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PREMIUM
REPORT

Farm Management Information Systems

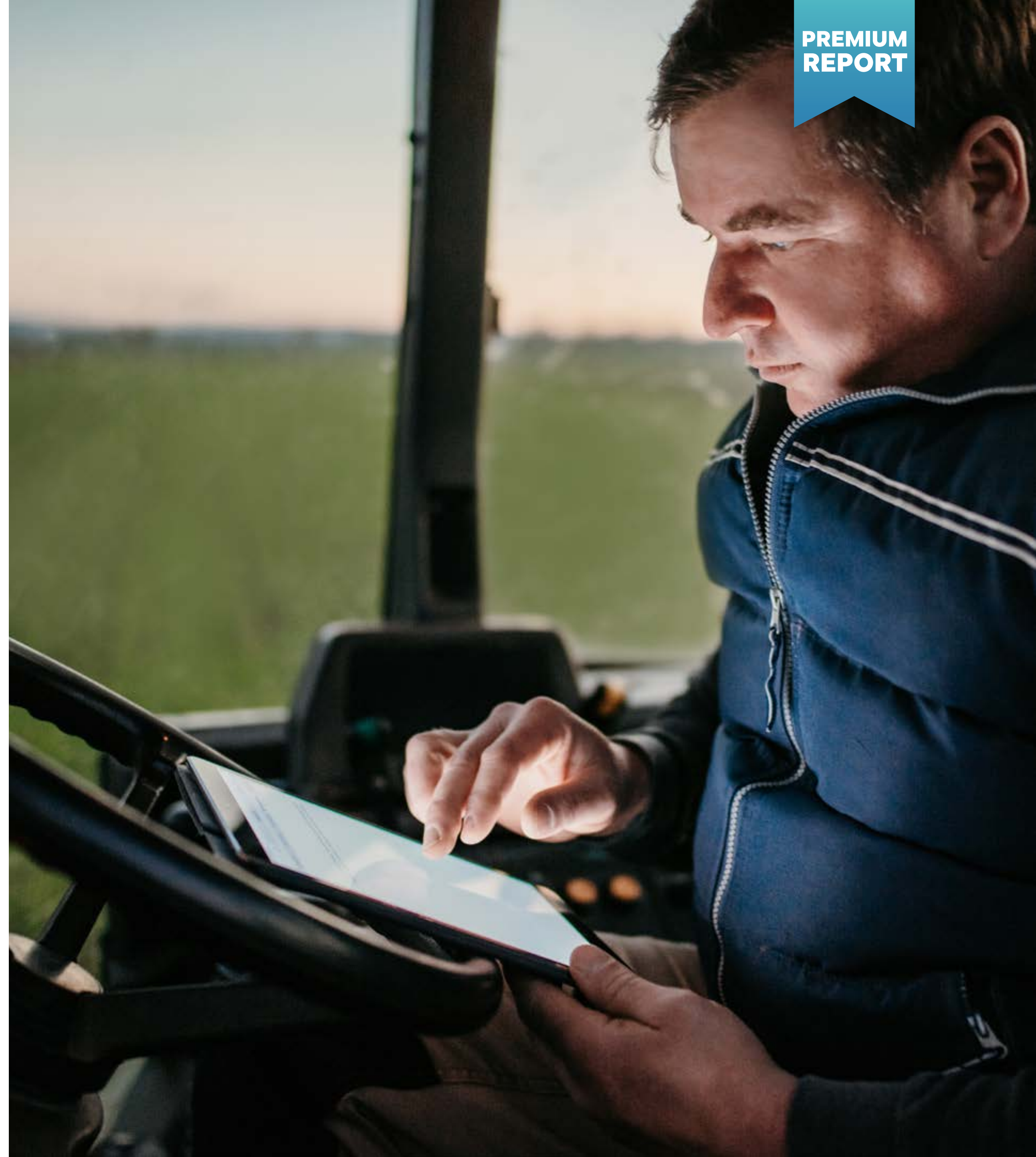
Premium Report Featuring 10 Exemplary Startups

Foodbytes
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Farm Management Information Systems

Foodbytes fosters connections within the F&A industry to drive meaningful improvement in the food value chain. To inspire and cultivate valuable collaborations, **we are exploring 10 critical themes throughout the year that we believe are positioned to drive sustainable impact.**

In March, our team explored Farm Management Information systems (FMIS), the data-driven technologies that continue to power improved decision making and operations on-farm. We scouted and reviewed more than 130 promising FMIS startups, honing in on key trends driving growth. On the ground at the World Agri-Tech Conference in San Francisco, the Foodbytes team gleaned valuable context for the role FMIS technologies have within F&A. In addition, we convened a small group of global Rabobank FMIS specialists, who lent their robust expertise in selecting 10 leading startups innovating in the space.



FMIS investment landscape and startup differentiators

Despite a global downturn in startup funding and valuations, venture capital investment into Farm Management Software, Sensing & IoT (Internet of Things) increased from \$30m to \$1.7B year-over-year according to [AgFunder's 2023 report](#).

This represents the biggest category increase within the broader agrifood landscape. Investors increasingly see Agtech as a component of climate tech – an area that has continued to attract investment. Upstream ag technologies that improve resource efficiency, reduce reliance on labor and contribute to supply chain resilience stand to benefit from this surge in investor interest. FMIS hits all those notes.



Here's what we believe are the most topical and critical characteristics for FMIS innovators today.

1

Defining value for growers:

The challenge of adoption is easier if a startup can provide a solution that is efficient, convenient, easy to use and productive. A win-win scenario must have immediate impact and demonstrable value, as opposed to innovations reliant on practice change and a long impact horizon.



2

Prioritizing operational sustainability:

FMIS must address sustainability on two fronts and answer two critical questions.

1. Does it make the farm operation fundamentally better?
2. Will it support financial sustainability via long-term operational profitability?



3

Compatibility is king:

Exponential improvements in data collection and advancements in API (Application Programming Interface) capabilities represent an opportunity to design engender compatibility across discrete technologies.



4

Forging a path towards standardization:

There is a lot of siloed, fractional data out there, which creates a massive opportunity to develop a framework for standardization and interoperability.



5

Improved spatial resolution:

Advancements in spatial imaging have resulted in increasingly smaller resolution, allowing growers to get closer to plant-level management. Growers need to leverage niche data to make more informed, full-operation decisions.



10 Exemplary Startups Pioneering FMIS

Over the last ten years, FMIS technologies have become adept at broadscale **data collection**. The critical piece for startups now is communicating a value proposition that resonates with the “massive interest corporations have in associating specific data with sustainable farming practices through the value chain,” **says Rabobank’s Global Head of FMIS, Robert Lubben.**

Although specialization can create data management products that are strong in their area of functionality, they tend to only solve for one point in the value chain. There’s a market opening for technologies that can address multiple points of data and leverage a broad set of information to provide an end-to-end solution.

How are startups addressing these drivers in unique ways? What type of traction are they seeing? How can you learn more and collaborate with them?

We’re glad you asked! Click their names in the following pages to link through to their Foodbytes profiles.

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There is a high level of collaboration needed with each partner you interact with. The current state of data drives higher costs. Systems that solve for this by making it easier to collaborate and lower the cost of operations still need to consider the high cost to maintain individual point-to-point solutions..

Duey Yliniemi of Greenstone – a Cultura Company, speaking at World Agri-Tech in March, 2023



The Full Value Chain Connectors

KisanHub

- **KisanHub:** Offers a full value chain analysis of data ranging from on-farm agronomic and environmental data to supply chain logistics and procurement contracts.

farmdeck

- **FarmDeck:** Provides a network of sensing and monitoring technologies that manage animal mobility, grazing and spatial mapping.

AGRIVI

- **Agrivi:** Synthesizes crop management data to optimize planning, operations and financial decision making. Provides field-level analytics to assess soil health, yield performance and risk management.

agtools®

- **Agtools:** Aggregates data for over 500 specialty and commodity crops from field to retail point-of-sale.

Streamlining Operations Through Data Aggregation

Improvements in edge computing and cloud aggregation software are empowering startups to combine plant-level data to produce prescriptive management decisions that streamline farm operations.

According to Rabo Agrifinance's Senior Data Analyst AI Griffin, the FMIS space is crowded with a lot of "descriptive products but not a lot of prescriptive products." Many startups are sparse on details currently, he says.

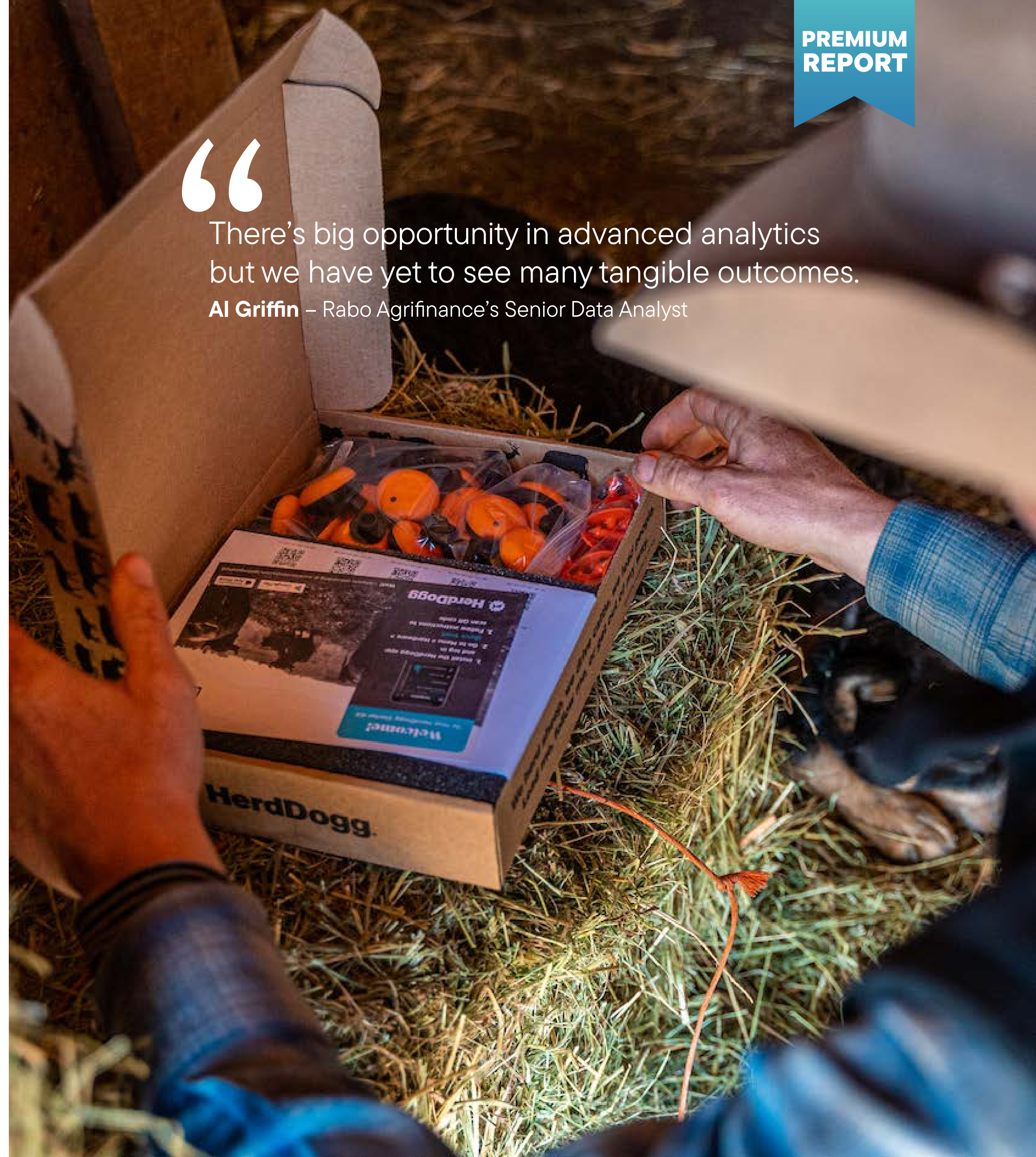
When growers utilize the faster processing power of edge computing technology, they receive details that paint a more accurate view of their fields and herds, leading to more efficient outcomes.

Data stored and aggregated in the cloud also improves outcomes, creating more access to a broader set of information and allowing faster and more efficient real-time management. Startups pioneering sophisticated aggregations can grow more effectively through collaboration, rather than sourcing 100% of the data they're aggregating.

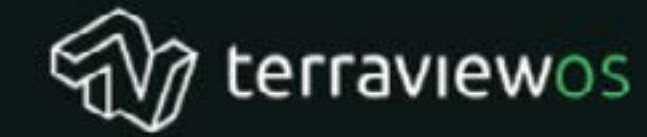
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There's big opportunity in advanced analytics but we have yet to see many tangible outcomes.

AI Griffin – Rabo Agrifinance's Senior Data Analyst



The Collaborative Aggregators



- **Terraview:** Aggregates a suite of vineyard operational efficiency monitoring tools aggregated in a central dashboard to improve yields and reduce input costs.



- **AquaSpy:** Operates in irrigation optimization technology that references a cloud platform to help growers better understand soil stewardship to be more efficient and sustainable.



- **Fermata:** Deploys a suite of disease detection reporting products that leverage computer vision learning algorithms to report on a wide variety of pathogen and insect infestations.



- **Herddogg:** Outfits herds with remote wearable sensing technology designed for herd management and animal health analytics.

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The only way to solve any bold ambitions that the industry has [is by] sharing information upstream and downstream to really be able to track a product as it moves through a value chain. That's the only way to solve these issues at scale.

Elizabeth Fastiggi, head of worldwide business development for agriculture at Amazon Web Services (AWS), when speaking at World AgriTech in March 2023.

Integration as a Steppingstone to Standardization

We believe integrations that leverage the growing set of collected data will provide a steppingstone to industry standardization. Reducing the number of apps in the hands of growers through a centralized system will be critical to building a holistic understanding of data across the value chain.

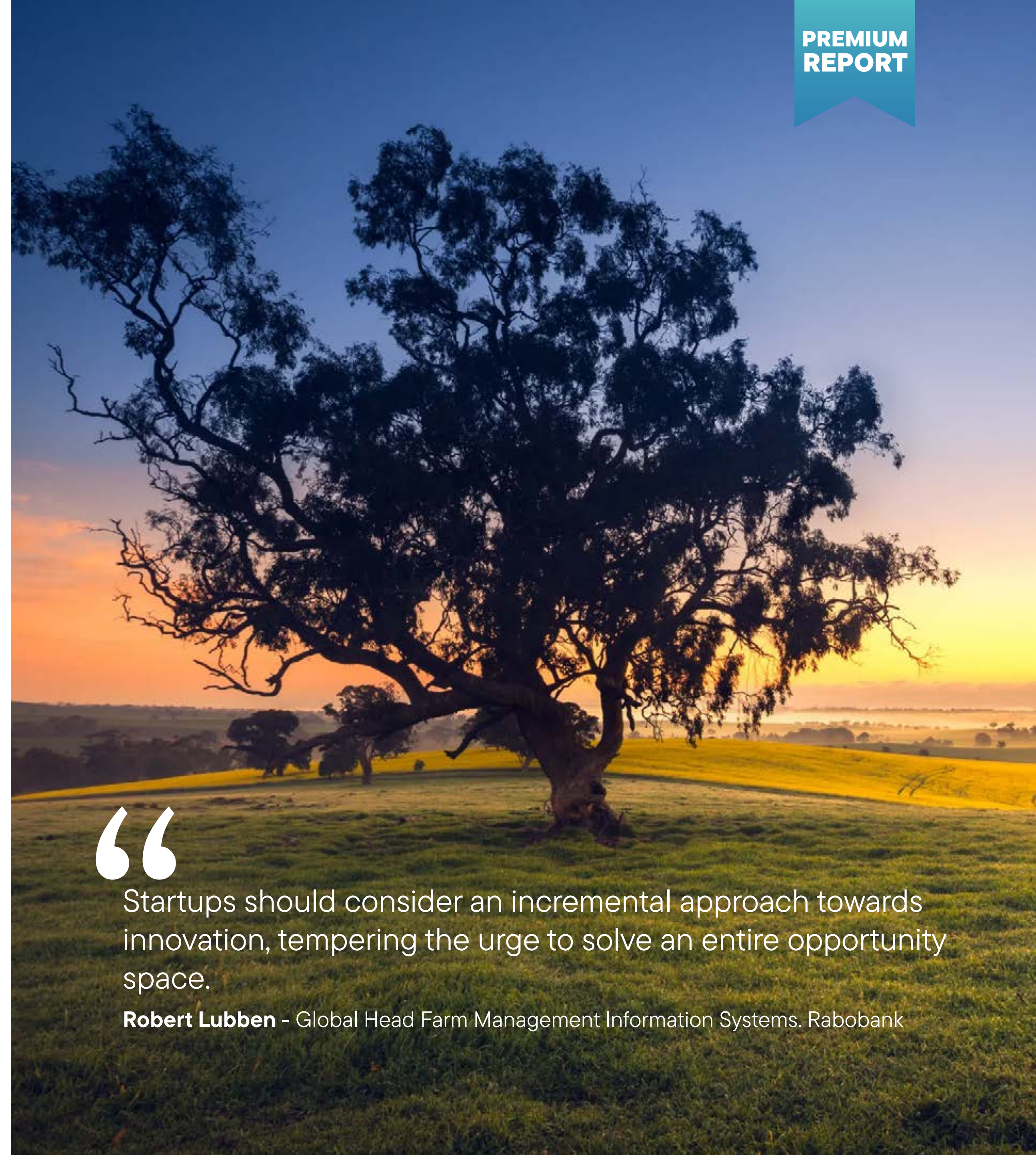
Systems that make it easy to collaborate while lowering operational costs will be the backbone of a strong digital infrastructure for agriculture. Innovators that building easy-to-use APIs and developing stronger startup partnerships with leading data storage corporations are best positioned to deliver a more efficient and universal understanding of on-farm data.

“Data aggregations that substantively improve farmland mapping, advanced analytics, and sustainability metrics represent a big opportunity,” shared Robert Lubben during our startup review earlier this month.

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Startups should consider an incremental approach towards innovation, tempering the urge to solve an entire opportunity space.

Robert Lubben - Global Head Farm Management Information Systems. Rabobank



The Bold Integrators



- **Pairtree:** Centralizes multiple streams of novel data in a single log, allowing the company to integrate data from various sources and give end users the flexibility to remain software and hardware agnostic.



- **Ancera:** Provides animal health and viral detection technology that integrates distinct data inputs to provide a single pane view of the entire value chain.

A window to the future of FMIS

The current challenges and opportunities in FMIS span across clearly defining grower value, prioritizing operational sustainability and focusing on compatibility and interoperability from the get-go. Beyond these growth areas, we see two major trends impacting the FMIS space:

- 1. Improved privacy capabilities:** Strong privacy policies are currently a baseline for new entrants to the FMIS sector. As a younger generation of growers takes over operations, there will be increased willingness to share data. Technologies that demonstrate trustworthiness and can securely anonymize information across many inputs will have a stronger path to scalability.
- 2. Service-forward technologies:** We expect winners in the FMIS space to place more emphasis on service in the future. Technologies will differentiate themselves in a crowded field by addressing the service gap among technologies requiring an auxiliary workforce to optimize efficiency.



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