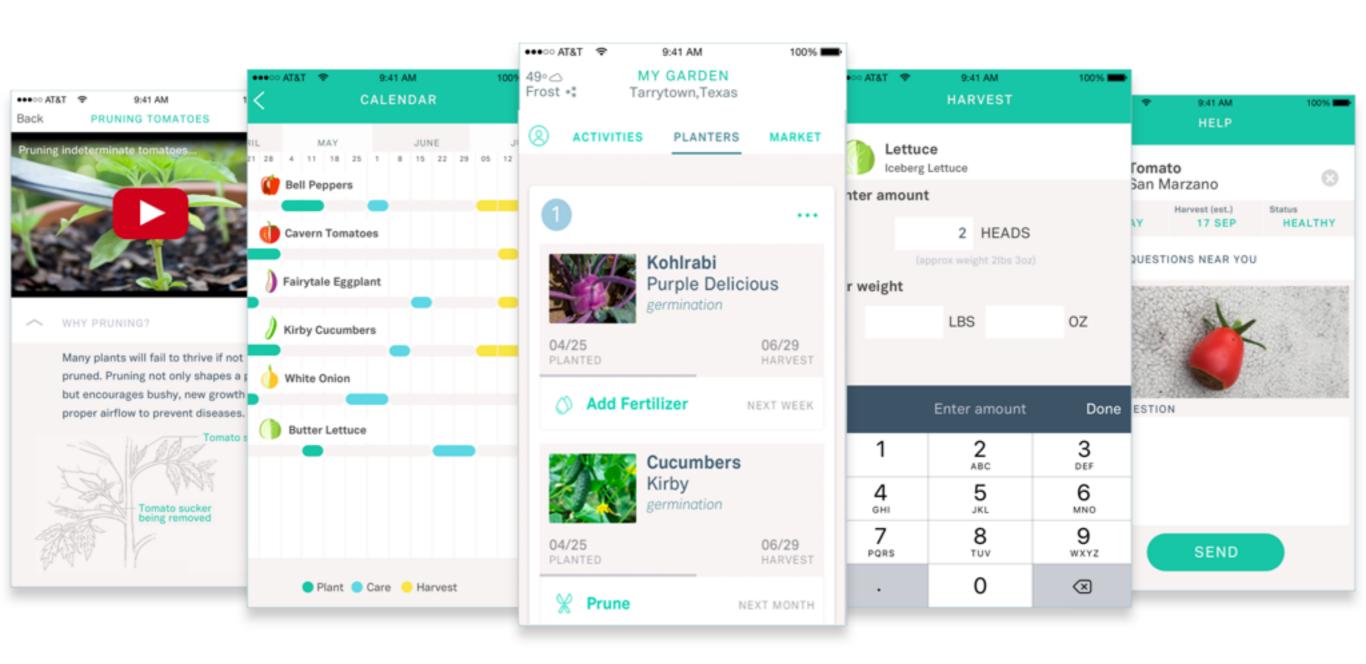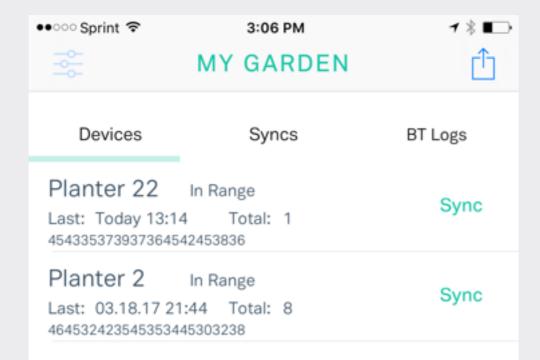
In your pocket
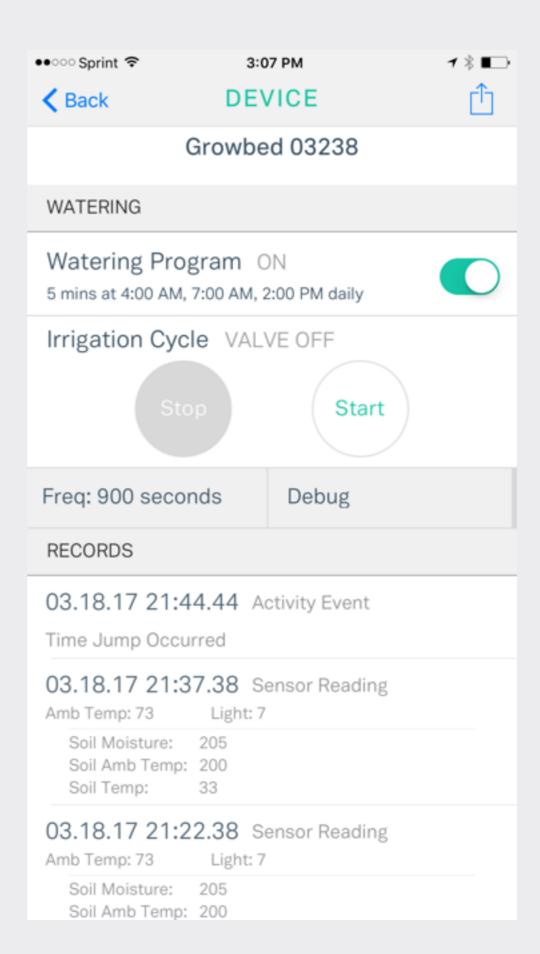
This is all in the BACKGROUND

What they do see.

What I built

MY GARDEN

Devices	Syncs	BT Logs

Planter 22   In Range   **Sync**

Last: Today 13:14   Total: 1

45433537393736454245453836

Planter 2   In Range   **Sync**

Last: 03.18.17 21:44   Total: 8

46453242354535344530 3238

‹ Back   **DEVICE**

Growbed 03238

WATERING

Watering Program ON

5 mins at 4:00 AM, 7:00 AM, 2:00 PM daily

Irrigation Cycle VALVE OFF

(Stop)   (Start)

Freq: 900 seconds	Debug

RECORDS

03.18.17 21:44.44 Activity Event

Time Jump Occurred

03.18.17 21:37.38 Sensor Reading

Amb Temp: 73   Light: 7

Soil Moisture: 205
Soil Amb Temp: 200
Soil Temp: 33

03.18.17 21:22.38 Sensor Reading

Amb Temp: 73   Light: 7

Soil Moisture: 205
Soil Amb Temp: 200

● **44437** Background
03.17.17 16:31

Duration: 01.204

Logs	Records

03.17.17 16:20.36 Sensor Reading

Amb Temp: 77   Light: 11

Soil Moisture: 288
Soil Amb Temp: -55
Soil Temp: 41

03.17.17 16:05.36 Sensor Reading

Amb Temp: 77   Light: 11

Soil Moisture: 288
Soil Amb Temp: -55
Soil Temp: 41

03.17.17 15:50.36 Sensor Reading

Amb Temp: 77   Light: 11

Soil Moisture: 288
Soil Amb Temp: -55
Soil Temp: 41

03.17.17 15:35.36 Sensor Reading

Amb Temp: 77   Light: 12

Soil Moisture: 288
Soil Amb Temp: -55
Soil Temp: 41

Devices	Syncs	BT Logs

2017-03-19 15:07:23.3920: Received on data comms:
0200000000000000000000000ffffffffff00ffff
2017-03-19 15:07:23.3940: Received on data comms:
0100ffff00ffff00ffff00000000000000000000
2017-03-19 15:07:23.4030: Received on data comms:
0000000000000032ed
2017-03-19 15:07:23.4040: Parsing program version:03
2017-03-19 15:07:23.4110: Received valid program: Start date: Mar 13,
2017, 2:07:45 PMCycles
Cycle: 4:00 AM - 5 minutes
Cycle: 7:00 AM - 5 minutes
Cycle: 2:00 PM - 5 minutes
Rule: Id: 1, Value: 200
Rule: Id: 2, Value: 1500
Rule: Id: 3, Value: 4
Rule: Id: 4, Value: 120
Rule: Id: 5, Value: 5

2017-03-19 15:07:23.4120: Finishing command: Get Water Program
2017-03-19 15:07:23.4130: Command queue size: 1
2017-03-19 15:07:23.4130: Starting command: Disconnect
2017-03-19 15:07:23.4140: Writing data: c0000e
2017-03-19 15:07:23.4630: Write confirmation received
2017-03-19 15:07:23.4640: Received on data comms: a00001
2017-03-19 15:07:23.4640: Awaiting disconnection.
2017-03-19 15:07:23.5970: Did disconnect
2017-03-19 15:07:23.6080: Current operation ended normally.
2017-03-19 15:07:23.6110: Finishing command: Disconnect
2017-03-19 15:07:23.6170: Command queue size: 0
2017-03-19 15:07:23.6180: Operation queue completed
2017-03-19 15:07:23.6190: Result of operation GET WATER PROGRAM:
Operation ended successfully
2017-03-19 15:07:23.7020: Parsing program version:03
2017-03-19 15:07:40.6890: will enter foreground
2017-03-19 15:07:40.6910: resetting from bluetooth observer
2017-03-19 15:07:40.7020: Bluetooth central state: Powered On
2017-03-19 15:07:42.0860: Scanning for nearby grow devices
2017-03-19 15:07:42.1060: Did discover: A339B851-B8B1-4B8D-888E-
D4FFD13F69BC
2017-03-19 15:07:42.1260: Did discover:
940C3EDC-7D1E-44B9-992E-10E85D9EF6B5
2017-03-19 15:07:42.5090: Did discover:
940C3EDC-7D1E-44B9-992E-10E85D9EF6B5

Building Two Apps?

Lab/Field
Facing
UI Code

Customer
Facing
UI Code

Shared Biz Logic

App BT Stack

CoreBluetooth

Plan with Architecture

Production

Know about Failures

Logs

Conclusion

Visibility

Enabling Other
Parts of Engineering

Universal Concepts