



Final Report

MLA and AgTech: A conceptual partnership bringing technological solutions to MLA members

Project code: P.PSH.1393
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Date published: 29.02.2024

PUBLISHED BY
Meat & Livestock Australia Limited
PO Box 1961
NORTH SYDNEY NSW 2059

This is an MLA Donor Company-funded project.

Meat & Livestock Australia acknowledges the matching funds provided by the Australian Government to support the research and development detailed in this publication.

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Abstract

The AgTech & Logistics Hub (ATLH) approached Meat and Livestock Australia (MLA) to be a collaborative service provider to source, develop, deploy, and demonstrate an innovation platform that drives digital ag solutions and a data culture for the Australian red meat and livestock sector.

ATLH aims to be industry-led, operating a true open innovation framework to scout globally and across industries for the right solutions and partners. Adopting an agnostic approach, the abovementioned project did not involve any commercial interests, with a focus instead on supporting close-to-market solutions to demonstrate that the ATLH addresses real producer problems and generates valuable opportunities.

The project ran for 18 months, and in conjunction with MLA Donor Company, established a baseline for today's digital ag innovation pipeline and a structured series of 'events' at the Toowoomba-based AATLIS 'smart farm'. This provided MLA with a pathway to encompass ideation-style boot camps, scouting and match-matching, followed by ground-truthing demonstrations with providers towards reducing associated risks before producers take agtech onto their farms.

Through an industry-led open innovation framework, the pilot project involved scouring the nation and the world for the right solutions, partners and programs towards enabling the red meat and livestock sector to drive uptake of Industry 4.0 digital ag and economy elements.

This partnership represents an evolving strategy for MLA that combined a 'smart farm' demonstration site with scouting and an open innovation platform that aimed to have a higher percentage of conversion of agtech uptake by producers. This also included a structured innovation pipeline that sought to address complex problems associated with mustering and whole-of-life wellbeing, and/or specific times of stress such as reducing calving mortality, water usage and crops feed base, animal husbandry and productivity mapping.

Executive summary

Background

This industry-led program was designed to assist the Australian red meat sector by adopting emerging digital technologies as well as utilising a combination of open innovation and challenge-led program sprints.

The ATLH was engaged as an external partner to complement and augment MLA's objectives using their open innovation program, OpenGround. The OpenGround program leverages a *coordinate, collaborate and commercialise* framework that sources solutions from its extensive partner ecosystem across strategic suppliers, universities, venture partners, innovation networks and corporate customers. The program coordinates the challenge focus areas and searches for solutions both nationally and globally. By promoting on-farm trials, demonstration days, and fostering collaboration, the red meat industry was exposed to digital technologies that support livestock well-being, water usage, crop feed base, animal husbandry, and productivity mapping.

Objectives

The primary goal of the program was to encourage the use of digital technologies, while also creating a collaborative ecosystem. Its specific objectives included promoting digital agriculture solutions, nurturing a data-driven culture, encouraging open innovation without commercial interests, organising events and demonstrations at the AATLIS 'smart farm', facilitating Industry 4.0 adoption, and increasing the use of agtech by establishing an innovation pipeline for managing livestock challenges.

Methodology

The OpenGround project methodology was designed to optimise engagement with the red meat industry and deliver impactful technology solutions that solve defined challenges.

The project used a series of interviews, open-ended surveys, case studies, observations and focus groups to define the challenges, an extensive ecosystem, and digital tools. It also used an expert panel to scout and select digital solutions and then demonstrate their impact at the AATLIS smart farm.

Overall, three sprints were delivered, which focused on the following:

- maximizing technology demonstration and adoption,
- closing the traceability loop in livestock transport, and
- enhancing crop and pasture management.

The ATLH project established objectives aimed at fostering technology adoption through networking, agnostic scouting and selection, on-farm trials, and expert validation. This approach facilitated connections with over 530 producers, 150 innovators, 45 corporate agribusinesses, 8 grower groups, 5 venture capital firms, and numerous other networking interactions, providing valuable insights that informed and directed the project sprints.

*** A detailed breakdown of networking interactions and industry insights can be found in the Appendix.*

Results/Key Findings

The project accelerated MLA's innovation agenda, aligning industry stakeholders such as farmers with MLA team members, innovators, and government agencies.

The collaborative methodology resulted in an increased awareness of digital technologies and encouraged the active adoption of solutions at and beyond the product demonstration days.

The project found that reliable technological solutions exist in areas like crop and pasture management and livestock transport, with post-demonstration day engagements continuing between MLA team members and their levy payers.

Over 18 months, the program engaged over 780 stakeholders, providing MLA with direct access to levy payers and facilitating industry progress. Clear challenge definitions fostered internal alignment among MLA departments, resulting in tailored products that directly address levy payers' needs and benefit the industry as a whole.

Throughout the three sprints, we received and reviewed 45 applications against specific criteria, with 20 advancing to the demonstration stage. It is noted there's a need for further development of post-demonstration programs to facilitate broader and more timely adoption.

Transforming Agricultural Engagement

The partnership between ATLH and MLA Donor Company represents a significant shift in agricultural practices, prioritising immersive engagement and rapid technology deployment to drive innovation and accelerate adoption. Through real-world experiences and collaboration among stakeholders, this model fosters an innovation culture and identifies areas for future research, enhancing industry resilience. Strategic scoping and monitoring ensure tailored solutions for Australian farms, delivering tangible value and benefiting MLA Levy payers. Such value and benefits include the following:

- An emphasis on immersive engagement and swift technology deployment;
- fostering an innovation culture and accelerating adoption;
- identifying critical areas for future research, in turn enhancing industry resilience;
- ensuring tailored solutions for Australian farms through strategic scoping and monitoring; and
- delivering tangible value and benefits to MLA Levy payers.

Benefits to Industry

The ATLH program had a significant impact on the Australian red meat industry, fostering collaboration and driving innovation through increased digital connectivity and on-farm engagements.

- It increased digital connectivity for producers through on-farm engagements.
- Hub-to-farm tours provided insights for better-designed technologies.
- Corporate technology providers and regulators improved accessibility to cutting-edge solutions.
- It highlighted areas for future research to address evolving challenges.
- It validated industry readiness for innovation through events and programs.
- It positioned industry for growth and global competitiveness while meeting consumer demands.
- Its commitment to advancing industry standards enhanced sector resilience and market access.

Future Recommendations

- This program has enabled industry challenges to be identified and for MLA to work closely with industry on innovative solutions. As such, we recommend this program be continued with direct levy payer engagement.
- MLA should seek to establish post-demonstration day pilot programs to further extend the adoption of promising technology within industry. The pilot program can establish application criteria, and its inclusion would increase the innovation response from the global market.
- MLA is encouraged to participate in the ATLH's commercial programs that assist in scaling solutions directly with the industry using our extensive ecosystem of resources and capability.
- ATLH proposes hosting an annual technology demonstration event with MLA to showcase industry advancements and promote collaboration and knowledge sharing among stakeholders.

Further, and in addition to the above, industry feedback and priority focuses included implementing digital solutions for

- biosecurity compliance,
- traceability and market access,
- pasture management optimisation,
- energy efficiency, and
- Net Zero.

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1 Background

This project aimed to address critical challenges within the Australian red meat industry, with a focus on promoting technology awareness, adoption, and improved practices. The aim was to bridge the gap between emerging digital agricultural technologies and their adoption by industry stakeholders, specifically livestock producers. The primary goal was to facilitate the seamless adoption of these technologies while promoting their use. The project targeted Australian livestock producers, agribusinesses, technology providers, and industry decision-makers to provide valuable insights and tangible outcomes. The project stood out by combining program sprints with an open innovation platform, actively promoting the adoption of digital agricultural technologies through on-farm trials, discussions, and collaborations, making it a practical initiative for real-world impact in the industry.

2 Objectives

The overall program objective was to facilitate innovation, promote the adoption of digital solutions, and create an open and collaborative ecosystem within the Australian red meat industry to effectively address challenges and increase opportunity.

Specific key objectives included the following.

- *Drive digital agriculture solutions:* The program aimed to source, develop, deploy, and demonstrate an innovation platform that promotes digital agriculture solutions within the Australian red meat industry.
- *Foster a data culture:* To create a data culture within the sector, emphasising the importance of data-driven decision-making and innovation.
- *Open innovation:* ATLH seeks to operate an open innovation framework, scouting globally and across industries for the right solutions and partners. The focus is on supporting solutions that address real producer problems and opportunities without commercial interests.
- *Events and demonstrations:* The program ran for 18 months and established a baseline for the digital agriculture solutions innovation pipeline. It aimed to conduct structured events and demonstrations at the AATLIS 'smart farm' in Toowoomba, involving ideation-style boot camps, scouting, matchmaking, and ground-truthing demonstrations with agtech providers.
- *Industry 4.0 adoption:* Through open innovation, the program aimed to enable the red meat industry to embrace Industry 4.0 digital agriculture solutions and related economic elements.
- *Conversion of agtech uptake:* It represents a strategy to increase the adoption of agtech solutions by producers. It seeks to provide a structured innovation pipeline to address complex problems across various aspects of livestock management, such as mustering, animal health, water usage, and productivity mapping.

3 Methodology

The role of the ATLH is outlined in the appendix.

The methodology used for Sprint 1 varied considerably to sprints 2 and 3.

Sprint 1 engaged directly with levy payers to identify common challenges. Through a combination of surveys and one-on-one interviews four major challenges arose. Those challenges are listed below.

Sprints 2 and 3 required a traditional ‘challenge-led’ open innovation methodology directly with industry and MLA. The methodology is underpinned by three pillars: coordinate, collaborate and commercialise (see graphic). A challenge-led scoping session was held with industry stakeholders to capture valuable insights. The session objective was to create a problem statement (EOI) for the market. Once the EOI was in the market, the applications were assessed against a selection criterion that can be distilled into three key pillars: program fit, customer and channel demand, and value proposition and feasibility (ROI). Once applications were shortlisted against the selection criterion and a cohort was finalised, technologists were invited to demonstrate their products and solutions at the Demo Day, a major event held at the ATLH facility. More on this process is outlined below, under ‘Program Sprints’.

The Agtech and Logistics Hub acts as the facilitator of innovation for your organisation.

	Coordinate	Collaborate		Commercialise
Stage	1 Scoping Session	2 Expressions of Interest	3 Selection Criteria	4 Showcase/Pilot
Stakeholders	Management Champions Doers	Management Champions Doers	Management Champions Doers	Management Champions Doers
Time frame	1 Day	4 weeks	2 weeks	1 month
Outcomes	Confirm Problem Statement	Full list of startups, innovators & products	Shortlist of startups, innovators & products	Solution Showcase

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Program Sprint 1: Maximising Technology Demonstration and Adoption

70 MLA levy payers representing the regional red meat industry attended a series of events and workshops. The AATLIS smart farm in Toowoomba was chosen due to its central location and its establishment of a reputation for innovative agriculture practices. The goal was to increase the likelihood of successful on-farm uptake and trials of demonstrated solutions that enhance productivity and efficiency in the Australian red meat industry.

A combination of surveys and one-on-one interviews were used to identify key challenges and opportunities faced by the producers. Four major challenges were identified by growers, as follows:

- digital connectivity,
- carbon farming,
- biosecurity, and
- traceability.

Every farmer expressed a desire to incorporate these aspects into their operations but lacked a clear starting point for adoption. While digital evolution offers opportunities and potential risks for growers, the following areas were singled out as particularly critical:

- Cybersecurity
- Connectivity
- Data interoperability
- What strategies can be employed to establish a digital plan that remains relevant and effective in the long-term?



Program Sprint 2: Closing the Traceability Loop in Livestock Transport

The open innovation methodology is underpinned by three pillars: Coordinate, collaborate and commercialise (see graphic). A challenge-led scoping session was held on July 12, 2023, and attended by 21 participants, including MLA representatives, industry experts, technology innovators, transport providers and livestock producers. Examples of companies that were represented at the scoping session include Australian Country Choice, Aglive, Austrex, Carter Transport, Direct Livestock, Farmed Well, Stockyard Beef and the Department of Agriculture and Fisheries.


The objective of the session was to create a problem statement for the market. To land on a well-informed problem statement, participants were guided through a series of surveys, innovation tools and live activities. Crafting an effective innovation problem statement serves a dual purpose:

1. It succinctly describes the issue at hand, and
2. It provides clear guidance on the scope and boundaries of the solution.

How our OpenGround Program Works

The Agtech and Logistics Hub acts as the facilitator of innovation for your organisation.

	Coordinate	Collaborate		Commercialise
Stage	1. Scoping Session	2. Expressions of Interest	3. Selection Criteria	4. Showcase/Pilot
Stakeholders	Management Champions Doers	Management Champions Doers	Management Champions Doers	Management Champions Doers
Time frame	1 Day	4 weeks	2 weeks	1 month
Outcomes	Confirm Problem Statement	Full list of startups, innovators & products	Shortlist of startups, innovators & products	Solution Showcase



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Scoping Session Goals & Outcomes



OpenGround – Goals for today include:

- Explore the genuine challenges faced by our consumers and stakeholders,
- Examine the opportunities for innovation to create preferred outcomes
- A fit for purpose problem statement that will be used as part of a worldwide Expression of Interest and application process
- Buy in from all MLA stakeholders






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The scoping session offered diverse perspectives, enhancing our comprehension of sector challenges, and enabling stakeholders to articulate precise pain points and share practical experiences. Participants were surveyed prior to the scoping session to identify their goals for participation. Below are some of their responses.

Session Goals – Survey Responses



“Arrive at a **well framed problem** statement that leads to an **effective global solution scout process** where viable use cases and value propositions exist.”


“The various technologies exist to address this problem, so we just **need funding and commitment** from MLA and key stakeholders to execute in a **collective manner**”

“Adoption of sensible **paddock to plate digital technology**”

“Cost effective automated traceability for livestock industries, and identify industry players for collaboration”

“Innovation that improves **traceability, animal welfare and compliance** without adding **more pressure** on primary producers whilst **providing a noticeable financial gain** for producers”

“**Clear problem statement** that allows innovators to **rally behind**, and a pathway forward to adoption of a solution”.



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Below is an example of the innovative tools we asked participants to populate during the session. There was a focus on key areas such as consumers/stakeholders, problem description, context, preferred outcomes, objectives, and the scope of innovation. Participants were given dedicated time to consider and utilise this template for the challenge at hand.

ATLH Open Innovation Scoping Canvas

A structured approach to scoping innovation projects for high growth companies

	Client	Program	Date
<p>Consumers/Stakeholders <i>Who has the problem, and most often?</i> Consumers have become increasingly concerned about the origin of their food - quality, safety & ethical.</p> <p>Growers - Ownership of their animals</p> <p>Trucking Providers - Get blamed</p> <p>End Point Party - Need to manage workforce and resources. Not have animals sitting around on trucks.</p> <p>Auditors - what data do I have on the animals to show the right procedures were followed</p> <p>Vets - If something goes wrong, I have no data to work with just opinions.</p> <p>Exporters - Need to supply traceability going forward US Mkt</p> <p>Stock agents with counts of animals onto and off the trucks</p>	<p>Problem <i>What is the root cause of the problem?</i></p> <p>Lack of transparency once animals leave the farm on the status of where the animals are?</p> <p>No data being collected on the journey</p> <p>Fragmented data management - not building to a story</p> <p>NLIS tags don't transfer data automatically and tags can be missing</p> <p>Cause of death not recorded</p> <p>No one point of aggregation of data to build insights</p> <p>Lack of understanding of what is required now & in the future</p> <p>Adoption of technology is low e.g. RFID, IoT, Traceability</p>	<p>Context <i>When does the problem occur? What does the consumer/stakeholder feel because of the problem?</i></p> <p>When - As the animals get counted onto the truck all the way through to being counted off the truck.</p> <p>Feelings - No understanding of arrival times therefore the resources can be constrained or underworked.</p> <p>Feelings - If something goes wrong there is a black hole of data to work with - starts the blame game</p> <p>Feelings - If animal carcasses dress out poorly or below expectations the supply chain is looked at. Currently no data to defend or improve processes</p> <p>Feelings of consumer - Are the animals treated well in transportation, they look crowded on hot/cold days. Consumers want assurance around quality, safety and ethics of their food</p>	
<p>Preferred Outcome <i>What would an ideal solution to this problem look like for the consumer/stakeholder?</i></p> <p>Consumer: Builds a consumer data source on the produce - breed, diet, living conditions, compliance and standards are met</p> <p>Industry Desires</p> <ul style="list-style-type: none"> - Easy to use - Data integrity and interoperability - Addressing key measurements / compliances - Cost effective - Compliant to Government e.g. bio-security <p>"Data to protect and promote the industry" - Paul Gibson ACC</p> <p>Enhanced Consumer engagement</p>	<p>Objective <i>How would we like to solve this problem better?</i></p> <p>Use technology to improve,</p> <ul style="list-style-type: none"> - What we have today NLIS for example - What we can we bring in that is new that addresses paperwork into a digital format - Shared data or easy to share - Secured data - No breaches to cyber security - Industry Led - Animal welfare the driver - ROI is acceptable - This piece of innovation feeds the rest of the traceability data collection by a farmer for their produce so a consumer can see the animal welfare 	<p>Scope of Innovation <i>What is the opportunity for innovation in solving this problem?</i></p> <p>Traceability to consumer telling the great story of the industry</p> <p>IoT to provide measurements</p> <p>Digital connectivity - phone to IoT in supply chain</p> <p>Trucking Innovation - Electric / hydrogen (Carbon footprint).</p> <p>Improved animal welfare - Livestock supply chain enhancements do to good data</p>	

Example Problem Statement

Nat's Group

How might we provide transparency in livestock transport performance from loading to unloading, for the supply chain on a per-head and per-transport basis so that we build confidence and trust in the livestock transport sector for the benefit of the Australian livestock industry through collection and reporting of objective performance data to enable regulatory compliance and welfare expectations of government and the community are met.

Owen's Group

Establish compliant livestock transport traceability data for whole of journey that provides for all supply chain partners protection or leverage.

Marc's Group

How might we improve product quality and confidence between all stakeholders, from property of origin to end receiver, through an automated digital platform (with real time digital traceability, "walk on, walk off" tracking, best practice data integrity) so that we can improve key pillar outcomes. .

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The following represents the final problem statement that went to market: ***In conjunction with MLA, we are looking at enhancing transparency and accountability to animal welfare and biosecurity in livestock transport by discovering solutions with a focus on data generating and business models that benefit all supply chain partners.***

Solutions could include, but are not be limited to, the following:

- capturing and reporting data for on-farm preparation of livestock for transport,
- improving supply chain transparency,
- tracking biosecurity compliance,
- ensuring the health and welfare of livestock,
- improving overall safety of transport, and
- reducing the environmental impact of transport.

Once the EOI was in the market, the applications were assessed against selection criteria, which can be distilled into three key pillars: program fit, customer and channel demand, and value proposition and feasibility (ROI). These pillars encompassed specific criteria, forming a comprehensive framework for evaluating applications.

In the context of *program compatibility*, the central objective was to assess the suitability of applicant teams and their alignment with the program's overarching objectives. Factors evaluated encompassed the commitment of teams, their relevant expertise, understanding of the challenge at hand, and adherence to governance principles.

Turning to the *channel demand and distribution strategy*, the focus transitioned towards evaluating the presence of genuine market demand for proposed solutions, their attractiveness to potential users, and the sophistication of their strategies for market penetration.

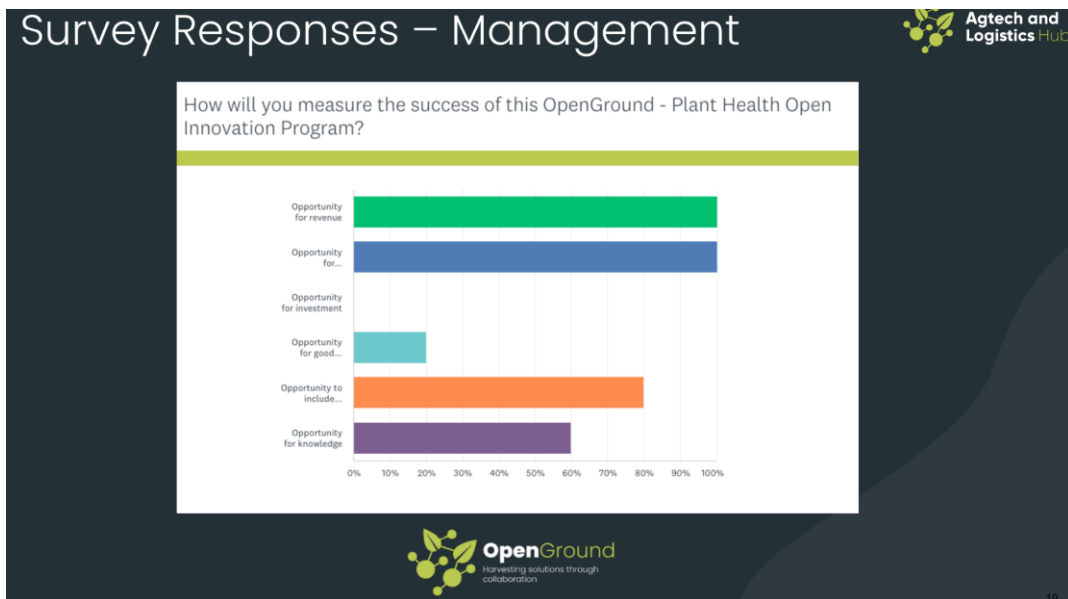
Lastly, the *value proposition and feasibility* pillars homed in on aspects of innovation, the potential impact of solutions, and their commercial viability. This encompassed the uniqueness of the proposed approach, the anticipated positive changes it could bring, and its potential for generating sustainable returns on investment.

The EOI received 15 applications, 10 of which were invited to demonstrate. Demonstrating technologies on the day included Aglive, Trust Provenance, ExoFlare, Wild Mouse, iTrazo, Truck Tracker, Livestock Track, Animal EyeQ and CuMesh.

Program Sprint 3: Enhancing Crop and Pasture Management

The third sprint of the open innovation challenge adopted the same methodology objectives, though in this sprint two additional components proved successful for the program.

Two industry-led scoping sessions were held on the 9th of August and 5th of September, respectively. Collectively, these sessions garnered participation from MLA representatives and up to 40 stakeholders. Various enterprises such as Australian Organics, Hort Innovation, Smart Sat CRC, University of Queensland, University of Southern Queensland, Syngenta, McDonald Rural Services, UPL Ltd, Aglink, Norco, RDO Equipment, Nufarm, InFarm Swarm Farm Robotics, National Rural Independents, Omnia, and Stockyard Feedlot recognised the complexity of effectively managing crop and pasture resources. Participants were asked to respond to two surveys prior to the session. One survey probed *how they will measure the success* of the challenge and the other probed for answers pertaining to *what does success look like*. Some example responses are provided below.



Success- Survey Responses

“Arrive at a **well framed problem** statement that leads to an **effective global solution scout process** where viable use cases and value propositions exist.”

“Meeting the aim of the program which is to **find innovation and technologies** that aid farmers in **growing crops and pastures efficiently** with **less environmental impact** whilst **optimising yields**”

“**Partnerships** with agtech companies **looking to scale** and **work with ag retailers**”

“New projects initiated with clear pathway to deliver **impact** for industry. Establishing techniques to improve **productivity, profitability and sustainability.**”

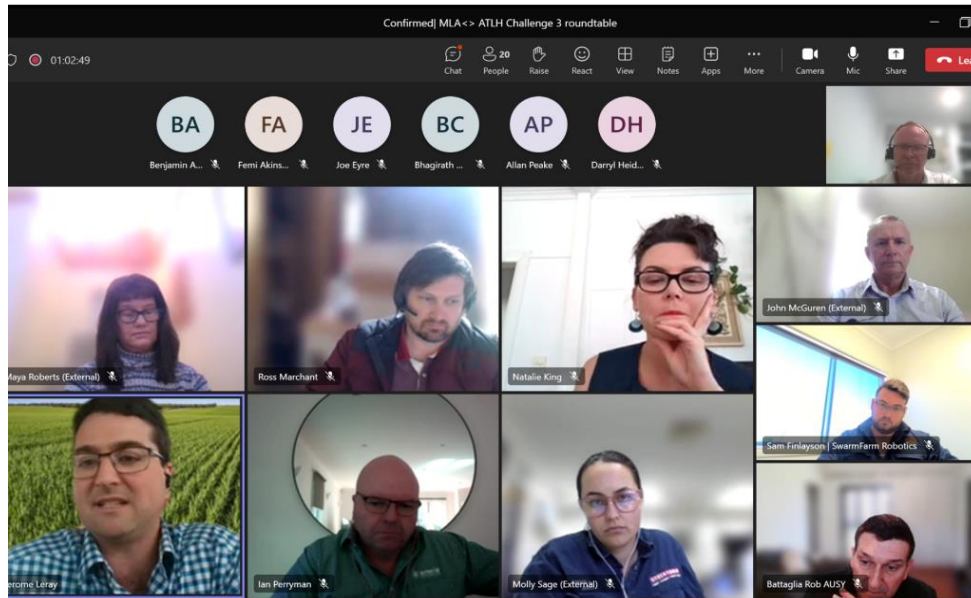
“The program helping develop a **suite of new contacts across the R&D, translation and commercialisation space** that are interested in further partnerships and delivery of impact”

“**Best possible outcomes** for our farming clients. Increased accuracy with our advice, resulting in increase profitability for our clients.”

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In response to a request from the MLA Digital Agriculture department, an invitation was extended to the MLA Feed Base team to participate in the second scoping session, on September 5th. This session provided an opportunity for MLA to concentrate on pasture and crop care management with industry representatives from Kojonup Agriculture Supplies, National Rural Independents, SwarmFarm Robotics, InFarm, Millicent Farming Systems, Syngenta, and Stockyard Beef.



Members of MLA’s FeedBase team shared valuable insights into the challenges faced by levy payers at the farm level, prompting adjustments to the problem statement, especially the selection criteria.

This input resulted in the following agreed-upon problem statement:

“We are currently seeking farmer-relevant, innovative Agtech, biological and non-synthetic solutions that have the potential to transform crop and pasture management. This includes measuring and managing plant establishment, pests, nutrition, utilisation by livestock and grazing management and their impacts on soil, water, and natural capital resources.

Solutions should enable increased productivity, profitability and enhanced sustainability while supporting the industry to grow with the evolving expectations of customers”.

The selection approach was designed around five core pillars: *program alignment, customer and channel demand, value proposition and business potential, industry impact, and feasibility*. Each of these pillars featured specific subcategories, offering a comprehensive framework for evaluating applications.

Program alignment primarily concentrated on evaluating the capabilities of applicant teams, their willingness to collaborate, and the governance structure of their proposed solutions. *Customer and channel demand* delved into aspects such as market relevance, demand, attractiveness, and readiness, with an emphasis on real-world impact. *Value proposition and business potential* highlighted user engagement, innovation, data effectiveness, and accuracy. The *impact* pillar scrutinised how the solutions could contribute to plant health, data-driven decision-making, supply-chain support, and their applicability across various crops. Lastly, *feasibility* considered aspects related to commercial viability, technical feasibility, and environmental sustainability.

The top-scoring applications underwent assessment by a panel comprising representatives from USQ, QLD Government, MLA's Digital Agriculture and FeedBase teams, and the ATLH. The selection criteria gave preference to innovative solutions led by founders committed to positively influencing the industry and open to diverse commercial opportunities. This meticulous scoring and evaluation process aimed to align selected solutions with the challenge's objectives and assess their potential for industry-wide adoption. Thirty (30) applications were received, 17 shortlisted for further review and a final ten invited to demonstrate. The demonstrating technologies that were invited were Non Tox, Hone, AirBorn Insight, Data Farming, InFarm, Weed Scan, Agronomeye, Kelpie and Calix.

4 Results

Program Sprint 1 – Maximising Technology Demonstration and Adoption

In the inaugural sprint of the program, the ATLH set out to establish a strong foundation for digital agriculture (digital ag) innovation within the agricultural sector. The core objective was to create a structured series of events that would not only connect key stakeholders but also promote the adoption of innovative digital technologies. These events successfully brought together a diverse group of participants, including farmers, innovators, and industry leaders. The atmosphere fostered open dialogue and collaboration, creating a platform for the exchange of ideas.

One of the significant achievements of Sprint 1 was the creation of extensive networks and connections between these diverse groups. This interconnectedness proved instrumental in facilitating numerous on-farm trials and sparking commercial discussions. Innovators had the opportunity to pitch their solutions directly to producers during project showcase events, receiving real-time feedback. This feedback played a crucial role in steering the direction of innovation, ensuring that solutions were tailored to farmers' specific needs. It also helped producers gain a better understanding of the potential benefits of adopting new technologies, empowering them to make informed decisions about technology investments.



Program Sprint 2 - Closing the Traceability Loop in Livestock Transport

The second sprint of the program revolved around the MLA demonstration day, held on the 24th of August, 2023, and which focused on the challenge of ‘Closing the Traceability Loop in Livestock Transport’. The 9 selected technologies demonstrated a wide range of technologies, from tracking and monitoring systems to data analytics platforms. The demonstrating technologies included Aglive, Trust Provenance, ExoFlare, Wild Mouse, iTrazo, Truck Tracker, Livestock Track, Animal EyeQ and CuMesh. The event attracted just under 100 attendees from some of Australia's largest red meat producers.

One of the key highlights of Sprint 2 was the active participation of livestock producers, who expressed a keen interest in adopting the technologies showcased at the event. These technologies aimed to enhance animal welfare, biosecurity, and operational efficiency during livestock transport. The presence of major players in the red meat industry underscored their commitment to advancing standards and ensuring livestock well-being during transport. Attendees engaged directly with technology providers, exploring potential applications within their operations and providing valuable feedback.

A notable collaboration formed within the demonstrating cohort. The results included a joint MLA donor application titled *Scaling Digitisation of Livestock Logistics Data Management* using IoT solutions, traceability software and the creation of data standards.

The project was an industry-led solution underpinned by an agnostic and open framework that sets out the data standards and requirements for solution providers to follow to align their solutions with the industry. Data interoperability sat at the core and enabled stakeholders to share data along the supply chain (i.e., a producer <> logistics company <> processors). Leading Queensland producers, feed lotters, logistics companies and processors led the co-design focus of the project. The application was submitted in February 2024.



Program Sprint 3 - Enhancing Crop and Pasture Management

The third challenge-led sprint focused on the challenge of 'Enhancing Crop and Pasture Management'. Demonstration Day, held on November the 23rd, 2023, saw 10 innovative technologies present their solutions, ranging from bio-stimulants capable of revolutionising crop and pasture management to cutting-edge digital and data mapping platforms, autonomous vehicle modifications, AI platforms, and drone technology. The technologies included Non-Tox, Hone, AirBorn Insight, Data Farming, InFarm, Weed Scan, Agronomeye, Kelpie and Calix.

The event was heavily supported by industry, attracting more than 100 individuals and 163 follow-ups of people who could not make the event. Attendees directly interacted with technology providers, exploring potential applications within their operations, and providing valuable feedback. Livestock producers displayed a keen interest in comprehending and experimenting with technologies that facilitate the transformation of crop and pasture management. Furthermore, large-scale agribusinesses participated, underscoring their dedication to advancing crop and pasture management standards. The event's success was also attributed to its capacity to foster meaningful connections and discussions.

Networking and engagement during the demonstration day resulted in successful collaboration and exploration of promising opportunities to date. Agronomists, industry representatives from Cotton Australia and representatives from MLA engaged in commercial discussions with innovators from Agronomeye, Precision Livestock Farming, In-Farm and Metagen.



5 Conclusion

The project boosted collaboration and networking in the red meat industry, forming valuable partnerships among various stakeholders. It accelerated the adoption of digital technologies, especially in crop and livestock management, empowering informed technology investments by producers. The industry's readiness for innovation, tailored solutions, and ongoing innovation were highlighted. For sustained progress, it is crucial to assess long-term impacts, expand tech adoption, and allocate resources for education and research. In summary, the project revealed its transformative potential in the red meat industry, emphasising collaboration, tech adoption, and

industry standards improvement, with a need for ongoing evaluation and resource allocation for future growth and innovation.

The following 3-minute and 90-second videos capture the essence of the program and outcomes:

<https://youtu.be/oxajSTGSoKo?si=RQqW1Om7DMp85FcQ>

<https://www.youtube.com/watch?v=luMuctg5WIE>

a. Key Findings

The project highlighted the importance of collaboration within the red meat industry. It brought together various stakeholders such as farmers, innovators, industry leaders, government agencies, capital funds, and academic institutions. This collaboration resulted in a supportive community that promoted innovation through events like demonstration days and program sprints. These events facilitated meaningful dialogue and partnerships between all the stakeholders within the supply chain.

Technology adoption, especially in crop and pasture management and livestock transport, was accelerated through the project. Demonstration days allowed technology providers to showcase their solutions to farmers, leading to an increase in farm trials and commercial discussions and revealing a genuine interest in embracing new technologies for efficiency and sustainability.

The strong industry support and participation across the demonstration days indicate readiness for innovation. The industry actively seeks solutions to improve transparency, accountability, and animal welfare in livestock transport and advance crop and pasture management standards. Hosting demonstration days at the Toowoomba-based ATLH not only fosters ecosystem building but opens pathways of opportunity for innovators to industry, in their own regional environment.

Tailoring technological solutions to the specific needs of farmers and the red meat industry is essential. One-size-fits-all approaches may not work, and understanding individual challenges is key to successful technology adoption. MLA achieved remarkable success through the open innovation platform, which facilitated dynamic collaboration between solution providers such as AI and Biotech specialists. By bringing together diverse expertise, MLA orchestrated a groundbreaking synergy between technology and biotechnology, resulting in the design and implementation of meaningful, sustainable solutions for the Australian red meat industry. The collaboration has not only enhanced the efficiency of production processes but has also introduced innovative approaches to address challenges unique to the sector. This success demonstrates how an open innovation model, fostering collaboration among stakeholders like AI and biotech providers, can drive transformative change within the Australian red meat industry.

Cross-departmental engagement, exemplified in Sprint 3, was crucial to success. Involving the MLA FeedBase team provided valuable insights into farm-level challenges, influencing the selection criteria for applications, and fostering commercial pathways and partnerships between innovators and the MLA FeedBase team.

Furthermore, effective communication was improved, extending the project's reach through collaboration with the MLA Central Comms team, enhancing the industry's understanding of potential solutions and addressing challenges in Sprint 3.

b. Transforming Agricultural Engagement

The partnership between ATLH and MLA represents a significant departure from conventional approaches, prioritising immersive engagement over mere demonstrations. This innovative model integrates real-world experiences through scoping sessions, surveys, and on-farm discussions, providing a dynamic platform for producers and agtech innovators/suppliers to collaborate on practical solutions. Unlike past practices that involved lengthy commissioning and demonstration processes, this partnership emphasises swift deployment and result monitoring, ensuring quick adoption and adaptation of technologies to meet industry demands.

This agile approach allows stakeholders to respond promptly to evolving challenges and opportunities in the agricultural sector. By involving producers and innovators in meaningful discussions and real-world deployments, the partnership fosters a culture of collaboration and innovation beyond traditional boundaries. Rather than just showcasing technologies, this model empowers stakeholders to actively engage in co-creating and validating solutions, thereby accelerating innovation and adoption across the industry.

The ATLH and MLA Open Ground program has played a pivotal role in addressing producer challenges while identifying critical areas for future research, in turn enhancing industry resilience and sustainability. This strategic focus enables stakeholders to allocate resources towards innovation and development, ensuring the long-term viability of agricultural practices.

- The program identifies critical areas for future research, mitigating risks and fostering industry resilience.
- It enables stakeholders to direct resources towards innovation and development, ensuring long-term agricultural sustainability.
- By focusing on producer challenges, the program lays the groundwork for future advancements, ensuring the industry's viability.

The partnership's focus on scoping, scouting, real-world training, and practical deployment enhances its effectiveness in driving industry-wide transformation. By closely monitoring the success and impact of deployed technologies, all stakeholders can swiftly identify effective strategies and areas for improvement. This results-driven approach not only accelerates technology adoption but also ensures that solutions are tailored to the specific needs of Australian farms. Ultimately, the partnership between ATLH and MLA is more than just about demonstrations—it is about delivering tangible value and driving meaningful change throughout the agricultural innovation ecosystem for the benefit of MLA levy payers.

c. Benefits to Industry

The program made a significant impact on the Australian red meat industry by fostering collaboration and networking among industry stakeholders, resulting in increased innovation and knowledge sharing.

- Increasing on-farm engagement and awareness among growers facilitated by ATLH has enhanced the crucial platform of digital connectivity for producers, enabling the adoption of digital technologies.
- Demonstrations effectively educated producers on implementing innovation, emphasising the importance of visual demonstrations to build confidence.

- On-farm demonstrations, discussions, and training sessions further facilitated the adoption of new innovations.
- Hub-to-farm tours provided technologists with valuable insights into producer challenges and working conditions, resulting in better-designed technologies and stronger validation through collaborative efforts.
- Corporate technology providers and regulators have played a role in making advanced solutions more accessible to producers.
- The increased adoption of technologies has boosted industry efficiency, productivity, and competitiveness, leading to better decision-making and product quality, thereby enhancing global reputation and export opportunities.
- Additionally, the program has identified areas for future research to address immediate and future challenges faced by producers.

The program validated the industry's readiness for innovation through support for events like demonstration days, one-on-one consultations and technology adoption programs including real-world education. Setting up adoption programs based on the learnings of this program can position the industry for growth and global competitiveness, meeting consumer demands for transparency and animal welfare. Moreover, a commitment to advancing industry standards in areas like livestock transport, crop and pasture management, and biosecurity will lead to improved practices and sector resilience, ultimately enhancing consumer trust and market access.

6 Future Recommendations

a. Strategic Collaboration and Industry-Led Initiatives

To enhance the program's effectiveness and industry impact, several key recommendations have been put forward:

- **Industry-Led Challenge Programs:** This program has enabled industry challenges to be identified and for MLA to work closely with industry on innovative solutions. As such, we recommend this program is continued with direct levy payer engagement.
- **Funding for Pilot Programs:** MLA should seek to establish post-demonstration day pilot programs further to extend the adoption of promising technology with industry. The pilot program can establish application criteria and its inclusion would increase the innovation response from the global market.
- **Increased Involvement of ATLH in MLA:** Given the scale of resources and capabilities within the ATLH network, ATLH could be used to support MLA more directly in validating technology investment decisions. Seeking validation from ATLH in collaboration with customers can help ensure that the allocation of funds and strategic direction align with industry needs and priorities.
- **Scaling MLA Investments:** The ATLH ecosystem provides an ideal environment for ground-truthing and scaling solutions. ATLH and the AATLIS precinct provide external resources and capabilities for founders to be mentored, scale their solutions, and seek further investment. MLA could engage ATLH over a 12-month process to assist some of their founders in scaling and engaging customers.

- **Yearly Solution Demonstration Day:** It is suggested that ATLH and MLA host a major technology and/or solution demonstration day annually. This event serves as a platform to showcase industry advancements and innovations, fostering collaboration and knowledge sharing among stakeholders.

b. Key Recommendations for Agtech Adoption

To propel the agricultural industry forward in terms of agtech innovation and adoption, it is imperative to identify key areas where action is urgently needed. Drawing insights from agribusinesses, surveys, and the wider ecosystem, the following recommendations outline crucial steps that stakeholders, including MLA and the Agtech community, must prioritise to drive meaningful progress and ensure the widespread adoption of transformative technologies.

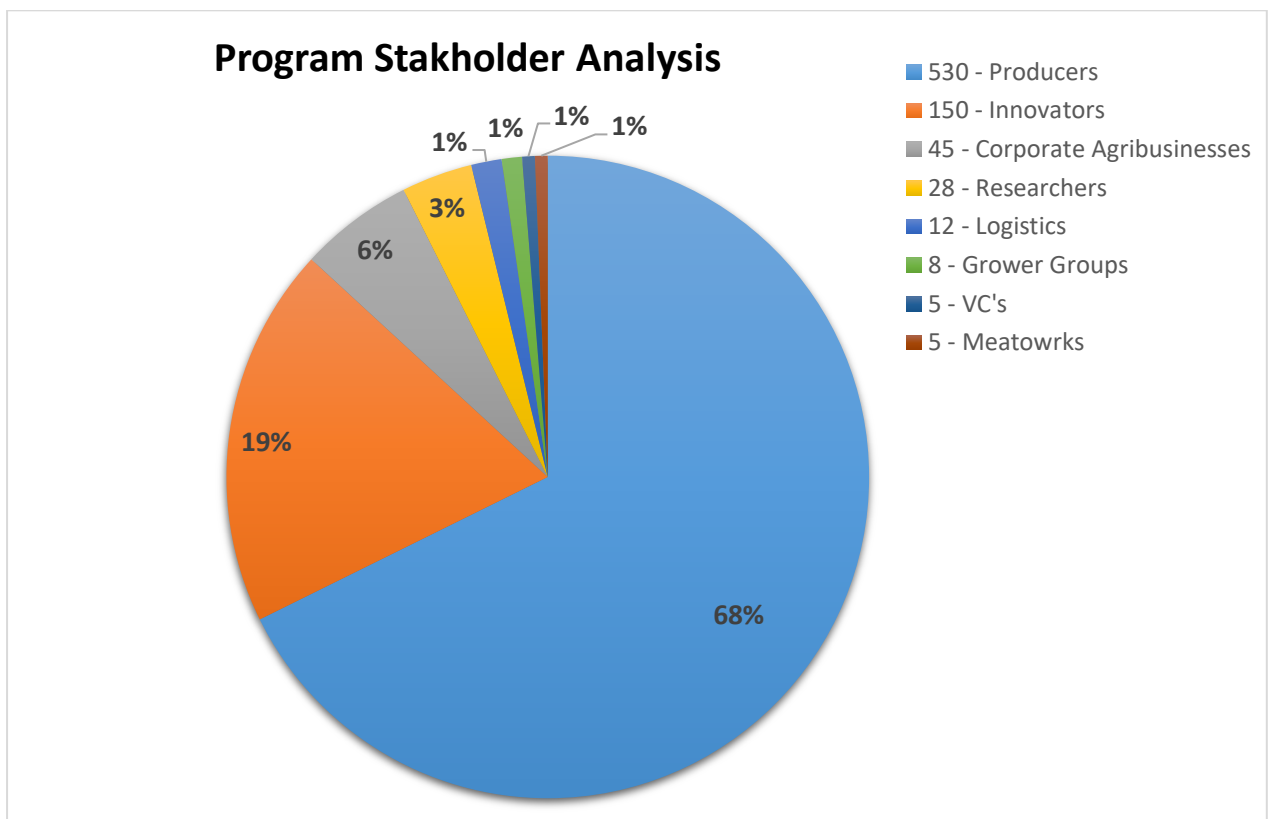
- **Simplifying Biosecurity & Compliance:**
 - implement digital solutions to streamline biosecurity compliance processes;
 - improve intensive red meat production biosecurity;
 - develop technology that utilises NLIS and eNVD more effectively; and
 - ensure early detection in high-risk areas, preventing disease outbreaks and ensuring smooth trade.
- **Enhancing Traceability:**
 - adopt agtech solutions for improved traceability of domestic and export red meat, maintaining market access and meeting stringent trading partner requirements.
- **Optimising Pasture Management:**
 - leverage agtech to reduce reliance on synthetic inputs in pasture management, addressing global pressures while enhancing sustainability and productivity.
- **Improving Energy Efficiency:**
 - deploy agtech innovations to deliver energy more efficiently on farms, and
 - mitigate rising costs and minimise environmental impact.
- **Maximising Natural Capital Usage:**
 - Utilise agtech to ensure compliance with natural capital regulations while seizing commercial opportunities for sustainable land management.
- **Advancing Sustainability:**
 - implement agtech solutions to improve water management, combat erosion, and enhance the overall sustainability of farming operations.
- **Exploring Circular Economy Practices:**
 - investigate and implement circular economy practices facilitated by agtech to minimise waste and generate additional benefits for growers.
- **Harnessing Big Data:**
 - leverage big data analytics to optimise farming efficiency, improve decision-making, and drive productivity gains.

- Facilitating Livestock and Input Transactions:
 - streamline the buying and selling of livestock and farming inputs, enhancing market efficiency and transparency.
- Adopting Digital Twins, AI, and Machine Learning:
 - integrate digital twins, AI, and machine learning technologies to enhance the management of farming properties, terrain modelling, optimise resource allocation, and improve yields.
- Prioritizing Safety and Well-being:
 - implement agtech solutions to enhance safety and well-being in farming communities, including for staff, through improved monitoring and management practices.
 - This can be done with AI and Human Behaviour to drive even more fail-safe systems
- Managing Drought Resilience:
 - Utilise agtech to develop drought management strategies, including
 - precision irrigation,
 - pasture monitoring,
 - enhancing resilience and mitigating risks with data, and
 - using the emerging biostimulants with AI to build stronger pastures in stressful times.
- Enhancing Animal Nutrition:
 - leverage agtech to optimise animal nutrition through precision feeding and monitoring, improving health and productivity outcomes; and
 - use data analytics to help with pasture management.
- Use Technology to Drive Down the Incidence of Livestock Theft
- Use Technology to Enhance Training of Staff:
 - Include technology like AR and VR, where retention of learning is proven to be higher.

7 Appendix

The mission of Agribusiness Connect (ABC) is to empower Australia's agriculture, fibre, and food industry for sustainable growth. With a vision to support communities and regions with opportunities and global impact, ABC serves as a trusted delivery partner. Grounded in innovation, diversity, inclusion, and social and environmental responsibility, ABC inspires collaboration and growth in Australia's agriculture, fibre, and food sectors. ABC's Agtech and Logistics Hub (ATLH) Project brought together diverse stakeholders, including universities, industry groups, and government representatives, to collaborate on tech-focused solutions. Through robust governance, ATLH surpasses other innovation hubs in metrics such as industry engagement and partnership development.

The following presents comprehensive engagement data detailing ATLH's interactions with producers, innovators, research partners, venture capitalists, logistics companies, and industry groups, underscoring the breadth and depth of collaborative efforts.



Producers:

ATLH interacted with more than 530 producers through engagements with organisations such as Agforce, QFF, ATLH Meetings and Surveys, Livestock SA, McKillop Group, NSW DPI, Macca's Angus Introductions, Elders, Nutrien, and NRI.

- ACC
- Mort & Co
- Hewitt Cattle
- Stockyard
- McCourts
- Paraway Pastoral
- Boonderoo Pastoral
- Arrabury Pastoral
- Anthony Struss
- Burenda Station
- Greg Bell

Innovators:

ALTH connected with over 150 innovators from Australia and around the world throughout the three MLA project sprints.

- Itrazo
- Fresh Chain
- Cropify
- IPF Australia
- Lumachain
- Everledger
- Aglive
- Interpredata
- T-Providence
- Ceres Tag
- Agriwebb
- AnimalEYEQ
- Moovement
- Wild Mouse
- Livestock Trac
- Exor
- Itrack
- iTracksystem
- AgCloud
- Trucktracker
- Biarri
- Pairtree
- AirAgri
- Agrihive
- Proagric
- AgKconnect
- Prime X
- Robotics
- FarmLab
- CSBP
- Precision Agriculture
- Remscan (Soil scanning)
- Ag Logic
- Bluequest
- Croc Troughs
- Smart Syphon
- Repratator
- Kimitec
- BIO10
- RuralBoss
- Metagen
- Corteva

Researchers, Venture Capital and Agribusinesses:

ATLH engaged with 28 research partners, including UQ, UniSQ, QUT, Adelaide University, JCU, CQU, Texas University, QDAF, Vic DPI, and QAAFI.

Additionally, ATLH conversed with five venture capitalists (VCs), 12 different logistics companies, and major players such as JBS, Teys, AMIC, Australian Country Choice, and OBE Organics.

The discussions extended to various industry groups such as AgForce, QFF, Livestock SA, the McKillop Group, and various sale yards including Mount Gambier, Roma, Bendigo, and Forbes.

ATLH also conducted over 45 corporate engagements related to MLA sprints. This area holds potential for further exploration to enhance funding and adoption initiatives.

- Nufarm
- Corteva
- Bayer
- Syngenta
- Ericsson
- Amazon
- IPL
- NRI
- Elders
- AgLink
- Nutrien

Crucially, we also engaged with research and development corporations (RDCs) during our discussions.

- Hort Innovation
- GRDC
- SRA