



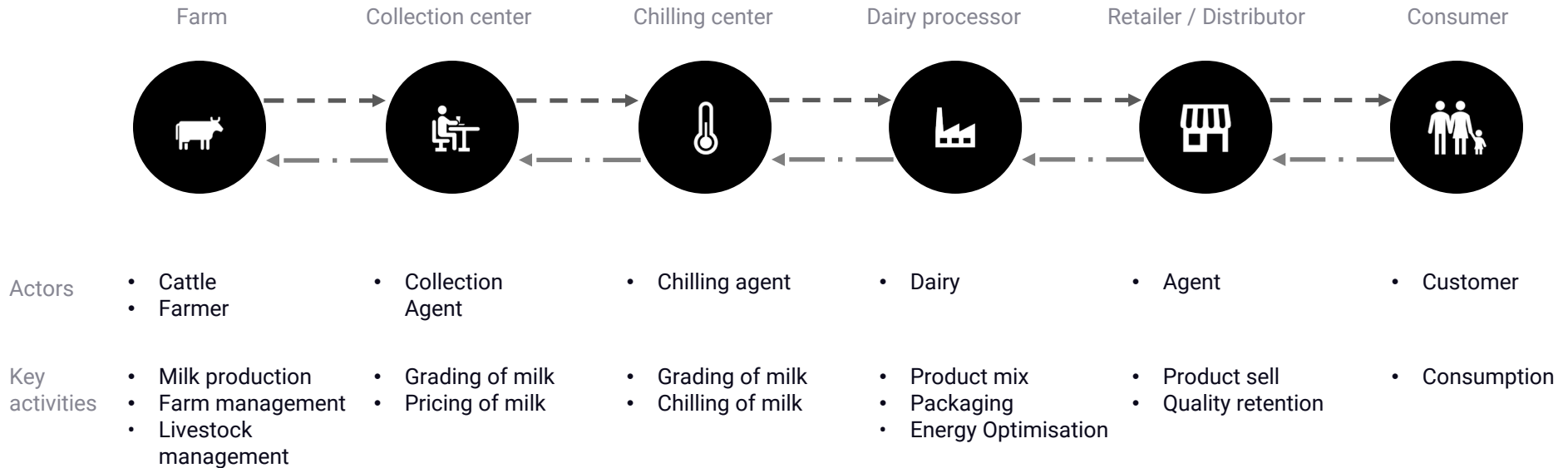
IoT and the Dairy Value Chain in India

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Overview of Dairy Supply Chain in India



Overview of Dairy Supply Chain in India

A Village Collection Center, A large Chilling Center



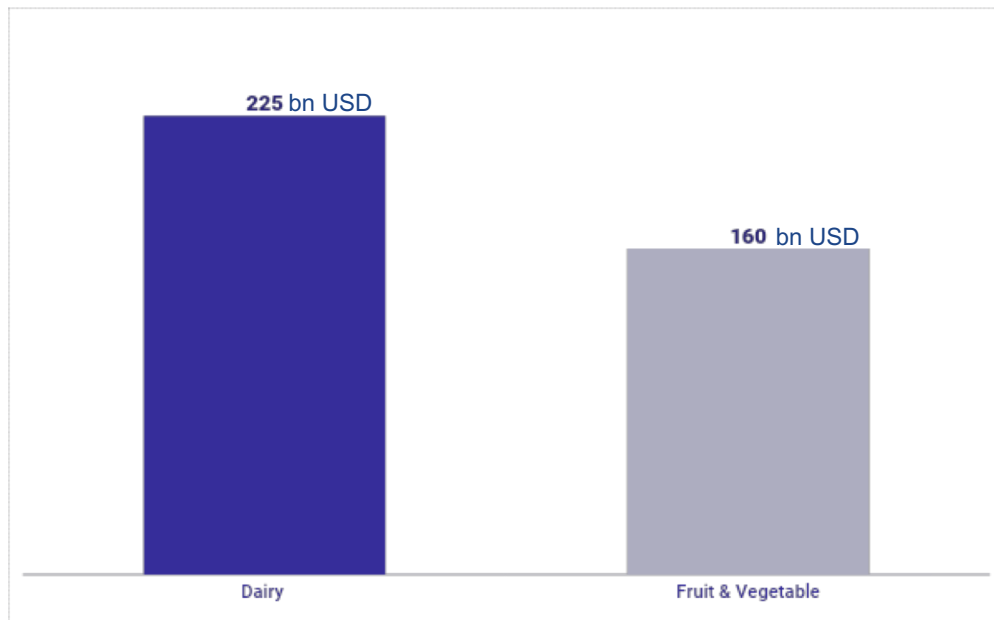
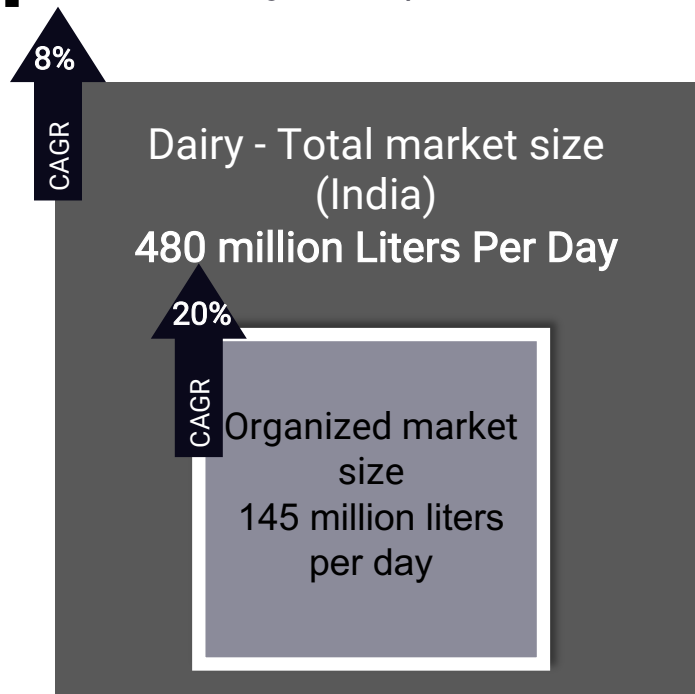
A Village-Level Collection Center

A Downstream Chilling Center



Indian Dairy scenario: a growing dairy market

Milk is the largest 'crop' in India and across the world



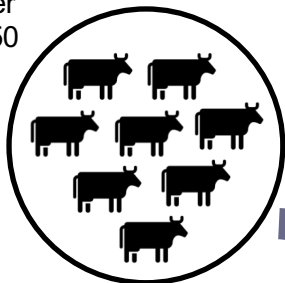
Total milk output and animal value represents around **7.6% of India's GDP***



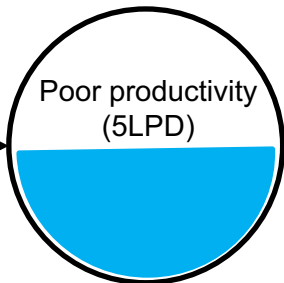
Why not just focus on livestock ?

Why take a supply chain view ?

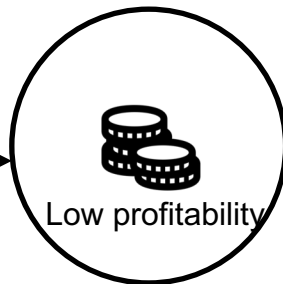
- Small holder farmers (~50 million)
- 300 million bovine



Poor productivity
(5LPD)

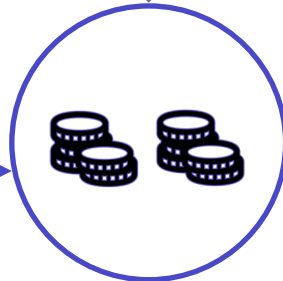
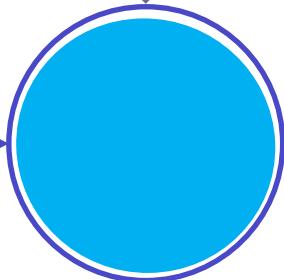
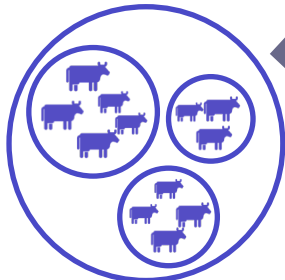


Low profitability



Transition fueled by tech because of the supply chain and demand-backward model

- Moving from subsistence to dairy as livelihood
- SHFs to grow into medium sized farms



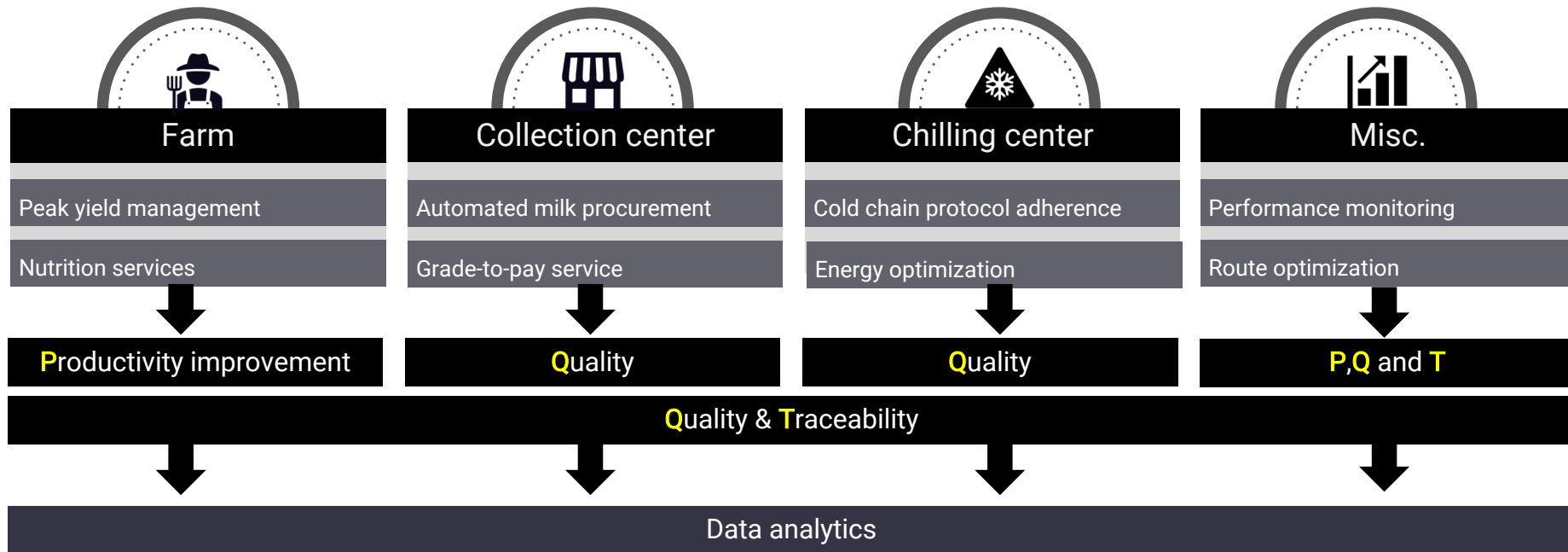
- Historically, emphasis has been to reach quantity-based milestones
- India is the largest producer of milk in the world today
- The yield per cow, however, is amongst the lowest

- Farm-side unit economics is a function of demand mappability
- India has a very good appetite currently for high quality milk and VADP
- With right interventions, this should translate to good economic value and should flow back to the farms



Creating value-chain impact with intervention at each node in the “Milk Route”

Leveraging advanced analytics and AI/ML to drive P, Q and T

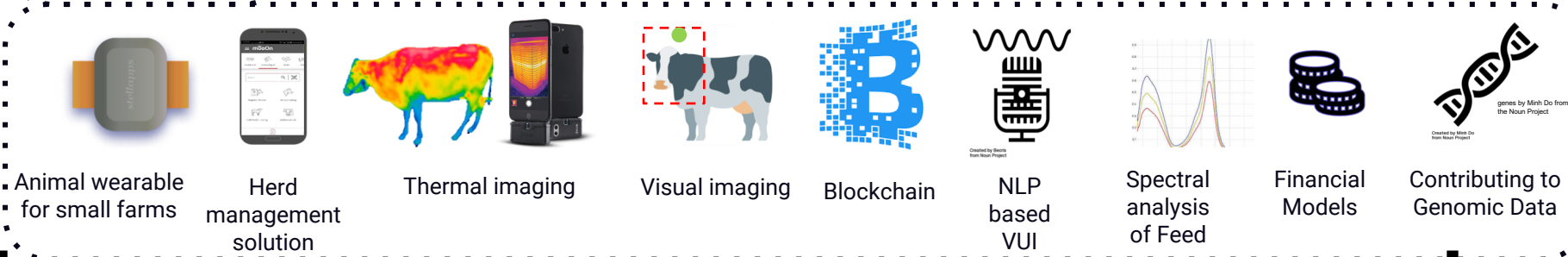
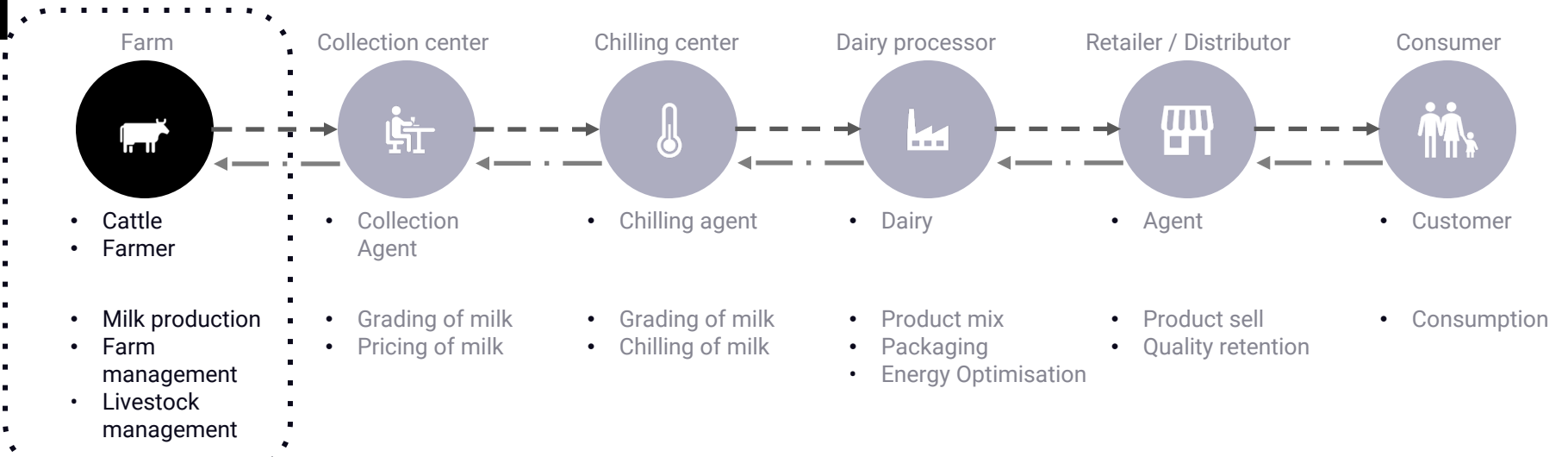


Key Learnings from our interventions at the farm level

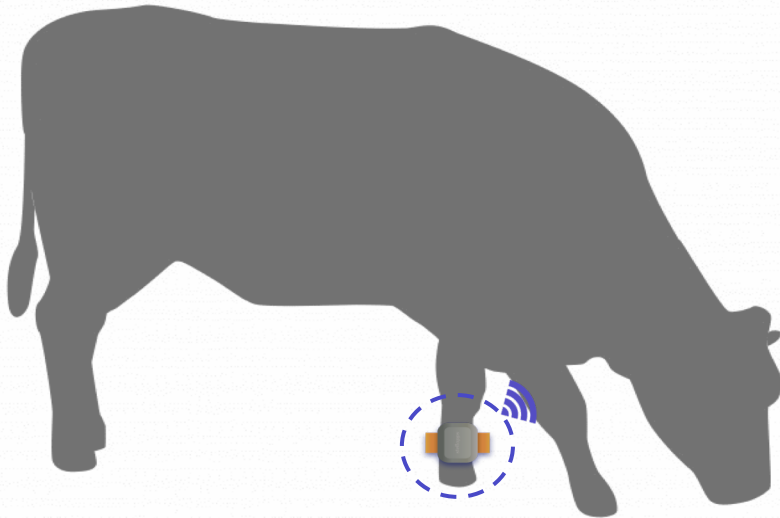
- Data Analytics: Completely dependent on quality of raw data
- More data that is human driven \Rightarrow More bias in the raw data
 - Unfortunately, human inputs cannot be eliminated
- Automate data capture where possible
- Demystify data capture
 - Use devices and interfaces that are easily available to farmers and agri extension staff
 - Use tech that do not overwhelm end-users
- Push content and information to users (rather than getting them to “login to portals”)
- Can individual farmers shape up to become role models?



Tech-based Interventions at the Farm for better Quality of the Data

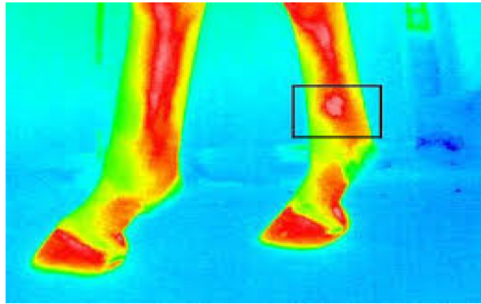


Data Capture at the Farm

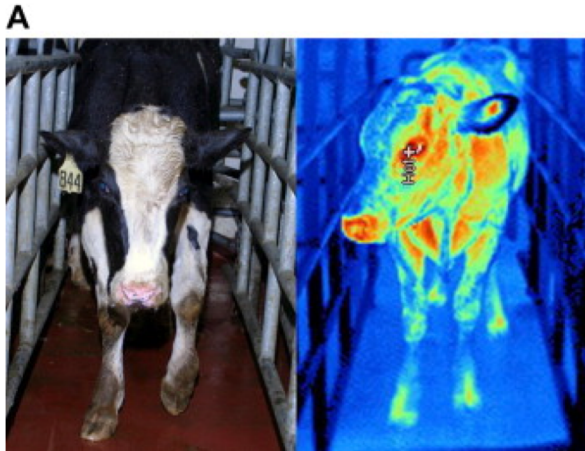


- Real-time cattle activity tracking
- Predictive analysis
- Disease detection based on animal activity
- Alerts to vets, para vets and farmers
- Digitizing animal health records
- Alive or dead status useful for cattle insurance

Data Capture at the Farm



Musculoskeletal problems - thermal imaging cameras can be used to diagnose a variety of disorders associated with neck, back and limbs (e.g. Lameness, hoof diseases)



Infection:

- Subclinical Mastitis and Clinical Mastitis
- FMD Infection (comparison between normal and affected)

<https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5234052/>

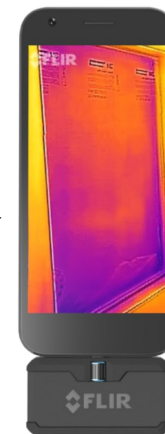
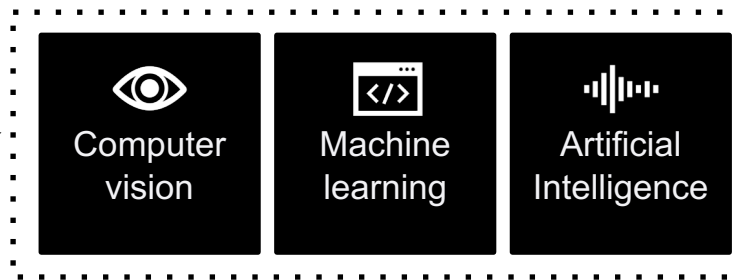
Authors: ICAR-NDRI, Bangalore]



Data Capture at the Farm



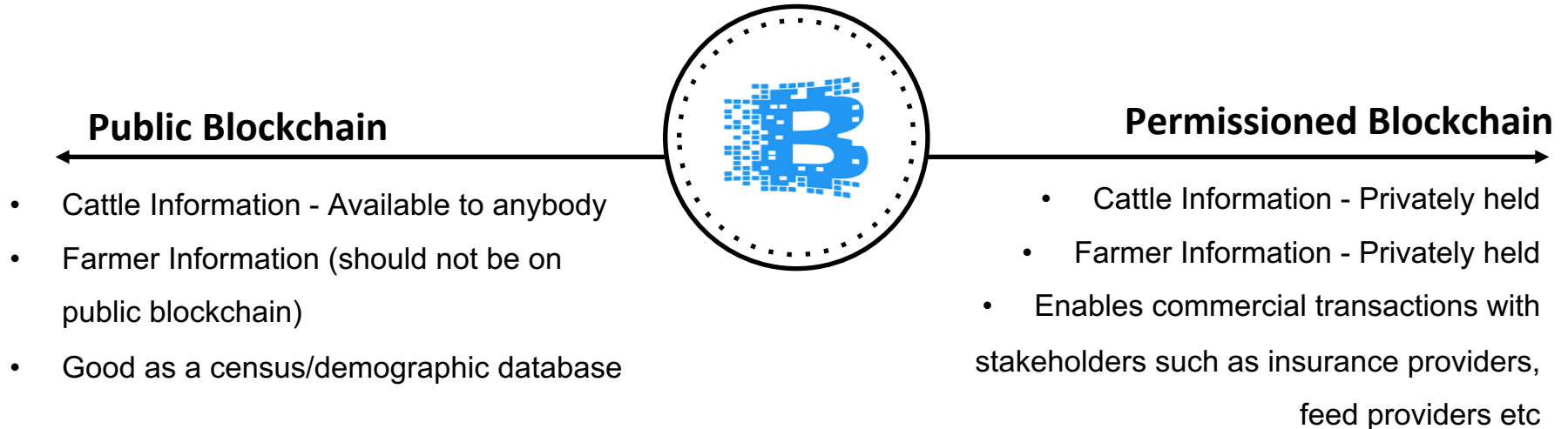
Democratised Devices



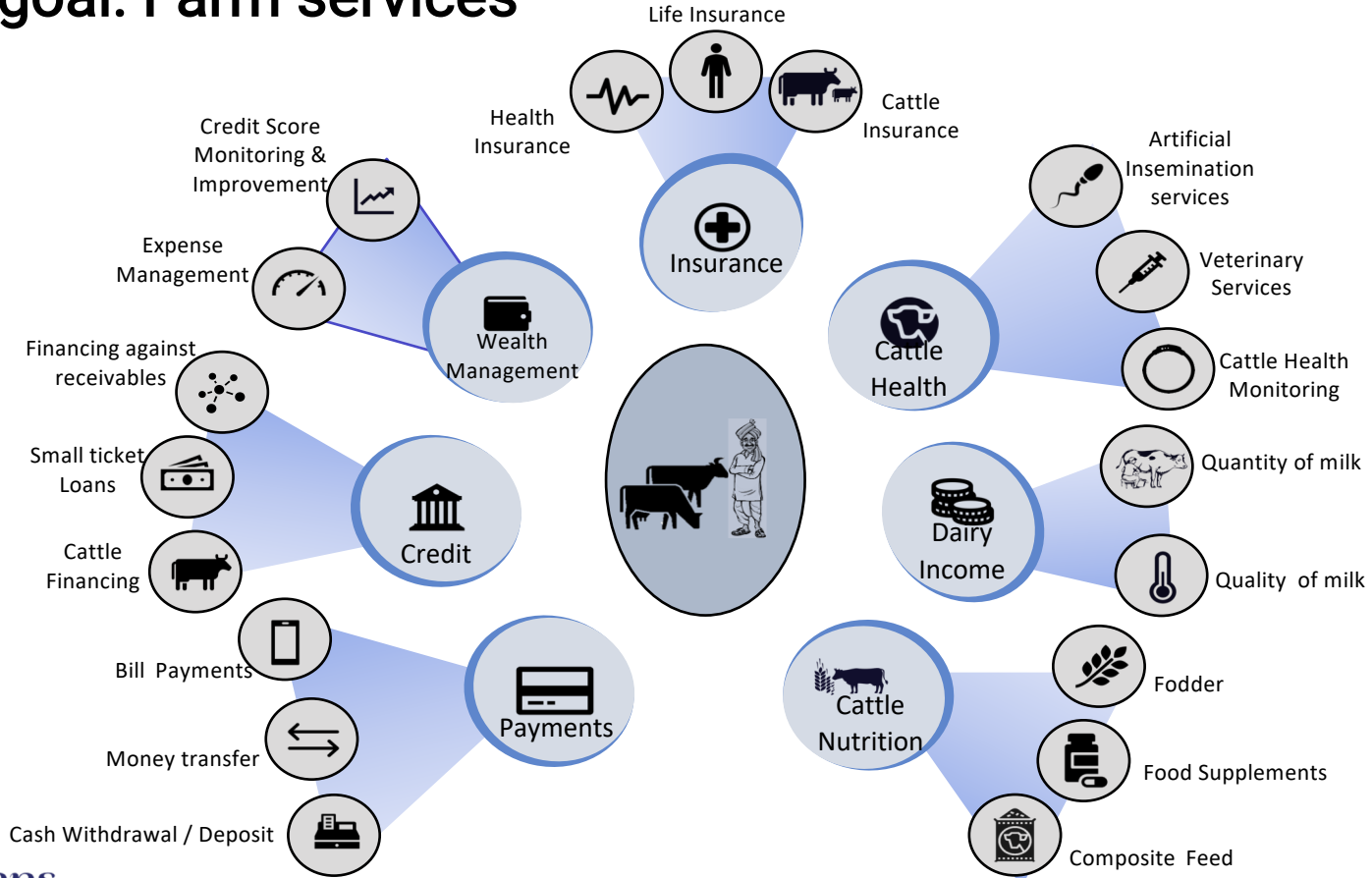
Extending this to Thermal Imagery



Farm and cattle data that can aid broader decisions, involving multiple contributors



The goal: Farm services





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