Intel Connected Logistics Platform Tech Jam
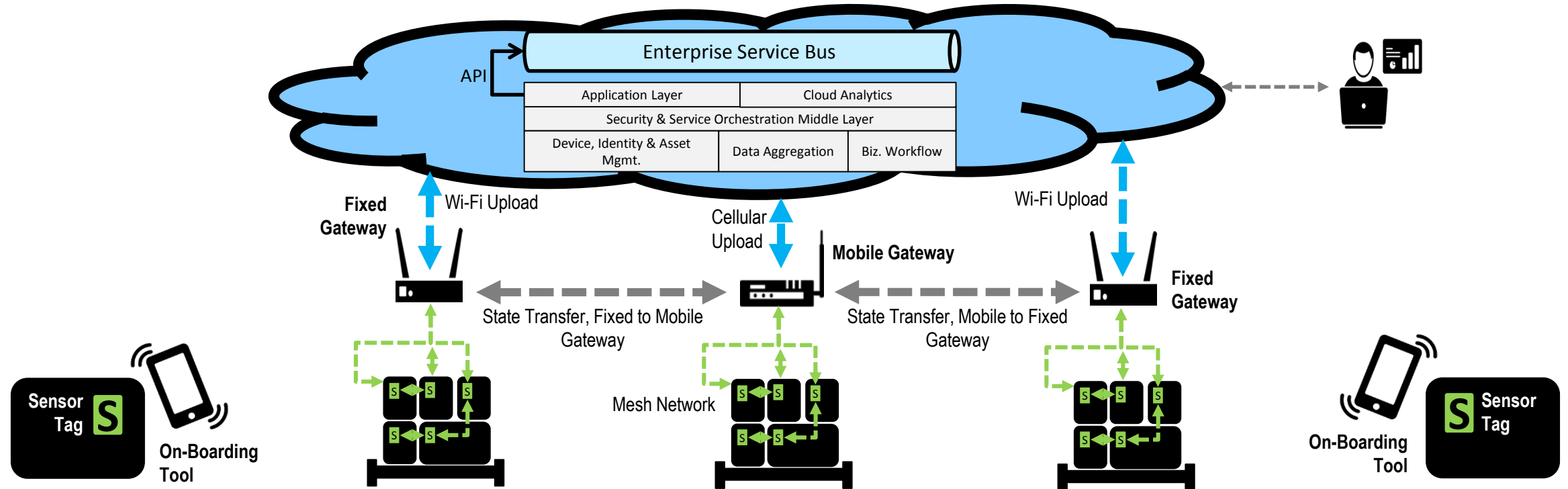
Laura Rumbel, Consumer Experience Enabling Director, Intel

Shawn Irvine, Economic Development Director, City of Independence

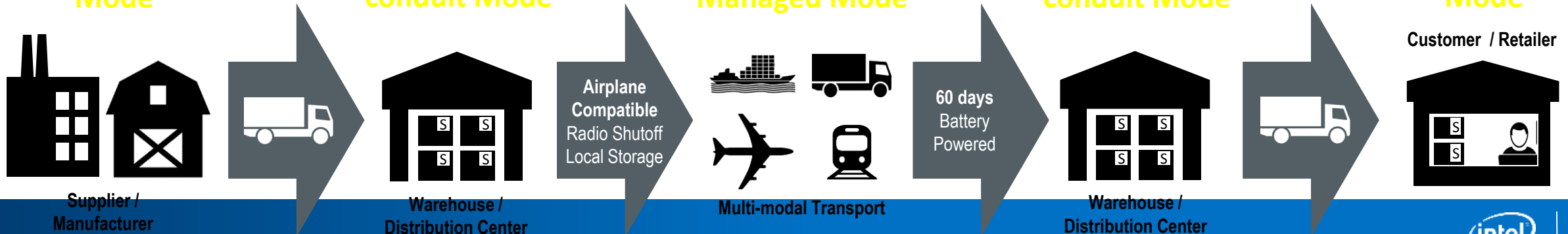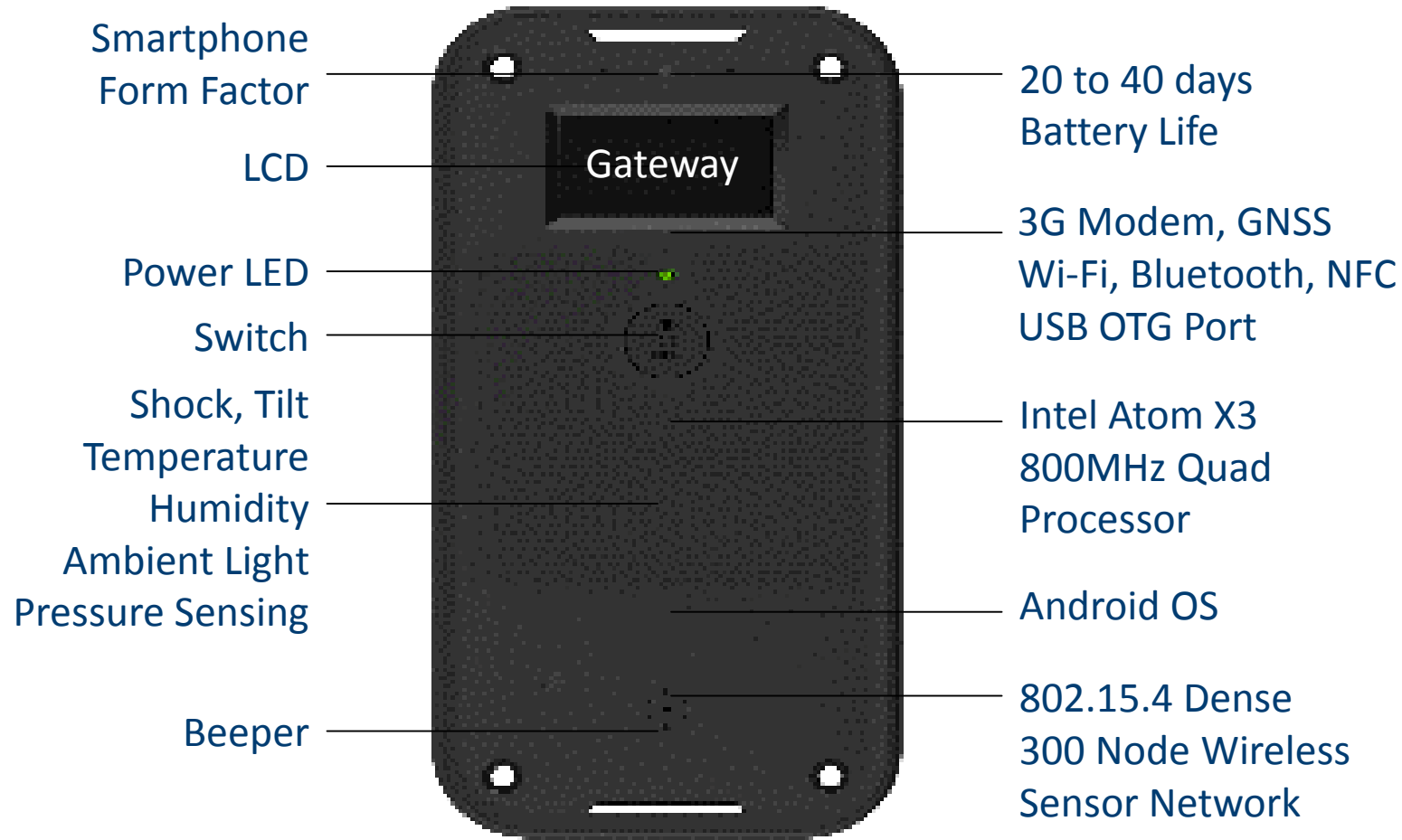# Use case: source to destination tracking

ICLP hardware

Gateway

- Smartphone Form Factor
- LCD
- Power LED
- Switch
- Shock, Tilt Temperature Humidity Ambient Light Pressure Sensing
- Beeper

- 20 to 40 days Battery Life
- 3G Modem, GNSS Wi-Fi, Bluetooth, NFC USB OTG Port
- Intel Atom X3 800MHz Quad Processor
- Android OS
- 802.15.4 Dense 300 Node Wireless Sensor Network

Tag

- Credit Card Form Factor
- 6-12 Months Battery Life
- 802.15.4 Wireless Sensor Network
- Security Chip
- 32-bit Microcontroller
- Shock, Tilt Temperature Humidity Ambient Light Range Sensing

intel
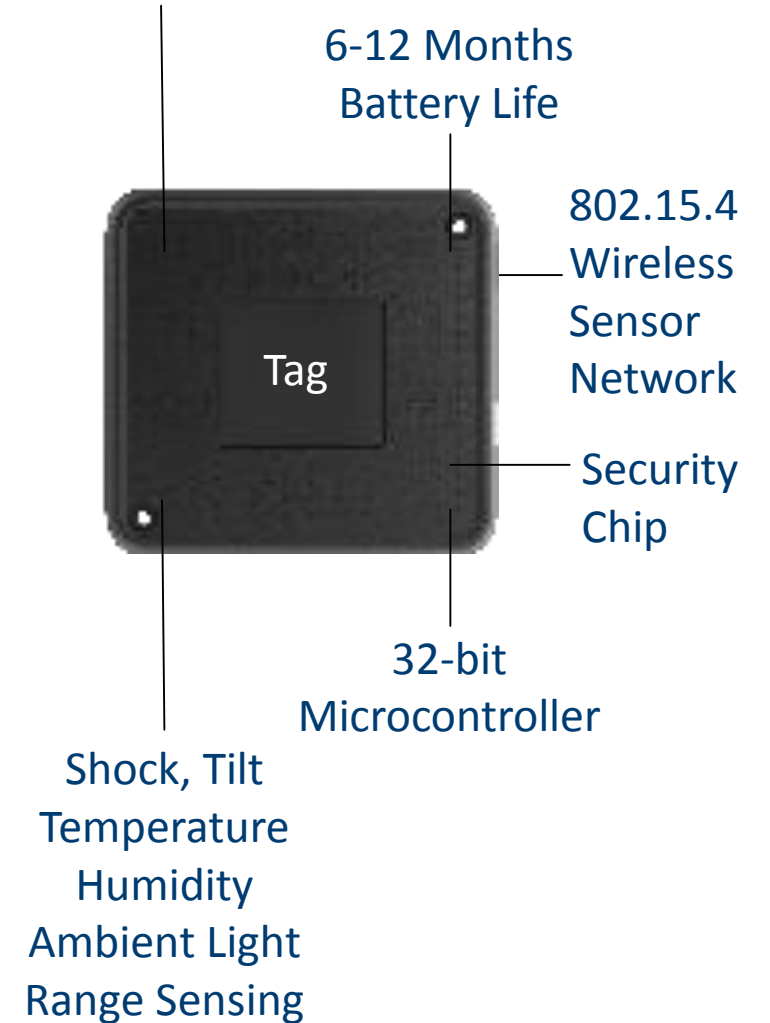
Rogue Fresh Hops Proof of Concept

Research Goals

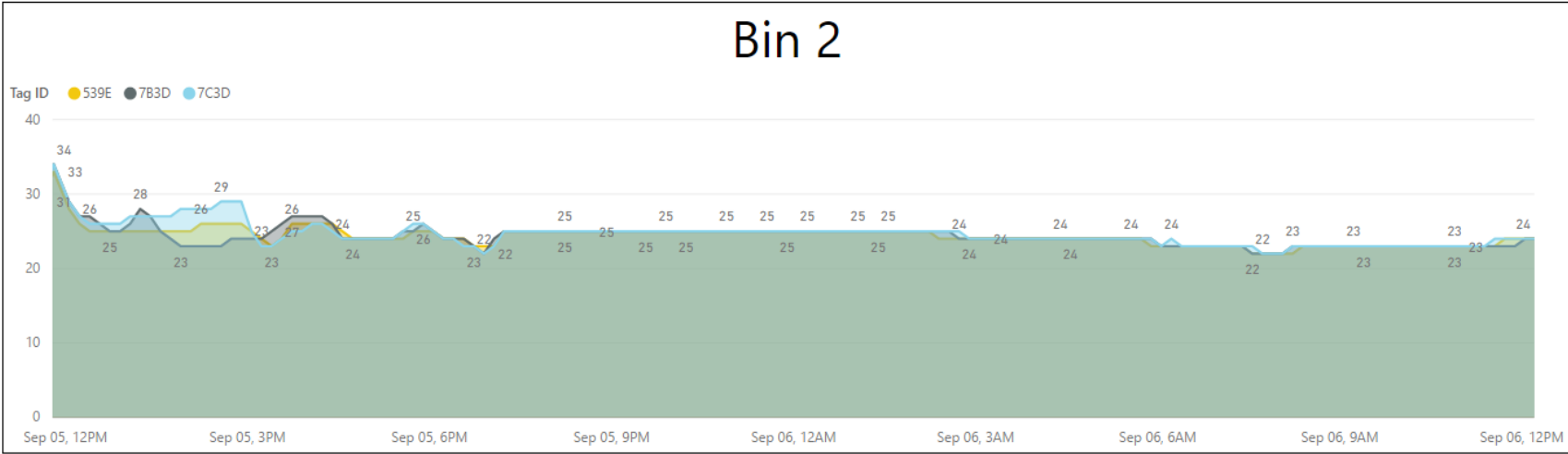**Demonstrate the ability to:**

- Collect temperature and humidity data on produce between the farm and the processor

  - Aggregate data for post hoc analysis

  - Supply real time data on website for inspection during transit

- Note whether temperature or humidity rise above or below preset boundaries

- Generate and transmit alerts to advise trucker and receiver that measurements are outside desired bounds

- Track location of produce using GPS

- Aggregate data for post hoc analysis

  - Supply near-real time data on website for inspection during transit

  - Generate and transmit alerts when shipment is within certain distance(s) of receiver

The Hop Journey
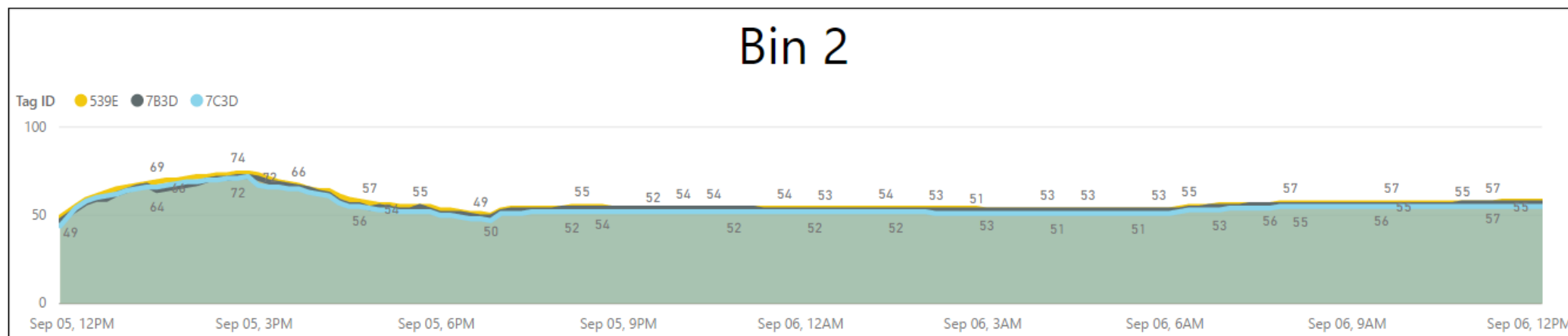
77.5 miles | 2:04 hours

Provisoning & Loading

Loaded into soft-sided bins and placed three sensors in each bin: one at the top, one at the bottom, and one near the middle.

Harvest

Collected hops at hop yard after picking

Transport begins

Checking RT Data

Driver stops for lunch while monitoring temp.

en route

Temperature sensor alarms set at 68°

en route

Temperature maxed out at 84.2°

Delivery confirmation sent to Farm

en route

Location reported to cloud creating easy to read web map

Notification to Brewery

Started beer brewing process when hops are en route

en route

Location status alert sent every ten minutes

Unloading & Confirmation

Use mobile app to confirm delivery of shipment

Hops arrive at brewery

Getting close

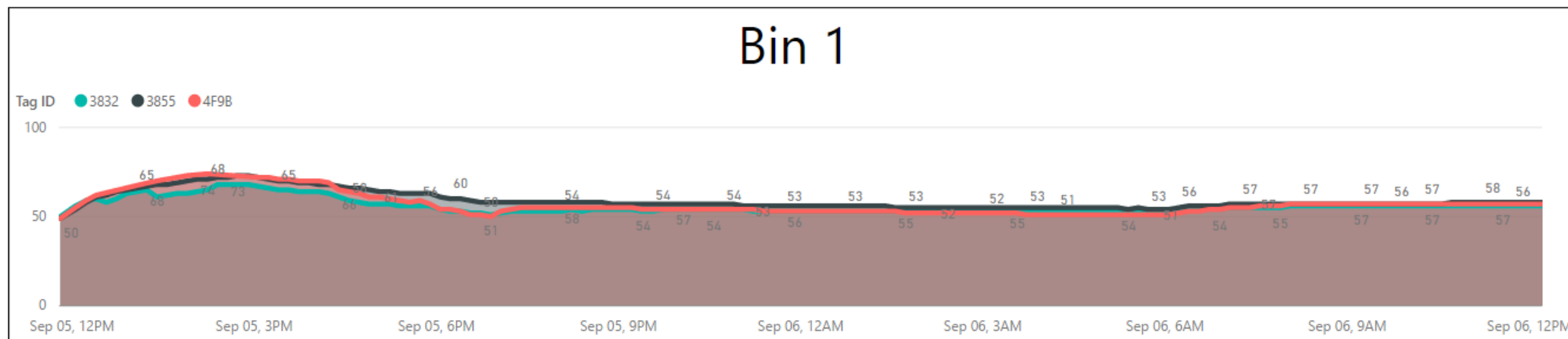Sensors notified team via email and text when 5 & 10 minutes away

ROGUE FARMS

ROGUE BREWERY

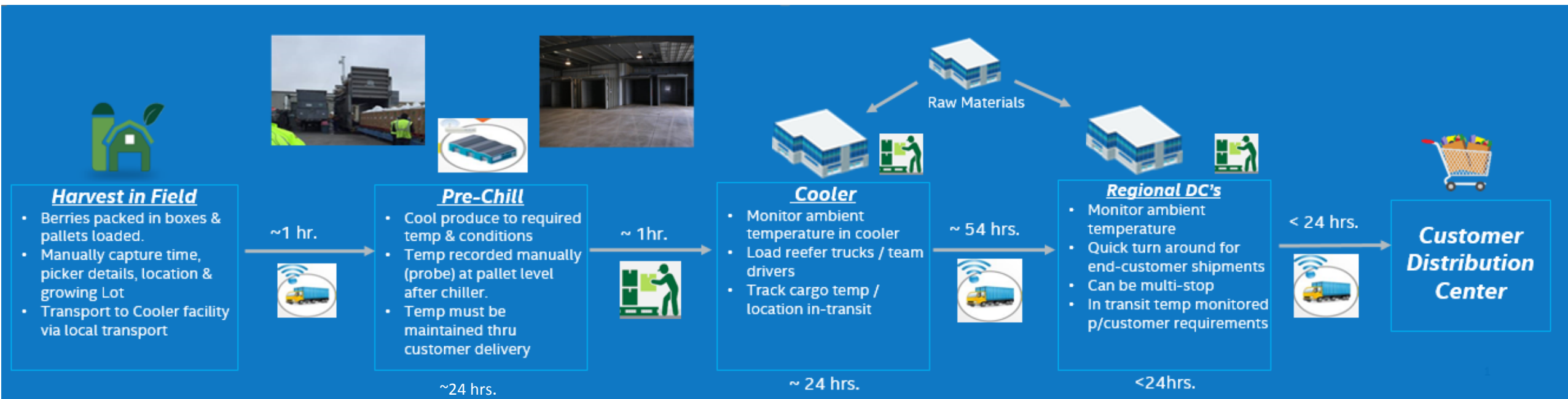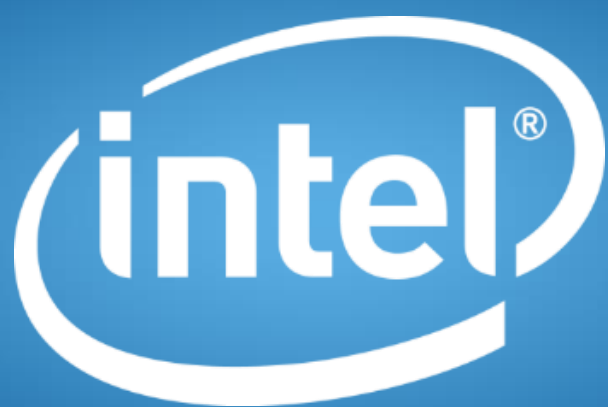# Temperature Report

Humidity Report

Berry Blockchain Proof of Concept

Berry POC scenarios

- Capture and log GPS origin of organic fruit picked at organic Harvest Site location
- Track the temperature and humidity of the picked fruit in the Harvest Site and identify how long the picked fruit is at Harvest Site awaiting transport
- Track location, temp and humidity of fruit while in transit from Harvest Site to Pre-Chill Site
- Track temp and humidity of fruit while at Pre-Chill Site
- Track location, temp and humidity of fruit while in transit from Pre-Chill Site to Processing Site
- Track location, temp and humidity of fruit while in at Processing Site and moving to Cooling Site
- Track location, temp and humidity of fruit while in transit from Cooling Site to Distribution Center
- Integrate ICLP with the block/ledger for one holistic platform
- Relevant shipment data (TBD) mirrored in ledger for POC stakeholders (PO, COC, POL)
- Automate all sensor data uploaded to ledger, eliminating risk of human error and shifting range of trust to technology platform

(intel)

POC Goal: "Visibility to all cold chain data from the growing lot to the end customer distribution center shared and exchanged securely using blockchain"

Harvest in Field
- Berries packed in boxes & pallets loaded.
- Manually capture time, picker details, location & growing Lot
- Transport to Cooler facility via local transport

~1 hr.

Pre-Chill
- Cool produce to required temp & conditions
- Temp recorded manually (probe) at pallet level after chiller.
- Temp must be maintained thru customer delivery

~24 hrs.

~ 1hr.

Cooler
- Monitor ambient temperature in cooler
- Load reefer trucks / team drivers
- Track cargo temp / location in-transit

~ 24 hrs.

~ 54 hrs.

Raw Materials

Regional DC's
- Monitor ambient temperature
- Quick turn around for end-customer shipments
- Can be multi-stop
- In transit temp monitored p/customer requirements

<24hrs.

< 24 hrs.

Customer Distribution Center

intel

Initial Concept design- Gen 1

Orchestration & Business Logic Layer

Radio Communication

Sensors on packages and pallets

Honeywell sensor tags and gateway: re-useable, recyclable components ensure cost-effective deployment on a large scale

Photos