September 20th-22nd, 2022

MTech Users Conference

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BRIDGING THE GAP

Bridging the gap between the farm and the end user

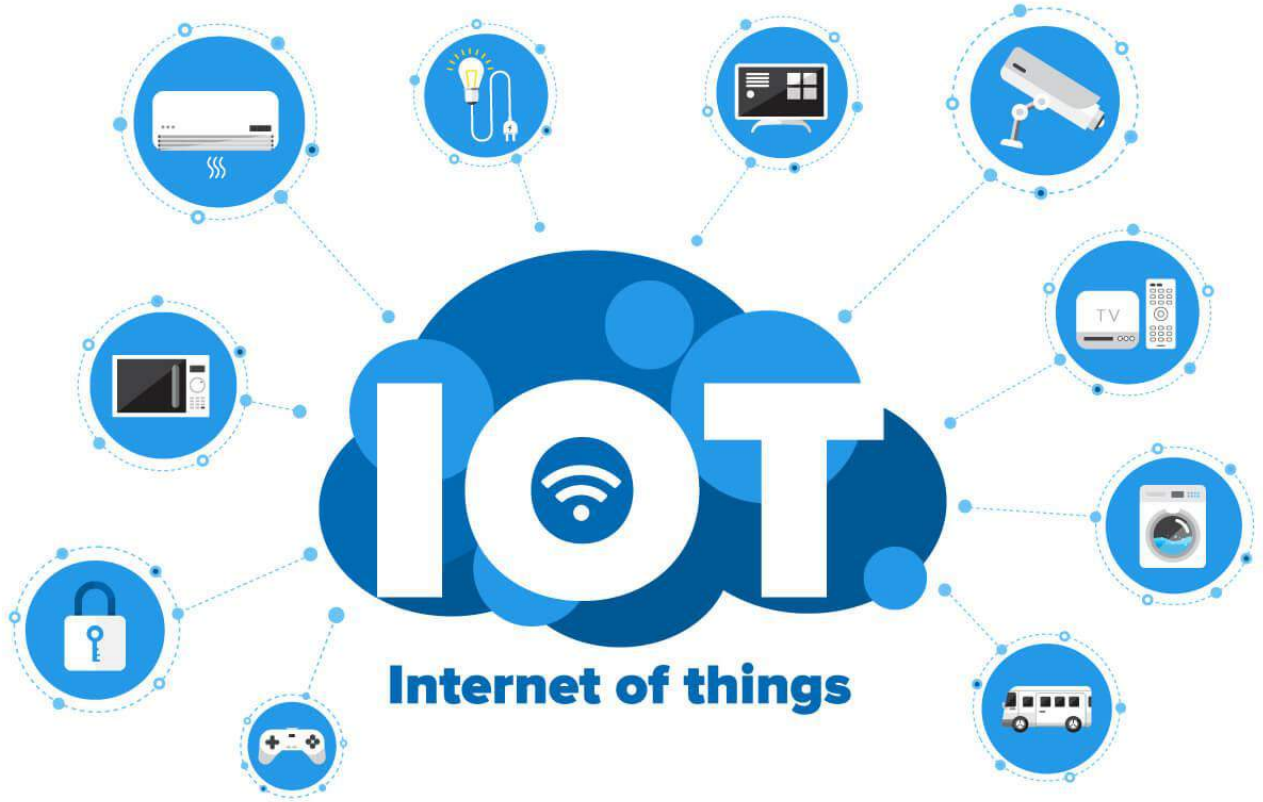
- Important to know both sides to understand the full picture
- Kelly discussed how we get the data to the end user
- Retrieving data from the farm

Starting the journey

- IoT
- IoT was coined in 1999
- IoT has been a buzz word over the past decade
- Becoming more popular because of advancements in technology
- Promises to make life easier because everything is connected

What is IoT?

- Internet of things
- Which is a network of physical things
- These “things” share information over the internet
- The “things” do most of the work without human intervention



Using IoT every day

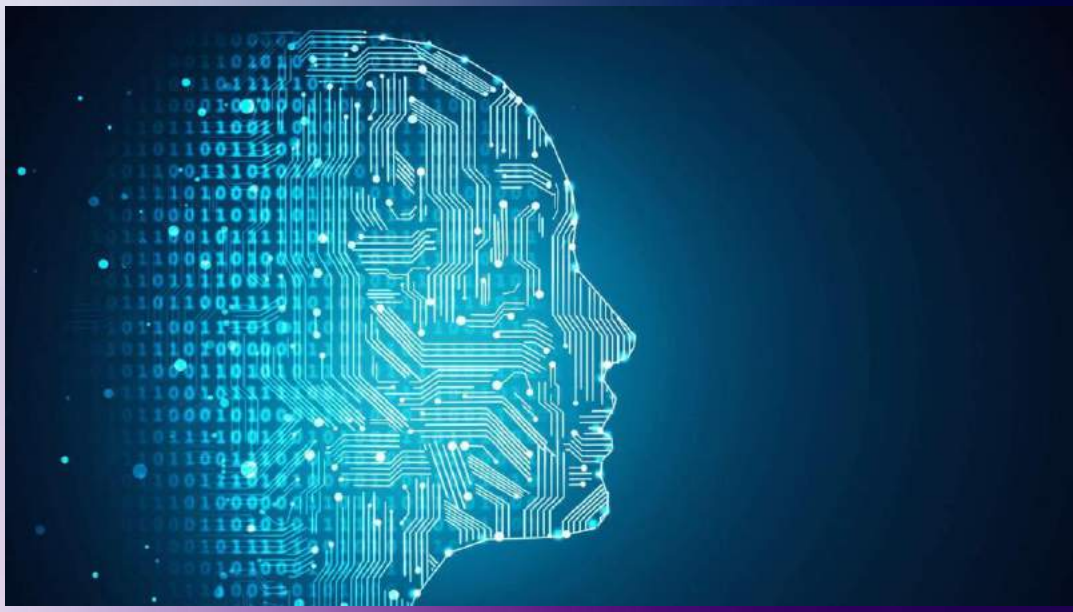
The coke machine at Carnegie Mellon CS department

- The programmers spent a large amount of time in the lab
- When they needed caffeine, most of the time their long walks to the coke machine were met with hot coke
- In 1982, they decided to install micro-switches in the machine to determine number of cokes and at what temperature
- This IoT device ensured that people didn't walk across campus for a hot coke

https://www.cs.cmu.edu/~coke/history_long.txt

Importance of IoT

- The possibilities are becoming seemingly endless because:
  - Cheaper sensors
  - Connectivity
  - AI and machine learning
- People are using IoT throughout their life to make everyday tasks simpler
- Understanding the power of data



How other industries are using this information?

- Customers sharing information with the company can help produce better products
- Companies can be more efficient, productive and competitive
- Analyze data to develop strategic plans
- Becoming predictive instead of reactive

How is the ag industry using this information?

- Predicting bird weights
  - Certain customers want a specific weight
  - Helping manage variation coming into processing plant
- Scheduling feed delivery
  - Using bin scales for more accurate feed delivery
- Environmental data
  - Determining the cause of certain events

What is currently done in the field?

- Things are recorded manually by service techs/advisors and manually keyed into a database
- Manual increases the chance of error
- Feed inventory
    - Climbing feed bins (safety hazard)
    - Throwing a rock at the bins

The change

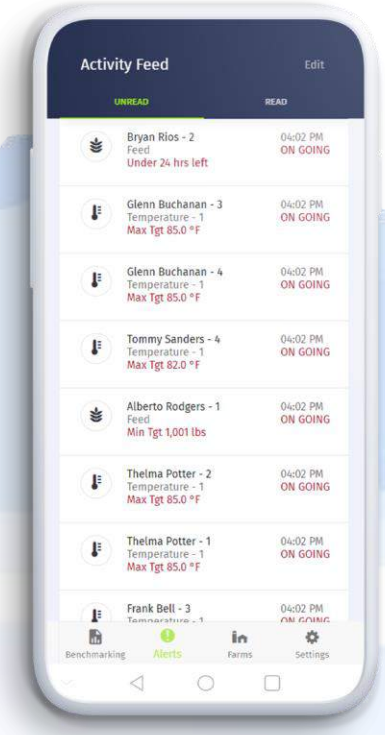
- Limit manual processes
- Using Sonar
    - Having everything at your fingertips
- Using IoT to plan farm visits
- Discuss issues and benefits at broiler meetings
- Determine more effective equipment
- Increase overall efficiency

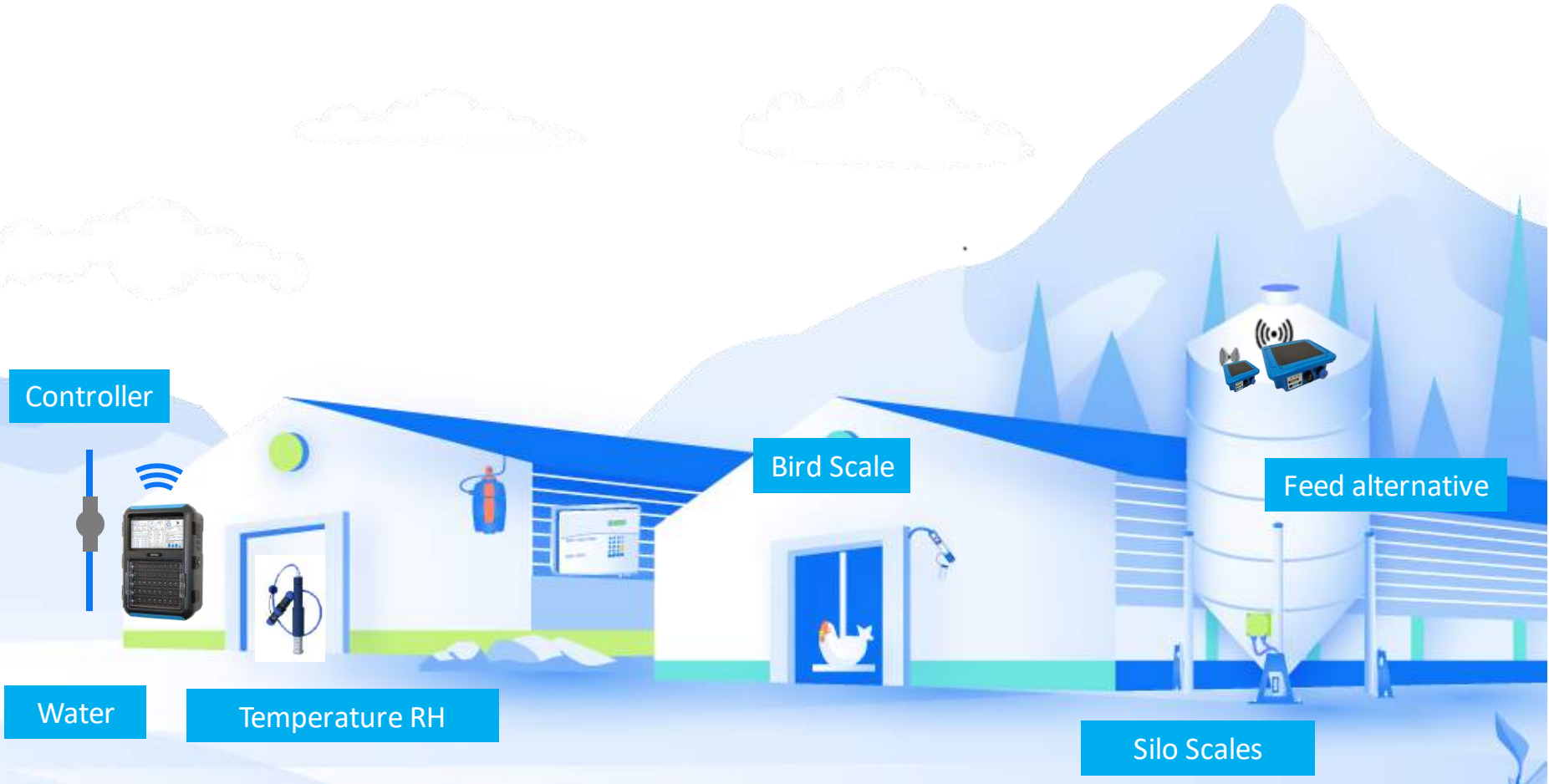
Clean data

- Ideal for data to flow directly from the farm
- Use IoT hardware to collect data
- Ensure the hardware works properly
- Transfer data to the cloud
- The data can be cleansed before flowing into an analysis application
- Trash in = trash out

Sonar IoT – connect your farm

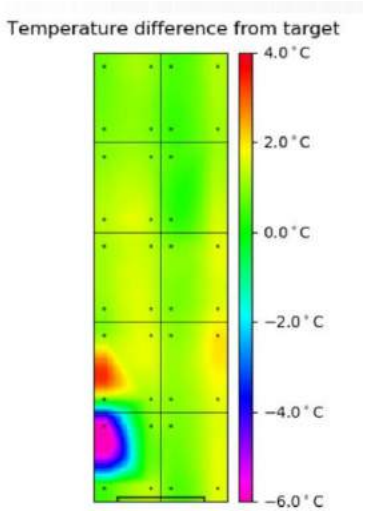
sonar

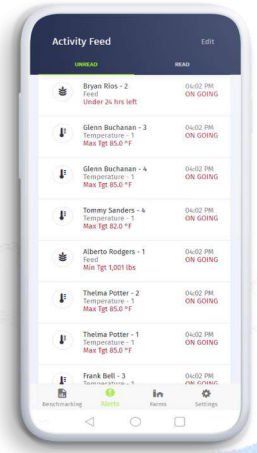


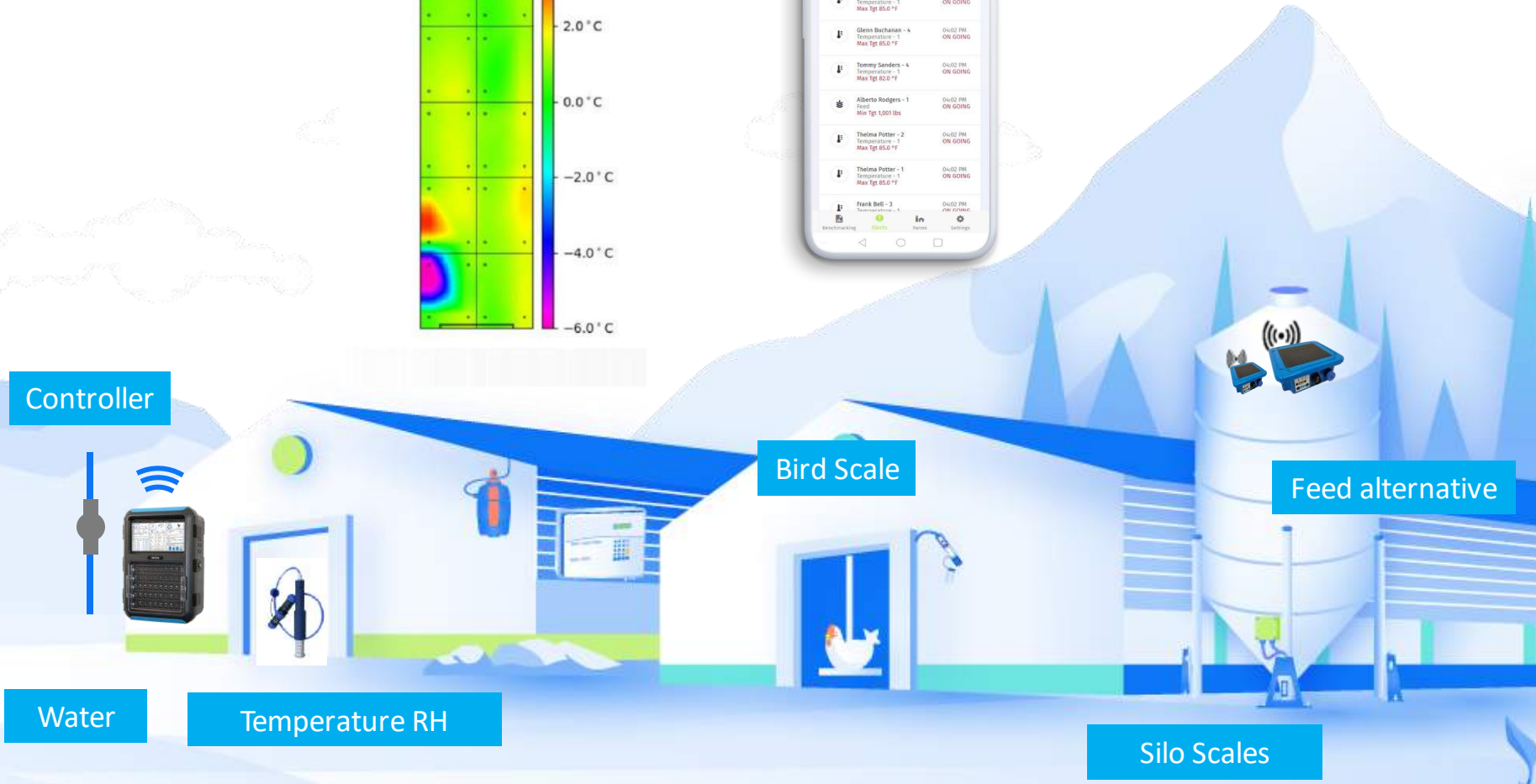


Sonar IoT – connect your farm

sonar







Sensor suite

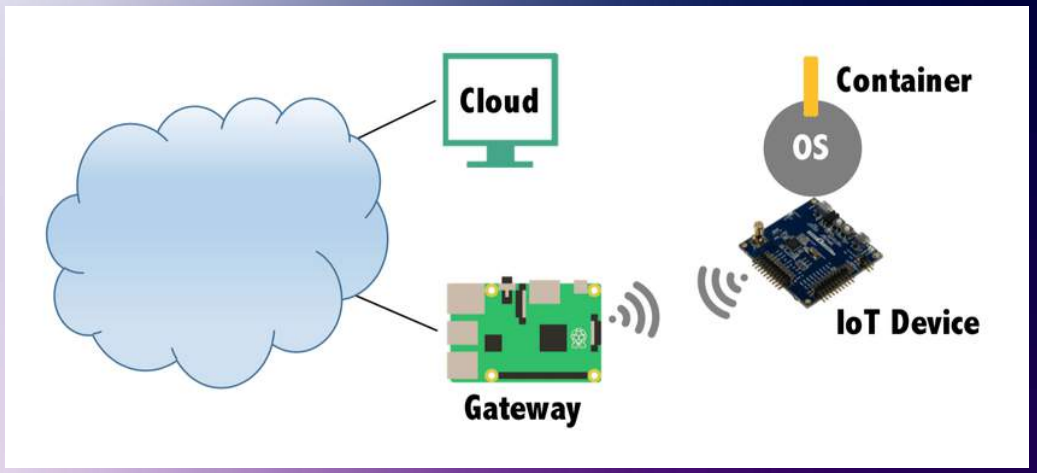
- Temperature (indoor/outdoor)
- Humidity
- Water
- Feed Bins
- Bird Weight
- Air Flow/CFM & Static Pressure
- CO2
- Ammonia
- Lighting
- Egg Counters

Focus on 5 kpi’s

- Temperature (indoor)
- Humidity
- Water consumption
- Bird weight
- Feed weight

From the sensors to the cloud

- Different options:
  - 3rd party controller
  - Wired solution
  - Wireless solution
- The options communicate directly with the cloud or use a communicator
- The data flows through payloads and is stored for further use



3rd party Environmental controller

- 3rd party controllers complete several tasks including collecting data
- The data collected can be transferred to the cloud via a communicator
- Some older controllers lack the technology to transfer data and need to be upgraded
- Sonar is controller agnostic

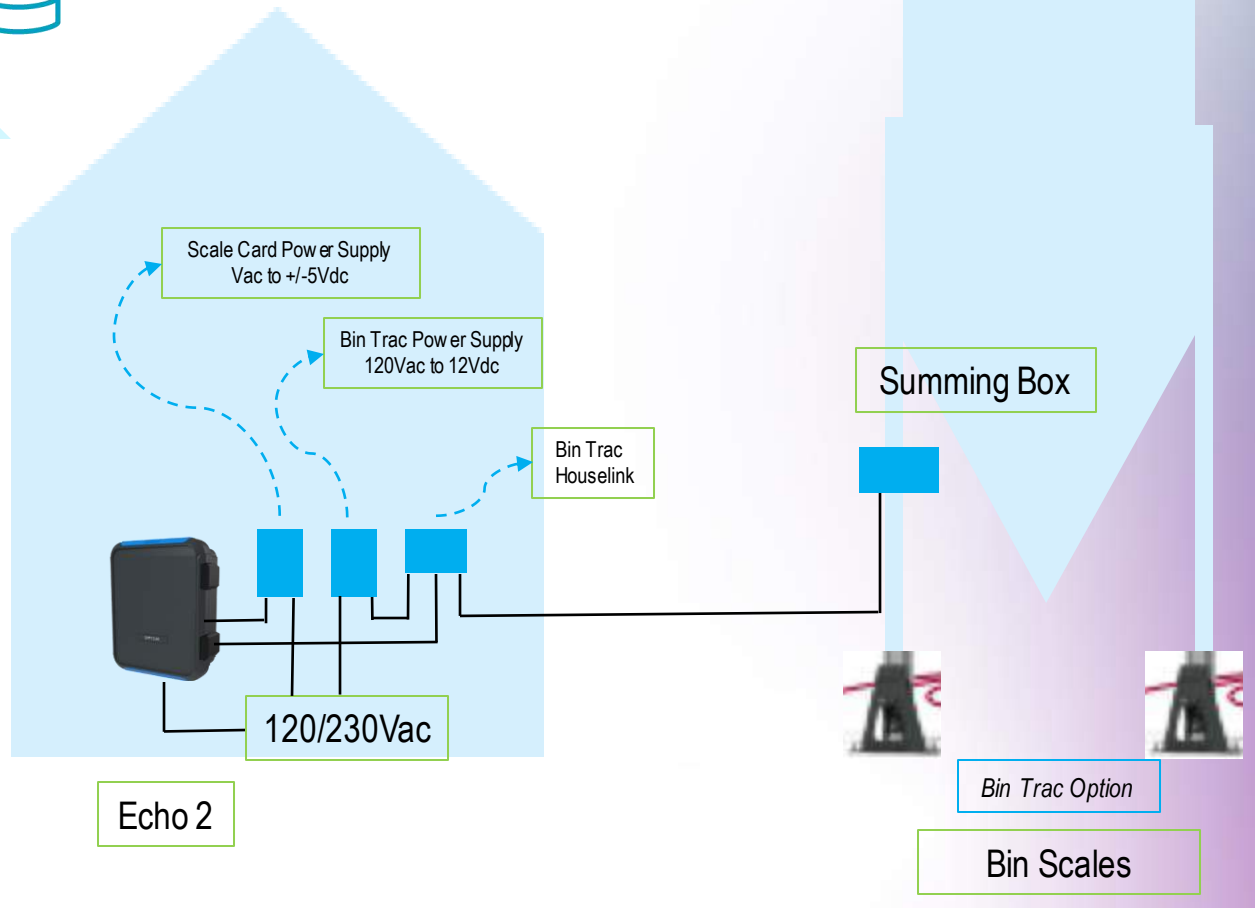
3rd party controller solution: Key information

- Extra hardware investment
  - Communicator
  - Bin scales
  - Bird scales
- Collects more climate/production data
- Multipurpose unit
- Needs API to retrieve data for the cloud
- Easy solution when using Rotem controllers

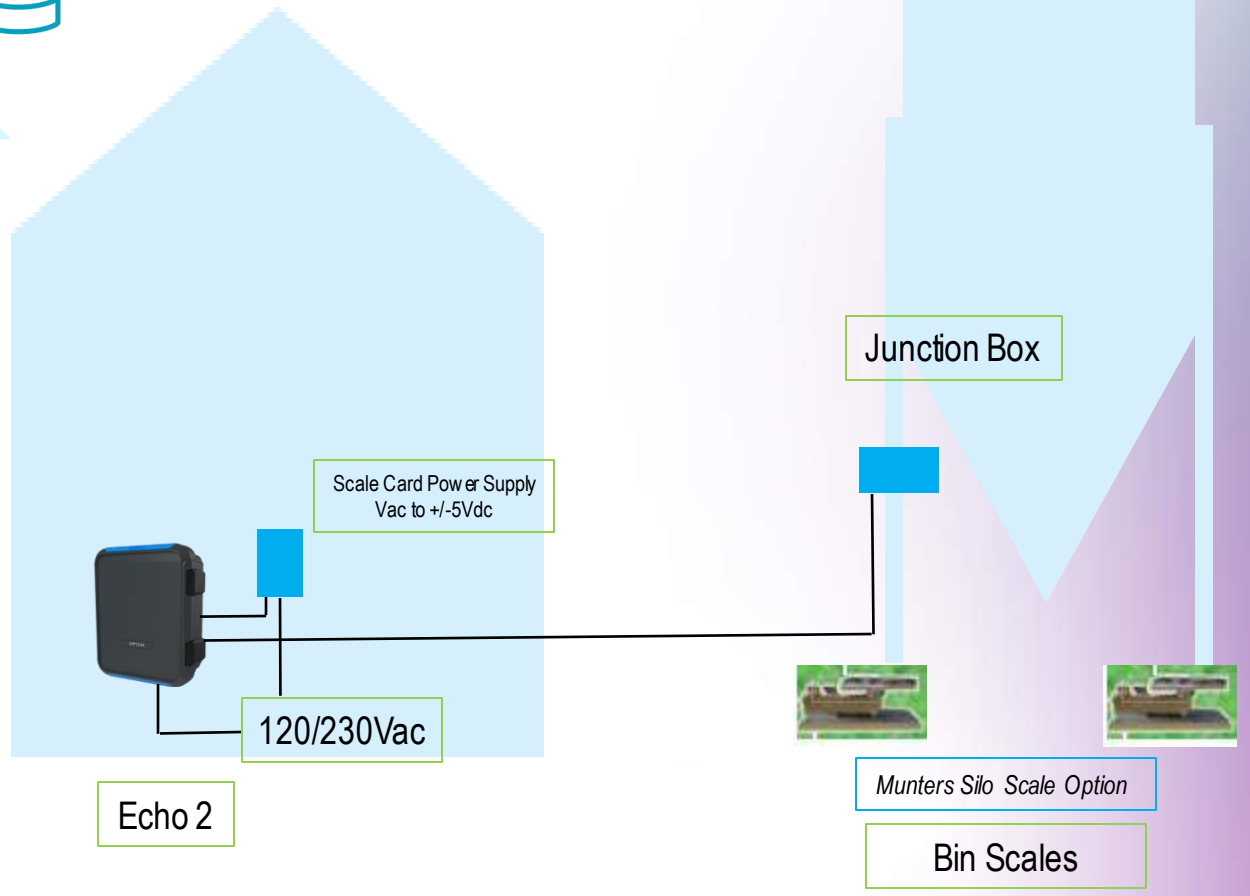
Echo2

- Wired solution
  - All sensors are connected to the Echo2 via wires
- Stand alone product that communicates directly to the cloud
- Designed by Rotem

Echo 2 BinTrac Bin Scale Installation Overview



Echo 2 Munters Bin Scale Installation Overview



Wired solution: Key information

- Sends data every 15 minutes for all parameters
- All telemetry data is sent through Sonar API
- Silo scales ordered separately, allowing Silo scale equipment to match house/farm/site needs
- Silo scale has high accuracy for feed weighing
- Higher cost of installation
- Customer needs to purchase SIM card or use LAN connection

BarnTalk

- Wireless solution
  - All sensors are wireless
- Partnership with BarnTools
- A BarnTools representative will speak more about this after the break

Wireless solution: Key information

- Multi-carrier sim card included
- Simple setup and configuration
- Established API for simple data transfer to Sonar
- Multipurpose platform

How we gather data with Sonar

1. Connect and Collect

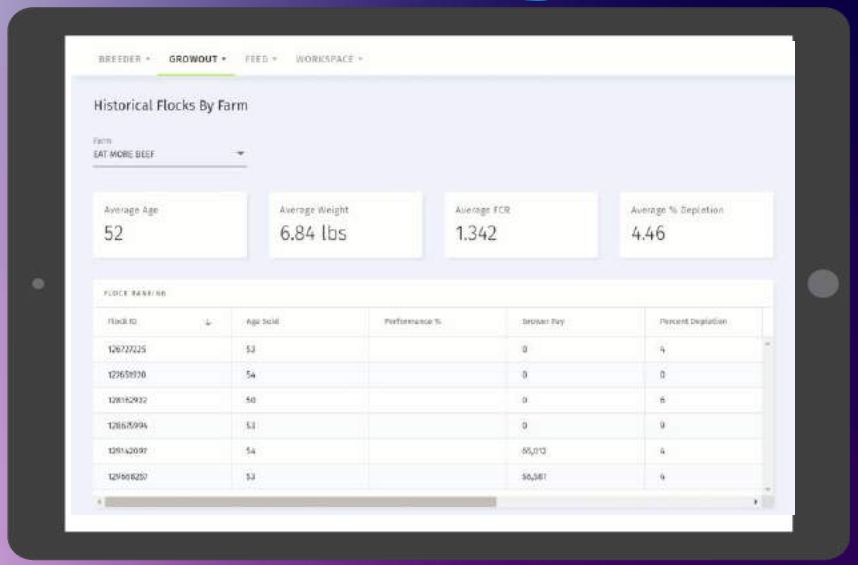
Deploy multiple sensors to capture real-time data

2. Securely Transmit

Send information from the farm to the MTech Cloud

3. Analyze and Act

Access performance analytics and Machine Learning to improve your production



Boost projections with Sonar

Precision Farming

Connecting all players in the production supply chain

AUTOMATED DATA COLLECTION

- IoT solution to connect broiler houses.
- Key data points: Feed, body weight, temperature, humidity, water consumption.
- Data is transmitted every 15 minutes from each house.
- More than 5000 daily data points per house.

ARTIFICIAL INTELLIGENCE

Data is submitted into MTech's IoT hub where the cleansing process utilizes MTech's exclusive ML/RL models.

SMART PROTEIN PRODUCTION MANAGEMENT SYSTEM

- All the data from pullets to broilers at the plant is managed.
- One single data point with a centralized Database.

THE REVOLUTION OF SUPPLY CHAIN PLANNING

- Utilizing Artificial Intelligence, the planning hits accuracies never seen before.
- Planning from pullet placements to broiler weights at the plant.

AXIS BI

All data is exposed in advanced and dynamic dashboards utilizing DAR concept.

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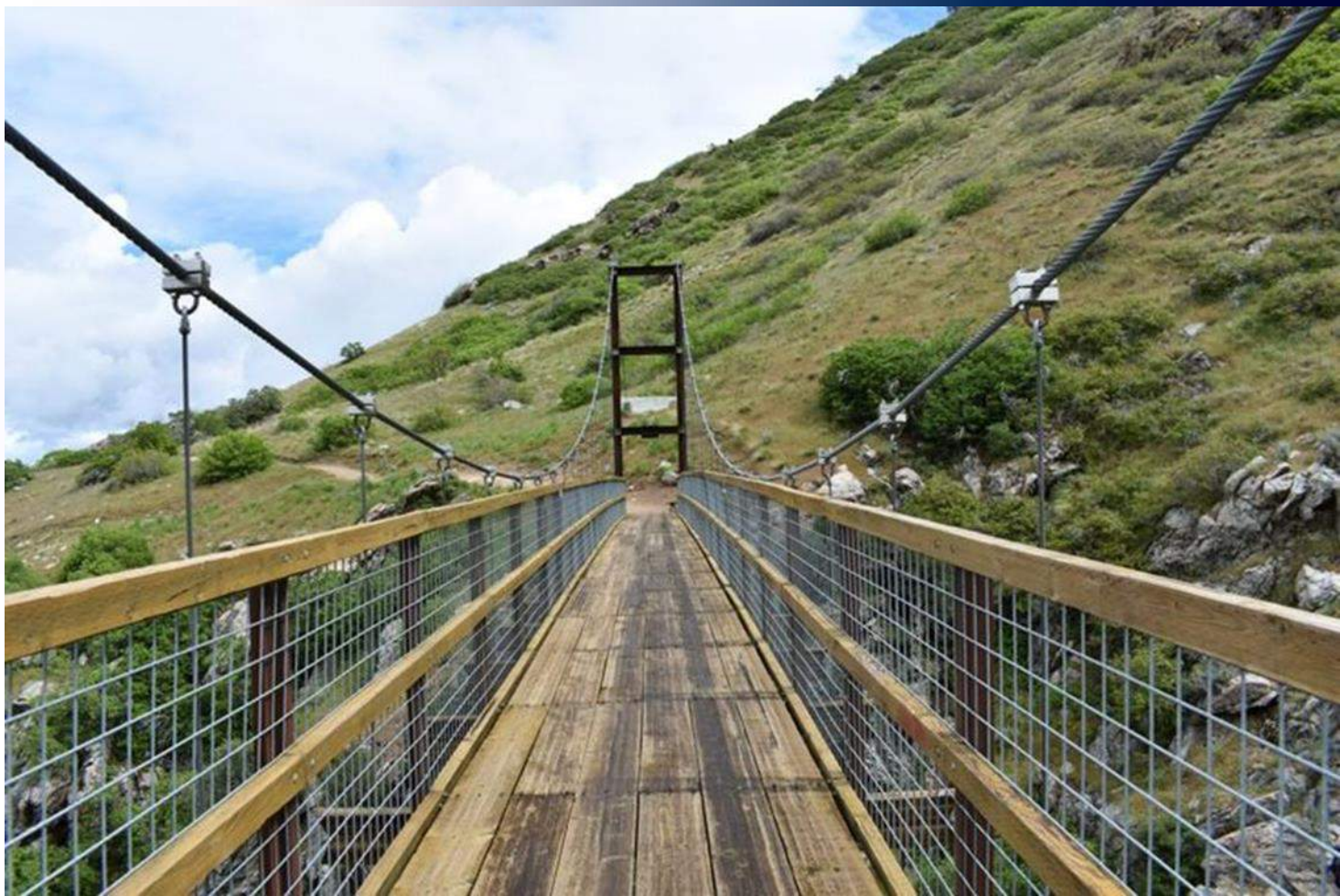
Full circle

- Understanding the importance of IoT and data
- Using data to be proactive and then predictive
- Connecting all aspects of production
- Bridges the gap



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Thanks Gracias 謝謝 ارك ش Danke Спасибо ありがとう Obrigado

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