



traits ewe truly care about



**AgHack Challenge:** Connected Sheep (4)

**Mentors:** John-Paul Collins, Mandy Curnow

# About Our Team



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**Our team excels at building tightly integrated software and hardware solutions.**

Our strength is our unique combination of expertise in different fields, where each member of the AgDex team brings both technical understanding and passionate enthusiasm to solve validated problems.

# Contemporary Problems

- **Fragmented** and **incomplete** tracking data.
- Genetic analysis is **expensive** and **flock-based**.
- **Incomplete pedigree** results in lower-quality breeding.
- Ewe and lamb data is **not linked** with pedigree data.
- Missed opportunities mean lower profits.

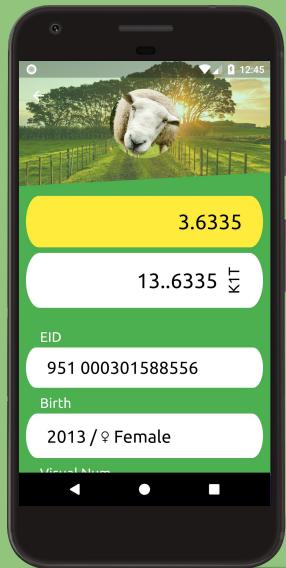


## Our Solution

- **Integrates** into existing systems and tracks the full maternal and paternal pedigree of **individual sheep**.
- Automatically determines the mother of lambs.
- Identifies poor performing ewes and **makes culling suggestions** to optimize generational gain.
- Improves **long-term breeding quality** by retaining the progeny of superior ewes and by linking productivity to ewe selection.

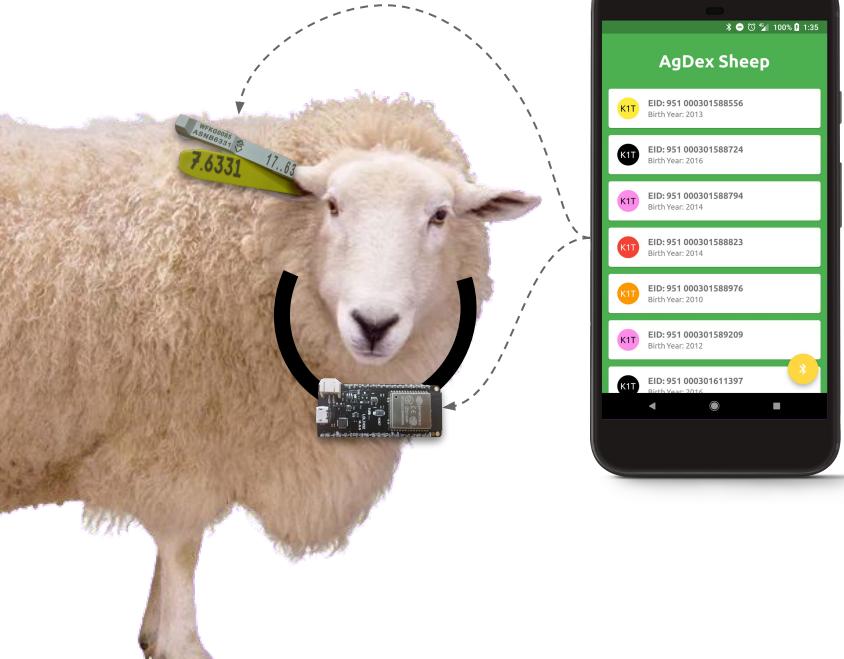


# Introducing: agdex



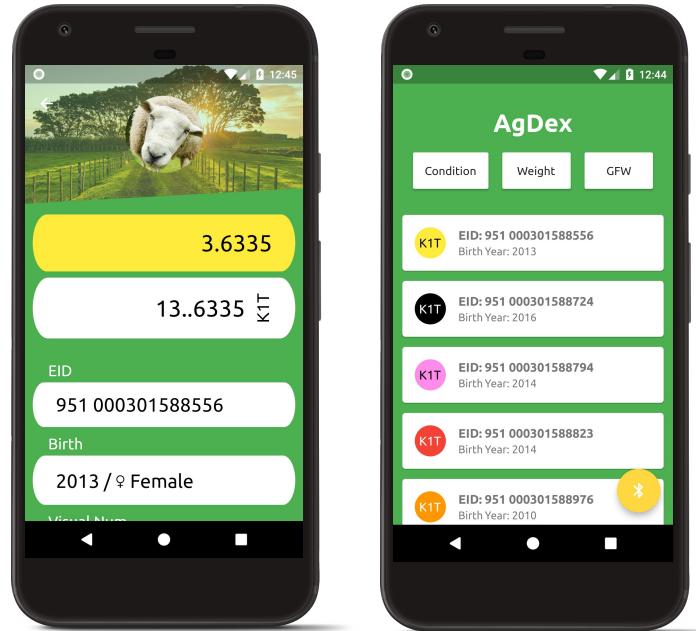
A tablet displaying the agdex app interface. The top navigation bar shows the agdex logo and the word "Livestock". The left sidebar menu includes "My Account" (john.doe@gmail.com), "Livestock" (selected), "Pedigree Analysis", "Performance", and "SmartSuggest". The main content area has a table titled "Livestock" with columns: EID, Origin, Tag, Stud, DOB, Sex, Condition, Weight, GPW, and Micron. Seven rows of data are listed, each corresponding to a different animal record. Below the table is a "Relative Performance" radar chart comparing five metrics: Offspring, Condition, Weight, GPW, and Micron, both for an "Individual" and an "Average". To the right of the chart is a map of Western Australia with a red location pin over Perth, and surrounding regions like Joondalup, Mandurah, and Bunbury.

# Step 1: Livestock RFID Pairing



- Simple sensor onboarding and pairing process of the **agdex collar** to set up tracking of **individual** ewes and lambs.
- Leverage existing **livestock identification tag**.
- Swapping sensors is **two taps** away!

## Step 2: Live Data



- Upon touching a sheep's **agdex collar**, the app reveals relevant up-to-date info.
- Add and update data in the field.
- **Rank ewes** by condition, weight, and greasy fleece weight, and more.
- Simple, fast, and reliable.

## Step 3: Analysis

ID	Origin	Tag	Stud	DOB	Sex	Condition	Weight	GFW	Micron
S09161201165001	KTT	20145001	RIM	07/12/2014	female	3.2	69.5	4.2	18.9
S09161201165002	KTT	20145002	RIM	09/12/2014	male	3.2	65.0	4.5	31.1
S09161201165003	KTT	20125003	RIM	04/04/2012	female	3.5	62.5	4.1	19.5
S09161201165006	KTT	20130006	RIM	15/05/2016	male	3.2	61.5	4.0	15.8
S09161201165007	KTT	20115007	RIM	23/07/2011	male	3.5	61.0	3.3	20.0

- AgDex combines a **smart tracker** provisioned by a **field-ready app** with a powerful **analysis solution**.
- Links available livestock data with gained pedigree insights.
- **Ranks ewes** based on performance and makes **intelligent breeding suggestions** to increase the median-value of the flock.

# Hardware Development

- Initial MVP uses the **ESP32** embedded development board.



- Design and fabrication of a specialized board is on the roadmap.
- Reducing power requirements; incorporate **gravitational** and **inertial sensors**.



# Market

- There are approximately **70.2 million sheep** in Australia on **5000 farms** with **14 million sheep in Western Australia** alone.
- Gross Export Market: **AUD \$3.9 billion**
- AgDex can be used effectively for **other types of livestock** of similar size.



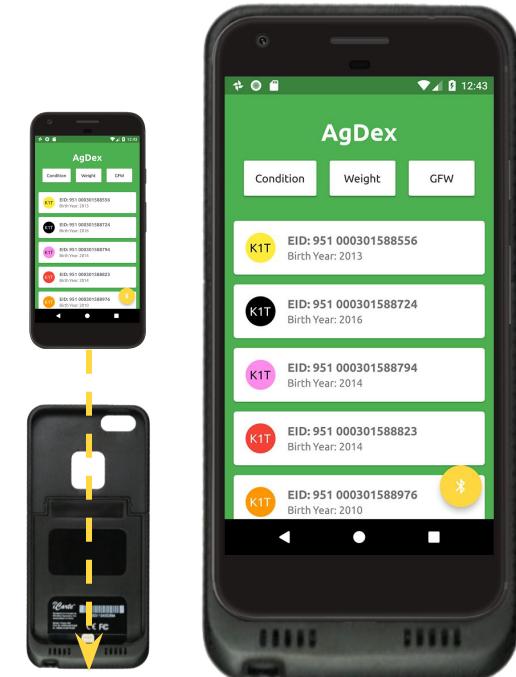
# Existing Solutions

- Current trials using **SmartShepherd** bring forward some key issues:
  - ▷ Point solution for a single problem in the space.
  - ▷ Data is siloed and not easily accessible to leverage.
- Approximate Pricing:
  - ▷ Pod (~\$15)
  - ▷ RFID Device with App (~\$1000)
  - ▷ Service Cost (\$2.50 per animal)

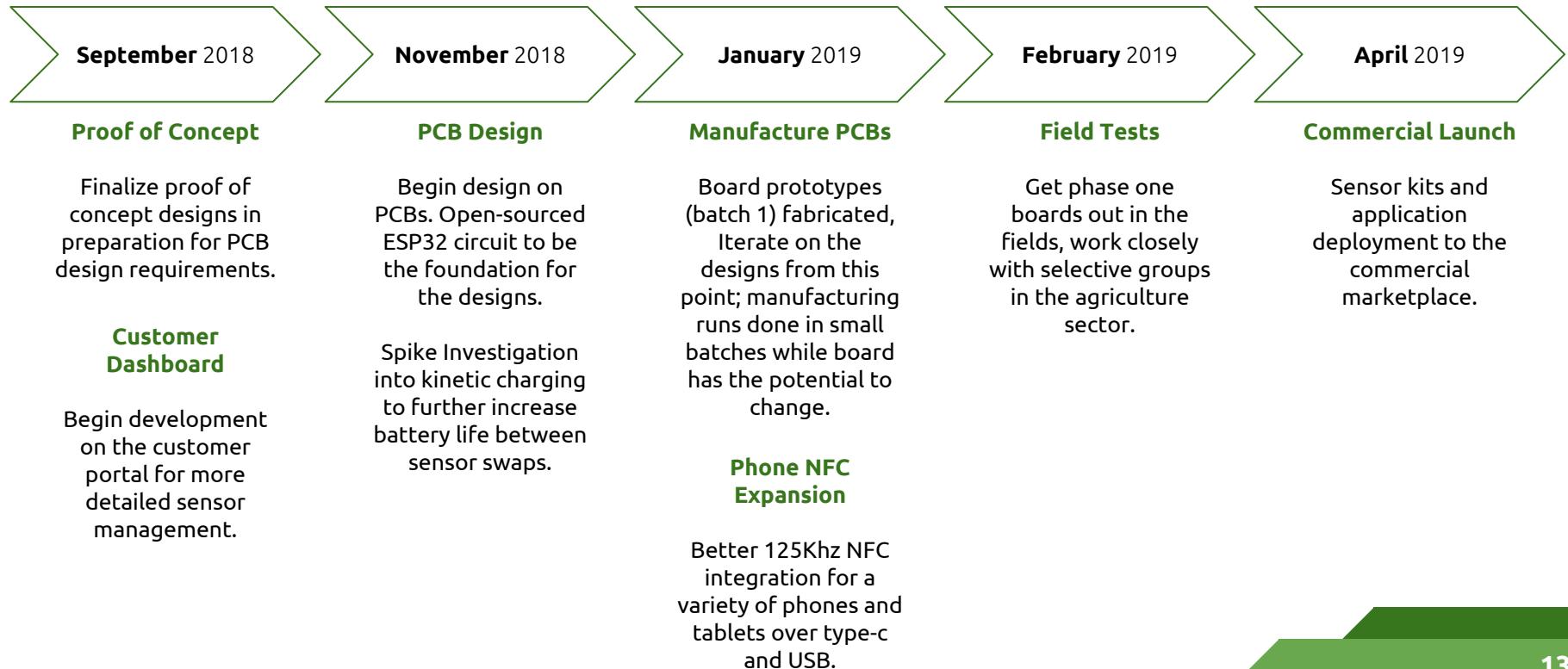


# Comparison

- **Existing Android / iOS device**
  - ▷ *Can be supplied by AgDex*
- **134.2 kHz RFID Reader** (for mobile device) (Optional)
  - ▷ Estimated cost ~\$70-\$100
  - ▷ *Recommended:* Avoid manual entry of animal ID tags
- **Smart BLE collar**
  - ▷ ~\$40-\$50
  - ▷ *Extendable via plug-in animal activity tracker*
- **Monthly Platform Subscription Service**
  - ▷ *Monthly access to the end-to-end platform*



## Roadmap



## We are Seeking...

- **Expert advice** and guidance.
- Farmers eager for **early adoption**.
- Seed funding

agdex

