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Integrity Systems Company Solution Provider Engagement Strategy

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Executive summary

The number and scope of companies providing technology and services that are relevant to the red meat sector is expanding rapidly. This environment of rapid change is confusing for supply chain participants and creates difficulty for industry organisations and funding bodies who have a responsibility to coordinate aspects of the supply chain for the benefit of the entire industry.

The Integrity Systems Company (ISC) is directly exposed to this environment through its responsibility to deliver technologies and services in support of the Australian red meat integrity system. A systemised approach to identification and partnering with solution providers will aid the ISC in ensuring that it is delivering on its purpose. This project has identified solution providers and proposed a number of engagement pathways by which the ISC could partner with appropriate companies.

A database of 128 solution providers that align with the purpose of the ISC is presented in this report. Accompanying this database is a system of categorisation which enables identification of solution providers that are fit for purpose for implementing strategic initiatives contained in the ISC strategic plan. A methodology for selecting appropriate engagement pathways is also provided.

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1 Introduction

The Integrity Systems Company's (ISC) responsibility is to provide data platforms and infrastructure to support and underpin the three core systems that provide industry owned mechanisms for food safety measures, quality assurance, and traceability from paddock to plate:

- National Livestock Identification System (NLIS)
- Livestock Production Assurance program (LPA)
- LPA National Vendor Declaration (LPA NVD).

The current systems provided by ISC successfully provide a national, industry owned framework for guaranteeing the integrity of Australian red meat. However, data that is required to fulfil this purpose can be used for a multitude of other purposes. Individual animal identification (mandated by the NLIS) underpins technology systems that address productivity, animal health and welfare, and breeding and genetics decisions amongst many other applications.

Analysis and value adding of data to provide actionable insights for farmers and others in the value chain to make more profitable decisions has been forecast to provide a step change in profitability for the industry. The size of the potential opportunity for Australian beef and sheepmeat industries was estimated by the AFI to be $2.2 billion if all impediments to the utilisation of data for better decision making were removed (Perrett et al., 2017).

The data upon which these better decisions rely on will, in almost all cases, originate from, or interact with, ISC platforms. However, increasingly, additional analysis and value adding of data for productivity and other purposes is being performed by commercial providers of software platforms and apps. Not only is there significant commercial activity in the provision of technology which utilises data collected through ISC platforms, but also there is rapid development in the technologies underpinning the ISC systems themselves.

Strategic initiatives contained in the Integrity System 2025 Strategic Plan also place a requirement on 'pursuing and adopting new integrity approaches and technologies' to 'leverage integrity data to add value through the chain' while 'ensuring that the integrity system continues to deliver'. These initiatives will not be effectively or efficiently delivered without strong engagement with the commercial sector.

The ISC is therefore operating in an environment where their mandated responsibility to develop and provide technology platforms for the purpose of industry integrity needs to reference the rapid development of a commercial marketplace for complimentary (and potentially competitive) products and services.

An engagement strategy that results in mutually beneficial commercial arrangements between ISC and solution providers operating in this environment is therefore vital to provide greater value for producers, create incentives for more cost-effective solutions in the market, and allow ISC to focus on core systems while collaborating with fully-commercial providers to open up new revenue streams.

However, the Agrifood technology[*] development ecosystem is a large, disparate and confusing space. Engagement with the entirety of the AgTech landscape in a systematic and thorough way is difficult and time consuming. The significant levels of investment- US$16.9 Billion in 2018 alone (AgFunder, 2019) - is attracting attention from new participants in agriculture, as startups and

[*] Agrifood technology is the small but growing segment of the startup and venture capital universe that's aiming to improve or disrupt the global food and agriculture industry (AgFunder, 2019).

established companies look to commercialise research and adapt technologies from different industries.

The sheer number of participants, as well as the non-traditional pathways by which they may be entering agriculture, adds to the confusion and difficulty for agricultural organisations and funding bodies tasked with ensuring that their industries have access to the most useful and relevant technology available, and that the technology integrates with existing industry systems and procedures.

To provide guidance to the ISC in navigating this environment, this project has reviewed the current solution provider landscape and provided a database of relevant products and companies that provide functionality and services of relevance to the ISC (Appendix 2). Engagement pathways have also been proposed, providing a framework by which the ISC can consider appropriate investments or commercial arrangements. Finally, a process for deciding on the appropriate engagement pathways for the solution providers listed in the accompanying database is suggested.

The authors of this report emphasise that any commentary or recommendations about participants in the Agrifood technology ecosystem and how to engage with them must be viewed in the context of a system that is rapidly changing and evolving. AgriFood technology funding has grown from just over $2 Billion to the current $16.9 Billion only in the last 5 years, and the AgFunder database from which these figures are calculated now contains nearly 30,000 companies (AgFunder, 2019).

Defining engagement pathways and categorising solution providers in the context of such rapid change in the environment will involve a certain amount of subjectivity in assessments. Nevertheless, there are still many benefits to a structured and defined processes of engagement which outweigh the subjectivity, as long as categorisations are considered a starting point rather than a fixed process. Benefits include but are not limited to:

- Transparency for all parties about potential commercial partnership pathways;
- Ability to use the engagement framework to ensure that strategic priorities for ISC are being actively targeted; and
- Confidence that potential beneficial partnerships are not being missed.

The following section details the development of the solution provider database and the methodologies used to categorise those providers to enable a more process-driven engagement strategy.

2 Development of database and categorisation of solution providers

The primary output of this project, a database of solution providers, is provided in section 6.2.

Primary research for the database assembly was carried out through desktop research from multiple sources including the existing AgThentic startup database (AgThentic, 2019), startup-specific resources such as AgFunder (AgFunder, 2019) and Crunchbase (Crunchbase, 2019), industry sources including trade shows and MLA provided data, as well as baseline internet searches across technology and published research sources.

There are 128 entries; however, the database is by no means exhaustive. New companies are emerging rapidly, just as some existing companies fail or are acquired by others. Any company that

has a product or service delivery that is related or complimentary to the services provided by ISC was included in the database.

A list of 128 technology and service companies is of limited use to the ISC without further context about their potential as partners. To provide this context, some categorisation steps were performed. To ensure relevance to the goals and purpose of the ISC, the companies identified were categorised according to their fit to the strategic initiatives contained in the *Strategic Plan: Integrity System 2025 and beyond*.

2.1 Strategic Plan: Integrity System 2025 and beyond.

The ISC Strategic plan (November 2018) sets out a pathway to achieve the vision of '*an integrity system trusted globally as underpinning a quality product, produced to rigorous standards, and embedded in the culture of Australian livestock management'*.

The Integrity System 2025 Strategic Plan references many emerging requirements such as the need for integration of more effective technology, as well as a desire to establish automation of traceability with seamless data transfer and reporting. The plan also recognises that new technologies are emerging at an increasingly rapid rate that will require additional investment directed towards driving further innovation. The plan is structured around three strategic pillars, each of which is accompanied by outcome statements and priorities (*Table 1*).

Table 1. Integrity system 2025 Strategic Plan structure

Pillar	Outcome	Priority
1. Ensuring our integrity system continues to deliver	Customers and consumers around the globe prefer Australian red meat based on their trust in our integrity system.	1. A collaborative and national approach to integrity. 2. Responding to consumer and customer demands. 3. Recognising the value of integrity.
2. Pursuing and adopting new integrity approaches and technologies	Adoption of the integrity system is maximised through the implementation of new technologies and approaches to integrity that simplify the system, and make it easy and cost effective to interact with.	4. Pursuing new technologies. 5. Driving new technology and system adoption.
3. Leveraging integrity data to add value through the chain	Industry participants recognise the value of the integrity system to their individual businesses and are proud of their role in making the integrity system a success.	6. Effective decision making through integrity data and insights.

For each priority, the plan outlines strategic initiatives within three time horizons. The 44 strategic initiatives contained in the plan provide a roadmap for strategy implementation. While not all of the strategic initiatives are directly relevant to technology products or service delivery, there are many that will only be delivered through technology partnerships. The list of strategic initiatives therefore provides a useful and relevant means of categorising the solution providers contained in the database (i.e., in terms of their fit against the ISC strategic plan).

Solution providers listed in the database have been allocated a code which aligns to one or more of the 44 strategic initiatives contained in the plan. The coding system is described in 6.1 Integrity Systems Strategic Plan 2025 - Coding.

The intention of this categorisation is to allow searching of the database for solution providers which are applicable to strategic priorities, time horizons and strategic initiatives.

To provide further functionality, a secondary categorisation has been provided.

2.2 Supplier/Solution Functional Categories

Categorisation using the ISC strategic plan initiatives provides a very granular and systematic approach to identifying potential technology or service delivery partners. It is also useful to have a more generalised categorisation that is relevant to functions that exist in the red meat supply chain.

Distinctions between these categories may not always be clear, and solution and suppliers will likely satisfy criteria for more than one category. Further refinement of this model may therefore involve attribution of more than one of these categories, in a tagging fashion, rather than a one-to-one categorization.

Table 2. Functional Solution Categories

Functional solution categories	Notes
Research/Industry	Published research, industry comparison, similar work in other jurisdictions, industry collaboration
Animal Data Tech	Technology targeted at core animal data collection and animal-scale interventions e.g. collars, tags, bolus
Press/Coverage	Coverage of integrity and traceability matters in trade and popular press
Animal Welfare/Health	Technology for the prevention, treatment and tracking of animal health and welfare interventions
Farm/Feed/Animal Management Software & Systems	Software supporting all aspects of livestock breeding, performance management, tracking, marketing etc

Production Assurance	Systems that support claims made about the methods and land use associated with production
Verification/Safety	Technology and systems that can provide scientifically valid verification of origin or composition
Transaction/Commerce/ Finance Software/Platforms	Systems that support commercial and financial information relating to livestock transactional commerce
Quality/Product Assurance	Systems and information relating to the processes and results of product quality and production assurance
Crop/Pasture Management/Analytics	Systems that support more effective management of pasture and crops
Data Integration	Systems that support information flows along the meat and livestock supply chain
Supply Chain	Systems and information supporting the supply chain and flow of product along it

The purpose of the categorisations for each entrant in the database is to allow a process for identification of potential partners for the ISC to engage with. For example, when analysing performance against the strategic plan, a strategic initiative may be assessed as being behind schedule. A relevant technology solution may be determined by searching the database for the code aligning to that initiative, and further refined by the functional solutions category(ies).

Once potential technology partners have been identified, a process for engagement is required (see *Section 3. How to engage?).*

This review of solution providers and engagement pathways has been constructed in the context of the contemporary environment. Identification of solution providers for the database and the process for identification of potential partners are all relevant to the current requirements and purpose of the ISC. However, all organisations change over time as the environment they operate in changes and their strategy is adjusted. While this project has not attempted to select appropriate partners and engagement models based on a possible future state, some commentary on what that future state may entail and how it might impact on partner identification is contained in the next section.

2.3 Future State Model

As the project objective is to envisage and model the viability of a new engagement model for the ISC, which will drive a higher level of collaboration with commercial solution providers, it is important to form and test a hypothesis about how the market would function in the future.

There are different systems for different types of information across varying human needs. The technologies and market expectations are both rapidly evolving. The ISC needs a hypothesis about where the world is going (i.e. what the marketplace will look like) in 5 years so that it can design and implement a system with incentives to reflect this view and incentivize specific behaviours.

Much of the information that would be captured in an expanded integrity system would be considered highly commercially sensitive to the relevant participants. Usually, only a small subset of the data which are, or could be, recorded are required to meet ISC objectives. However, it will be necessary to contemplate the existence of a system that facilitates the recording, and securely-mediated sharing, of far greater levels of information.

Rather than focusing solely on a technological view, it will be important to look at the design and implementation of system incentives to produce the desired outcomes.

System incentives will need to enable and support more information going to processors and other supply chain participants over and above what's required by regulation. These incentives will need careful consideration due to the commercially sensitive natures of the information.

Consideration also needs to be given to what the results should be, rather than *how* outcomes are achieved. For example, as machine learning and enhanced vision systems evolve, animal identity may be achievable without the use of tags. In such a case, an incentive that promotes the reporting of verifiable animal identity and movement, rather than solely the reading and recording of RFID tags, is critical. Incentive design of this kind will help inoculate ISC's strategy from fast-moving technological shifts.

3 How to engage?

Section 2 of this report has presented a database of solution providers (section 6.2) and a methodology for identifying providers that may be of interest to the ISC. Once prospective technology partners have been identified, pathways for the ISC to engage more directly with the ecosystem of current and prospective solution providers are required. To aid in the selection, design and implementation of programs to achieve this, the following methodology and catalogue of engagement models is provided.

The purpose of the methodology is to enable the translation of key elements of the ISC strategic plan into programs of engagement with prospective solution providers via a set of engagement models that are likely to be of value to those providers. The models take into account the needs of solution providers and target specific areas of need that will align with the objectives of the provider and are likely to be well matched to the operational capabilities of the ISC.

3.1 Engagement Models and Provider Methodology

The purpose of the engagement models is to provide the ISC with specific guidance about how to encourage Solution Providers to actively participate in the red meat supply chain and to amplify the impact of that participation. The key areas where engagement activity by ISC can catalyse impact are:

- Solution Provider Impact Area (SPIA) -1 — Awareness and Adoption

    - making the market aware of the solution providers and catalysing adoption of the solutions by market participants
- SPIA-2 — Application and Incentives
    - directly incenting Solution Providers to enter the market or tailor their offering to suit the market
- SPIA-3 — Capital and Resources
    - providing access to, or otherwise catalysing the availability of growth capital and resources to support the growth of Solution Providers

In the following section, recommendations of one or more engagement models, with different implementation approaches are detailed. Each model is analysed for specific characteristics of the model itself, participants, risks, mitigation strategies and is ranked for applicability to the solution provider impact areas listed above. Where available, examples of the engagement model are outlined.

3.2 Application of Methodology

Rather than rank the existing database of Solution Providers in terms of their suitability to each of the engagement models suggested, this methodology has been developed to ensure it will remain applicable even as the list of Solution Providers changes.

For each selected solution provider, a short analysis is required to assess the likely key areas of impact for the provider.

A. Are they already providing relevant solutions but need better awareness and engagement with the Australian red meat supply chain?
B. Are they providing similar solutions to other markets and need to be encouraged to adapt to and service the Australian red meat supply chain?
C. Do they need growth capital or other direct resources to enable them to service the Australian red meat supply chain?

The degree to which each assessment is relevant to a given provider will determine which engagement model might apply.

Table 3. Engagement model selection process

Response	Action
Yes on A	Select engagement models with medium or high rating for SPIA-1
Yes on B	Select engagement models with medium or high rating for SPIA-2
Yes on C	Select engagement models with medium or high rating for SPIA-3

This process will yield a number of engagement models. These models can then be filtered based on other dimensions of strategic fit and for alignment for ISC core strengths and partnerships.

3.3 Engagement Models

The engagement models outlined below will provide specific pathways for ISC to encourage greater collaboration by solution providers in the red meat supply chain. The models are grouped primarily in terms of high-level characteristics of their implementation and described in a way which focuses on engagement through an ISC lens. This does not mean that solution providers derive no benefit from these engagement pathways, it is rather an acknowledgment that ISC, as the investor in most cases, needs to triage potential partners in order to have a succinct and sensible process for engagement. Solution providers will benefit in a general sense from ISC implementing a defined engagement process as it will be more likely that the most appropriate focus will be given to potential partners as opposed to more random and unknown pathways.

Table 4. Engagement models

Information Based Engagement Models	
Characteristics	Largely focused around the flow of information to the participants in red meat supply chain who would likely be customers for the solution providers.
Models	• ISC creates/facilitates solution provider knowledge network.
	• ISC participates in an existing knowledge network/hub.
Direct intervention and market participation engagement models	
Characteristics	System incentives to directly target solution providers and encourage them to actively participate in the red meat supply chain.
Models	• Direct licensing for use in ISC infrastructure.
	• ISC facilitates 'pay to play' field days and corresponding trials.
	• ISC directly contracts enhancements or new products with solution providers Targeted investment for a known product outcome.
	• ISC charges for branding/certification program participation.
	• ISC designs, funds and operates trials with published outcomes.
Capital and investment related	
Characteristics	Addressing the need for access to growth capital by solution providers to enable them to actively participate in the red meat supply chain.
Models	• ISC creates a dedicated investment vehicle.
	• ISC co-investment scheme.
	• ISC funds participation in a range of accelerators.

The following tables describe the 10 engagement models listed above.

3.3.1 ISC creates/facilitates solution provider knowledge network

Characteristics of model:

ISC actively facilitates and curates a knowledge network by providing information to solution providers on the needs of industry, ISC and information to industry about potential new technology solutions. ISC also provides introductions and helps to develop relationships between solution providers and end users. Solution providers end up well connected to each other and the industry. The needs of industry are understood and promoted to the network. The network is visible, open and easily accessible.

Characteristics of participants:

Technology developers of any size who want to be connected with industry or are looking for introductions. Likely to be very early stage looking to test or validate ideas before further development or organisations with developed technology who need introductions and entry path into the industry. Industry participants are likely to be innovators and early adopters seeking access to early-stage technology.

Inherent Risk:	**Mitigation strategy:**
• Potentially time and resource consuming to cater to the needs of tech developers with little knowledge of industry. • Risk of negative reaction from Industry presented with unfinished or unviable technology. • Lack of engagement of community with network.	• Careful curation of network to ensure active participation from credible participants (all stakeholders). • Ensure industry participants are willing adopters of minimum viable products. • Widespread promotion and ease of access into network.

Example of established model:

Agritech East (Agri-Tech East, 2018)

Solution provider impact[†]:	SPIA-1: high SPIA-2: low SPIA-3: low

ISC next steps: A review of the existing networks would be prudent to ensure that any subsequent design and implementation of an ISC-specific network would be based on best-practice and on learnings from existing networks domestically and internationally.

[†] While there is general alignment for each model to the key solution provider impact areas, there are models which will deliver impact in more than one key area

3.3.2 ISC participates in an existing knowledge network/hub

Characteristics of model:

ISC evaluates, selects and partners with existing knowledge network. There are several initiatives in Australia that are developing to fill the needs of many stakeholders in the agricultural innovation ecosystem. It is likely that these networks will be cross-industry and may encompass stakeholder requirements well beyond the scope of matching solution providers with industry expectations.

Characteristics of participants:

With an existing network, participants are likely to be a far larger group of stakeholders than with a tailored network. Suppliers and other participants will be from many different sectors, but largely should have requirements similar to those in the red meat supply chain. Suppliers will be looking to increase awareness with prospective customers.

Inherent Risk:	**Mitigation strategy:**
• General knowledge networks may be too broad in scope and pose challenges in use and navigation. • Lack of control of content and user experience may lead to poor engagement with red meat supply chain participants	• Work directly with network developers to offer methods of tailoring and customizing user experience for specific stakeholders. • Increase the level of support to provide greater influence over direction and priorities for system development

Example of established model:

growAG, AgTech Finder, FarmTable

Solution provider impact:	SPIA-1: high SPIA-2: low SPIA-3: low

ISC next steps:

Knowledge networks are being developed in Australia e.g. growAG[‡] and AgTech Finder[§]. ISC could partner with and leverage these networks and add introduction services.

[‡] https://www.growag.com/
[§] https://www.foodagility.com/posts/agtech-finder-open-for-registration

3.3.3 Direct licensing for use in ISC infrastructure

Characteristics of model:

ISC elects to initiate a direct commercial agreement with selected solution providers as a means of ensuring the availability of the solution in a key part of the red meat supply chain, or directly as part of ISC-maintained systems. This model would largely be used to provide assurance around specific features and functions that were either essential to the ISC system or where risk of market failure threatened the viability of the solution provider.

Characteristics of participants:

Providers might tend to be focused directly on the red meat supply chain and their business model is likely to be more focused on services or bespoke development than on servicing a wider market need.

Inherent Risk:	**Mitigation strategy:**
• Lock-in with a single vendor. • Reliance on vendors that are not independently commercially viable.	• Ensure adequate documentation is available to describe how the system operates. • Design and implement system via the use of documented, standard interfaces and ensure the provider complies with standards to allow later substitution.

Example of established model:

eNVD

Solution provider impact:	SPIA-1: low SPIA-2: high SPIA-3: low

ISC next steps:

Evaluate key functional areas of ISC systems requiring technology development and match with a subset of the catalogue of solution providers. Assess viability of those solution providers to determine if direct engagement is warranted.

3.3.4 ISC facilitates 'pay to play' field days and corresponding trials.

Characteristics of model:

ISC would use industry challenges to frame, design and implement trials and pilot exhibitions that providers would pay to be involved in. These trials would ideally be designed to establish the clear efficacy of specific ways to solve known industry challenges and would be highly visible to prospective customers and provide detailed information on the operating condition, objectives of the trial and the results for each solution.

Characteristics of participants:

Solution Providers who are actively seeking deeper integration into the Australian red meat industry. These are likely later stage (more mature) companies and may well have established markets in other geographies or other related markets. Participation in paid trials would be within their financial means and would be consistent with their marketing goals for increased awareness and lead generation outcomes.

Inherent Risk:	**Mitigation strategy:**
• Resource intensive for ISC to implement. • Lack of focus of engagement by solution providers. • It may be challenging to clearly deliver 'value for money' to the solution providers.	• Careful planning and budgeting for the programs. • Detailed selection process for providers to ensure capability to fully engage. • Well-designed and clearly communicated expectations for the benefits of participation.

Example of established model:

The field day at Carwoola Station held in conjunction with the 2018 MLA digital forum.

Solution provider impact:	SPIA-1: high SPIA-2: high SPIA-3: low

ISC next steps:

ISC (and MLA) continue to develop permanently located field day sites and provide appropriate resources and assistance required to develop them as industry centres of excellence.

3.3.5 ISC directly contracts enhancements or new products with Solution Providers

Characteristics of model:

Having identified solutions that could be adapted or developed to the requirements of the red meat supply chain, ISC would directly negotiate the terms and conditions of paid engagement to provide specific solutions to augment their capabilities or develop new products to meet industry needs. The terms of the contract would likely need to specify the general availability of the new features and a commitment to the ongoing support of the features.

Characteristics of participants:

Participants are likely to be more mature providers of solutions in related markets or different geographies (for enhanced solutions) or public or private research agencies (for new product development). Traditional research contracts which have deliverable technology outcomes would fit into this model.

Inherent Risk:	**Mitigation strategy:**
• Industry-specific features are not properly supported by Solution Providers. • Traditional research providers lack a commercial imperative.	• Design appropriate incentives to ensure ongoing support of enhancements in contract terms and go-to-market support. • Select partners with proven commercial delivery cultures.

Example of established model:

GRDC Online Farm Trials project.

Solution provider impact:	SPIA-1: low SPIA-2: high SPIA-3: low

ISC next steps:

Perform gap analysis to determine technology gaps critical to strategic plan that are unlikely to be delivered through technology marketplace. Contract accordingly.

3.3.6 ISC charges for branding/certification program participation

Characteristics of model:

ISC would design and operate tiered brand architecture that provided levels of market assurance and compatibility that solution providers would pay to use and/or be certified against. As outlined in the section 2.3 *Future State Model,* the market will need a high level of interoperability. The information architecture and compliance with an ISC-designed interoperability system would deliver great value to participants and is unlikely to emerge without direct intervention.

Characteristics of participants:

Likely more mature providers who are seeking to consolidate their role in a well-defined ecosystem of providers who together, can provide end-to-end solutions to large-scale industry challenges.

Inherent Risk:	**Mitigation strategy:**
• The costs of program operation are significantly higher than the revenue generated from participants in the scheme. • Significant initial cost in the development and documentation of the information and compliance assessment infrastructure.	• Engage specialists who have an established track record for the development of similar programs.

Example of established model:

LoRaWAN

Solution provider impact:	SPIA-1: high SPIA-2: high SPIA-3: low

ISC next steps:

Development of a comprehensive model for the future state of the industry and the information systems that will operate within the industry.

Development of an information architecture that caters for the future state and considers the wider needs of participants, not just the needs of ISC.

3.3.7 ISC design, funds and operates trials with published outcomes

Characteristics of model:

ISC would design, fund and implement trials intended to showcase key aspects of red meat supply chain operation. These trials would partially or fully fund the participation of solution providers and would publish publicly available reporting details the outcomes of the trials.

Characteristics of participants:

Participants are more likely to be earlier stage companies who may not have the resources to undertake their own larger scale engagement activity or who have previously focused on different market opportunities.

Inherent Risk:	**Mitigation strategy:**
• High costs of implementation. • Providers have not achieved product market fit.	• Careful design of programs objectives and participant expectations. • Trials expanded to attract other sectors and involvement - cost distributed.

Example of established model:

Ongoing MLA Digital Forum Carwoola Trials.

Solution provider impact:	SPIA-1: high SPIA-2: high SPIA-3: low

ISC next steps:

ISC (and MLA) continue to develop permanently located field day sites with ongoing co-located trials and provide appropriate resources and assistance required to develop them as industry centres of excellence.

3.3.8 ISC creates a dedicated investment vehicle

Characteristics of model:

ISC would create a dedicated group and associated fund for making equity investments into service providers. The investment mandate for such a fund would potentially include both benefits to red meat industry and investment return potential from the equity investments.

Characteristics of participants:

Participants are more likely to be servicing larger market opportunities than solely the red meat supply chain in Australia. These providers are likely to be seeking larger sums of growth capital to support multi-sector growth and international expansion They will generally be at post-accelerator stage (differs from MLA/Cicada investments

Inherent Risk:	**Mitigation strategy:**
• Capacity of ISC to adequately perform due diligence on prospective investee companies. • Reputational damage to ISC through association to investee company's governance failures. • Conflict between investment mandate imperatives.[**] • Lack of deal flow.	• Engage external expertise to assist with due diligence. • Take board seat to ensure visibility of investee operational status. • Clearly set priorities and expectations relating to investment mandate.

Example of established model:

GRDC GrainInnovate

Solution provider impact:	SPIA-1: low SPIA-2: low SPIA-3: high

ISC next steps:

Engage with GRDC/GrainInnovate to become familiar with model.

[**] There is a potential for conflict when prospective investments can be seen to deliver a needed Industry outcome but are also likely to provide a poor investment return.

3.3.9 ISC co-investment scheme

Characteristics of model:

The ISC would establish a scheme for the provision of co-investment funds to support additional investment in solution providers who had secured investment from qualified investors. These co-investments would apply on a dollar matching basis and seek to amplify the impact of investment that qualifying solutions providers had secured from other investors. The scheme would include an application process that service providers would use to demonstrate that they had secured outside investment and that their solution was consistent with ISC priorities.

Characteristics of participants:

Solution providers who were able to secure moderate levels of investors, likely earlier stage or angel investors, and would benefit from additional capital.

Inherent Risk:	**Mitigation strategy:**
• Capacity of ISC to adequately perform due diligence on prospective investee companies. • Overhead involved in management of fund.	• Co-investing alongside other investors will provide a good filter for opportunity. The willingness of other investors to commit will help qualify investments and ensure adequate due diligence of investee companies.

Example of established model:

QLD Business Development Fund (QLD Government, 2019).

Solution provider impact:	SPIA-1: low SPIA-2: low SPIA-3: high

ISC next steps:

Engage with the Queensland Government to obtain detail on terms of engagement. Test terms with potential investors and investees to gauge viability.

3.3.10 ISC funds participation in a range of accelerators

Characteristics of model:

ISC partners with range of accelerators (there is a growing network of accelerators in Australia) to provide opportunities for early stage solution providers. Investments would be relatively modest and short term in nature.

Characteristics of participants:

Solution providers would be early stage with ideas that are untested in the market. Investment would be equally to build skills and capacity in participants as it would to develop the product or idea.

Inherent Risk:	**Mitigation strategy:**
• Capacity of ISC to adequately perform due diligence on prospective investee companies. • Overhead involved in management of program.	• Co-investing alongside other investors will provide a good filter for opportunity. The willingness of other investors to commit will help qualify investments and ensure adequate due diligence of investee companies. • Make investment via non-equity mechanism to reduce impact of negative outcome/poor performance

Example of established model:

Cicada GrowLab

Solution provider impact:	SPIA-1: high SPIA-2: high SPIA-3: low

ISC next steps:

Accelerator partnerships have been in place with various RDC's for a number of years. ISC could review progress to date and select and join successful partnership models.

4 Conclusion

A database of 128 solution providers relevant to the ISC and 9 suggested pathways of engagement (these numbers could easily be increased), suggest the potential for ongoing confusion for all stakeholders around desirable partnerships to advance the Australian red meat integrity system.

Fortunately, the ISC strategic plan provides clear strategic initiatives which can be used as the basis to filter the long list of solution providers in order to identify those that can provide industry needs. In many cases those industry needs will be met through normal market development opportunities without ISC involvement however it is inevitable that some strategic gaps will remain unfilled and require industry intervention.

The nine engagement pathways described in this report are not exhaustive however they do represent a range of partnership models encompassing all envisaged current-state requirements. The models presented vary from very light touch (approaches for the facilitation of knowledge exchange) through to investment models for capital return. While some of the models will be business as usual for the ISC (e.g. funding trials and field days), others will require the development of new procedures and governance (e.g. providing growth capital).

A systematic approach to maintaining a solution provider database that includes categorisation for fit to strategic initiatives will provide a sound basis for ongoing identification of desirable partners and engagement pathways by which the ISC can continue to advance the Australian red meat integrity system.

5 Bibliography

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6 Appendix

6.1 Integrity Systems Strategic Plan 2025 – Coding

The following table assigns codes to each of the strategic initiatives contained in the ISC strategic plan. These codes have been used to categorise solution providers listed in the database (section 6.2) for their potential fit against the strategic plan.

Pillar 1: Ensuring our integrity system continues to deliver						
	Horizon 1 (1-2 years)		**Horizon 2 (2-5 years)**		**Horizon 3 (5+ years)**	
A collaborative and national approach to integrity	P1H1a	• Achieve a truly national system for livestock identification and traceability	P1H2a	• Implement real-time compliance monitoring methodologies.	P1H3a	• Broad industry adoption of new automated data capture and verification systems
	P1H1b	• Global review of alternate compliance frameworks	P1H2b	• Assess new models for collaboration between industry and government for compliance and enforcement		
	P1H1c	• Investigate desktop auditing technologies and reporting tools to drive efficiencies in program compliance activities	P1H2c	• Align legislation and program rules with new technologies and	P1H3b	• Work with existing and new markets to ensure there is acceptance of new

				new approaches in the delivery of the integrity system		product verification and traceability models
	P1H1d	• Research alternate frameworks for verifying product compliance with market and legislative requirements				
Responding to consumer and customer demands	P1H1e	• Surveying model developed to determine consumer preferences for integrity attributes	P1H2d	• Systems to underpin provenance and country of origin researched and trialed	P1H3c	• Farm to fork traceability models being adopted across several value chains
	P1H1f	• Assess how the integrity system can integrate sustainability and environmental objectives	P1H2e	• Proof of concepts for underpinning sustainability and environmental claims developed	P1H3d	• Adoption of sustainability and environmental initiatives within the integrity system
Recognising the value of integrity	P1H1g	• Communication and adoption strategy developed to underpin the Integrity System 2025 Strategy	P1H2f	• Integrity system value proposition identified for each segment	P1H3e	• Measurable shift in attitudes to the integrity system and the value that it delivers to customers, individual read meat

						businesses and the industry as a whole
	P1H1h	• Development of a stakeholder consultation and communication framework	P1H2g	• Active communication about value proposition and transition across all target audiences		
	P1H1i	• Development of a culture and leadership plan to support cultural shift within the industry				
			P1H2h	• New investment models for the integrity system in place		
	P1H1j	• Integration of the Integrity System 2025 Strategy into the MISP 2025 planning process			P1H3f	• Review and refresh the Integrity System 2025 Strategy
	P1H1k	• Research and development of investment models for the integrity system	P1H2i	• Review and refresh the Integrity System 2025 Strategy		

	P1H1l	• Establish an expert panel/working group to oversee the Integrity System 2025 Strategy				

Pillar 2: Pursuing and adopting new integrity approaches and technologies						
	Horizon 1 (1-2 years)		**Horizon 2 (2-5 years)**		**Horizon 3 (5+ years)**	
Pursuing new technologies	P2H1a	• A comprehensive market and technology review to create a technology roadmap for the future integrity system	P2H2a	• Implement proof of concept technologies in line with the technology roadmap	P2H3a	• Roll-out new technologies to support livestock identification, farm to fork traceability and product verification
	P2H1b	• Global review of identification and tracking technologies to integrate with or replace existing identification methods	P2H2b	• Proof of concept real-time livestock tracking systems operating in several supply chains	P2H3b	• Implementation of new livestock identification and tracking technologies underpinned by nationally consistent legislation
	P2H1c	• R&D into real-time product verification opportunities (e.g. feeding regimes, HGP treatments, chemical residues etc.)	P2H2c	• Proof of concept real-time product verification operating in several value chains	P2H3c	• Industry wide adoption of new product verification methods

Driving new technology and system adoption	P2H1d	• Pool of early adopters identified and working collaboratively on adopting new technologies	P2H2d	• Transition plan developed to support technology adoption and system uptake	P2H3d	• Broad industry roll-out of new integrity technologies and approaches commences
	P2H1e	• Assess likely barriers to adoption of new technologies and develop strategies for uptake				

Pillar 3: Leveraging integrity data to add value through the chain						
	Horizon 1 (1-2 years)		**Horizon 2 (2-5 years)**		**Horizon 3 (5+ years)**	
Effective decision making through integrity data and insights	P3H1a	• Analysis and scoping of integrity system data and data platform opportunities	P3H2a	• Technology proof of concepts developed to build connections between consumers and producers	P3H3a	• Real-time, feedforward and feedback mechanisms established to share market eligibility information, product verification and product performance through the value chain
			P3H2b	• Systems developed to enable real-time assessment of market eligibility		

6.2 Database

Name	URL	Category	ISC strategic initiatives
Meat farming technology trails in the EU - IOF2020	https://www.iof2020.eu/trials/meat	Research/Industry	P2H1c, P2H2c, P2H3a
Welcome to GS1	http://www.gs1.org/	Animal Data Tech	P1H1h, P1H2d, P1H3c, P2H2c, P3H2a
Meat Transparency and traceability	https://www.iof2020.eu/trials/meat/meat-transparency-and-traceability	Research/Industry	P1H1a, P1H2d, P1H3a, P2H1c, P2H2c, P2H2a
BranchenDialog Fleisch + Wurst 2019 - 04. - 05.06.2019 - GS1 Germany Knowledge Center, Köln	https://www.gs1-germany.de/no_cache/gs1-academy/veranstaltungen/detail/seminar/BranchenDialog-Fleis-2226/seminar-termin/2019-06-04_GS1-Germany-Knowledg_ID_3834/	Research/Industry	P2H1c, P2H2c, P2H3a
About the National Livestock Identification System	https://www.mla.com.au/meat-safety-and-traceability/red-meat-integrity-system/about-the-national-livestock-identification-system-2015/	Research/Industry	P1H1a, P1H3a, P1H3c, P2H2b, P2H2c, P2H3a, P2H3b, P3H1a
Using NLIS to manage livestock	https://www.mla.com.au/meat-safety-and-traceability/red-meat-integrity-system/about-the-national-livestock-identification-system-2015/using-nlis-to-manage-livestock/	Research/Industry	P1H1a, P1H3a, P1H3c, P2H2b, P2H2c, P2H3a, P2H3b, P3H1a
Producers confused over LPA program updates	https://www.farmweekly.com.au/story/5671513/producers-confused-over-lpa-program-updates/	Press/Coverage	P1H1f, P1H2e, P1H3d
Tagging livestock	https://www.mla.com.au/meat-safety-and-traceability/red-meat-integrity-system/about-the-national-livestock-identification-system-2015/tagging-livestock/	Research/Industry	P1H1a, P1H3a, P1H3c, P2H2b, P2H2c, P2H3a, P2H3b, P3H1a

Name	URL	Category	ISC strategic initiatives
NLIS information	https://www.nlis.com.au/NLIS-Information/	Research/Industry	P1H1a, P1H3a, P1H3c, P2H2b, P2H2c, P2H3a, P2H3b, P3H1a
About the Livestock Production Assurance program	http://www.mla.com.au/meat-safety-and-traceability/red-meat-integrity-system/about-the-livestock-production-assurance-program/	Research/Industry	P1H1c, P1H1d, P1H1f, P1H2b, P1H2e, P1H3d, P2H1c,
Welcome to NLIS Australia's national livestock identification system	https://www.nlis.com.au/#/see-information-about-your-livestock	Research/Industry	P1H1a, P1H3a, P1H3c, P2H2b, P2H2c, P2H3a, P2H3b, P3H1a
Latest cattle, sheep and pig slaughter statistics	https://www.gov.uk/government/statistics/cattle-sheep-and-pig-slaughter	Research/Industry	P1H1h, P1H2b
Comparison of beef traceability in serial and parallel fabrication systems using RFID and two-dimensional barcodes	https://academic.oup.com/tas/article/2/1/101/4907954	Research/Industry	P1H1a, P1H2d, P1H2a, P1H3c, P2H2c, P2H3a, P2H3b, P2H3c
Radio Frequency Identification Technology	https://www.matthews.com.au/technologies/labelling-technologies/radio-frequency-identification-technology	Animal Data Tech	P1H1a, P1H2d, P1H2a, P1H3c, P2H2c, P2H3a, P2H3b
LIVESTOCK SOLUTIONS	https://www.zoetis.com.au/livestock-solutions/	Animal Welfare/Health	P1H1f, P1H1h, P1H2e, P1H3d, P2H1c
National Animal Identification and Tracing	https://www.mpi.govt.nz/growing-and-harvesting/livestock-and-animal-care/national-animal-identification-and-tracing/	Research/Industry	P1H1a, P1H2b, P1H2d, P1H3a, P1H3c, P2H2b, P2H2c, P2H3a, P2H3b
Allflex	https://www.allflex.global/au/homepage-uk	Animal Data Tech	P1H1a, P1H2b, P1H2d, P1H3a, P1H3c, P2H2b, P2H2c, P2H3a, P2H3b

Name	URL	Category	ISC strategic initiatives
Modeling and Implementation of Cattle/Beef Supply Chain Traceability Using a Distributed RFID-Based Framework in China	https://journals.plos.org/plosone/article?id=10.1371/journal.pone.0139558	Research/Industry	P1H1a, P1H3a, P1H3c, P2H2b, P2H2c, P2H3a, P2H3b, P3H1a
How the System Works	https://www.canadaid.ca/traceability/how-the-system-works/	Research/Industry	P1H1a, P1H1d, P1H2a, P1H2d, P1H3a, P1H3c, P2H1c, P2H2b, P2H2c, P2H3a, P2H3b, P2H3c, P3H2b
CLTS Web Services	https://www.canadaid.ca/clts/clts-web-services/	Research/Industry	P1H1a, P1H1d, P1H2a, P1H2d, P1H3a, P1H3c, P2H1c, P2H2b, P2H2c, P2H3a, P2H3b, P2H3c, P3H2b
NLID	https://www.holstein.ca/Public/en/Services/NLID/NLID	Research/Industry	P1H1a, P1H1d, P1H1e, P1H2a, P1H2d, P1H3a, P1H3c, P2H1c, P2H2b, P2H2c, P2H3a, P2H3b, P2H3c, P3H2b, P3H3a
Agriculture	https://www.gov.mb.ca/agriculture/food-safety/traceability/print,animal-identification.html	Research/Industry	P1H1a, P1H1d, P1H2a, P1H2d, P1H3a, P1H3c, P2H1c, P2H2b, P2H2c, P2H3a, P2H3b, P2H3c, P3H2b
Animal Identification & Tracing: An Overview	http://nationalaglawcenter.org/overview/animalid/	Research/Industry	P1H1a, P1H3a, P1H3c, P2H2b, P2H2c, P2H3a, P2H3b, P3H1a
New livestock service champions farm to fork traceability	https://www.gov.uk/government/news/new-livestock-service-champions-farm-to-fork-traceability	Research/Industry	P1H1a, P1H3a, P1H3c, P2H2b, P2H2c, P2H3a, P2H3b, P3H1a
Has RFID's time come with new livestock traceability system?	https://britishmeatindustry.org/industry-news/has-rfids-time-come-with-new-livestock-traceability-system/	Research/Industry	P1H1a, P1H2a, P1H2d, P1H3a, P1H3c, P2H1c, P2H2b, P2H3a, P2H3b

Name	URL	Category	ISC strategic initiatives
Welcome to NAIT	http://nait.co.nz/technical-information/it-developers/	Research/Industry	P1H1a, P1H3a, P1H3c, P2H2b, P2H2c, P2H3a, P2H3b, P3H1a
Richard Laverick	https://ahdb.org.uk/Staff/richard-laverick	Research/Industry	P1H1a, P1H1h, P1H2d, P1H3c, P2H3a, P2H3b, P3H1a
Full circle: Cattle ID and traceability	https://www.beefmagazine.com/animal-health/full-circle-cattle-id-and-traceability	Press/Coverage	P1H1a, P1H3a, P1H3c, P2H2b, P2H2c, P2H3a, P2H3b, P3H1a
Heat Detection & Health Alerts by CowAlert	http://the.cowalert.com/	Animal Data Tech	P1H3a
Biggest Agtech Acquisition on Record Signals Positive Outlook for Animal Health Innovation	http://techaccel.net/2018/12/biggest-agtech-acquisition-on-record-signals-positive-outlook-for-animal-health-innovation/	Animal Welfare/Health	P1H1a, P1H2d, P1H3c, P2H2b, P2H3a, P2H3b
Rex for Livestock & Food Producers	http://rexanimalhealth.com/forlivestock/	Animal Welfare/Health	P1H3a
AAD/QScout	http://www.qscoutlab.com/	Animal Welfare/Health	P1H1f, P1H2e, P1H3a
SenseHub™ Solution	http://www.scrdairy.com/cow-intelligence/sensehub.html	Animal Data Tech	P1H3a
Livestock Intelligence & Management	https://www.antelliq.com/allflex-livestock-management	Animal Data Tech	P1H1a, P1H2d, P1H3c, P2H2b, P2H3a, P2H3b

Name	URL	Category	ISC strategic initiatives
Cainthus	http://cainthus.com	Farm/Feed/Animal Management Software & Systems	P1H1c, P1H2a, P1H3a, P2H3a, P2H1c, P3H3a
My Site	http://www.performancelivestockanalytics.com/	Farm/Feed/Animal Management Software & Systems	P1H1c, P1H2a, P1H3a, P2H3a, P2H1c, P3H3a
Halter	https://www.halter.co.nz/	Animal Data Tech	P1H1f, P1H2e, P1H3a, P1H3d
SmartBow - Herd Monitoring Software	https://www.smartbow.com/en/home.aspx	Farm/Feed/Animal Management Software & Systems	P1H1c, P1H2a, P1H3a, P2H3a, P2H1c, P3H3a
Moocall Calving Sensors	https://moocall.com/	Animal Data Tech	P1H1c, P1H2a, P1H3a, P2H3a, P2H1c, P3H3a
Tambero	https://www.tambero.com	Farm/Feed/Animal Management Software & Systems	P1H1c, P1H2a, P1H3a, P2H3a, P2H1c, P3H3a
ISC Developer Portal	http://developer.integritysystems.com.au/	Research/Industry	P1H1a, P1H1b, P1H1d, P1H2b, P1H2d, P1H3a, P1H3c, P2H3a, P2H3b
Field to Market	https://fieldtomarket.org/	Production Assurance	P1H1f, P1H1h, P1H2e, P1H3d, P3H2a
Aglive	http://aglive.com/	Animal Data Tech	P1H1a, P1H1c, P1H1d, P1H2d, P1H3a, P1H3c, P2H3a, P2H3b

Name	URL	Category	ISC strategic initiatives
Granular	https://www.granular.ag/	Farm/Feed/Animal Management Software & Systems	P1H1c, P1H2a, P1H3a, P2H3a, P2H1c, P3H3a
Maia Grazing	https://www.maiagrazing.com/	Farm/Feed/Animal Management Software & Systems	P1H1c, P1H2a, P1H3a, P2H3a, P2H1c, P3H3a
Conservis	https://conservis.ag/relationships-with-farmers-and-agriculture-data-management/	Farm/Feed/Animal Management Software & Systems	P1H1c, P1H2a, P1H3a, P2H3a, P2H1c, P3H3a
Ranch Manager	http://www.ranchmanageropen.com/	Farm/Feed/Animal Management Software & Systems	P1H1c, P1H2a, P1H3a, P2H3a, P2H1c, P3H3a
Farmier	http://farmier.com/	Farm/Feed/Animal Management Software & Systems	P1H1c, P1H2a, P1H3a, P2H3a, P2H1c, P3H3a
Mobble | The Farm App for Farm & Livestock Management	https://www.mobble.io/	Farm/Feed/Animal Management Software & Systems	P1H1c, P1H2a, P1H3a, P2H3a, P2H1c, P3H3a
Figured	https://www.figured.com/au/	Transaction/Commerce/Finance Software/Platforms	P1H1c, P1H2a, P1H3a, P2H3a, P2H1c, P3H3a
Manage your herd, drive profit with Livestocked!	https://www.livestocked.com/	Farm/Feed/Animal Management Software & Systems	P1H1c, P1H2a, P1H3a, P2H3a, P2H1c, P3H3a
HerdMASTER Feature Comparison List	https://herdmaster.abri.une.edu.au/features/overview-and-feature-list/herdmaster-feature-comparison-list/	Farm/Feed/Animal Management Software & Systems	P1H1c, P1H2a, P1H3a, P2H3a, P2H1c, P3H3a

Name	URL	Category	ISC strategic initiatives
Herd Watch	https://www.herdwatch.co.uk/	Farm/Feed/Animal Management Software & Systems	P1H1c, P1H2a, P1H3a, P2H3a, P2H1c, P3H3a
iCattlePro	https://itunes.apple.com/us/app/icattlemgrpro/id569022242?mt=8	Farm/Feed/Animal Management Software & Systems	P1H1c, P1H2a, P1H3a, P2H3a, P2H1c, P3H3a
Sapien - Individual animal management - Sapien Technology	http://www.sapien.com.au/	Farm/Feed/Animal Management Software & Systems	P1H1c, P1H2a, P1H3a, P2H3a, P2H1c, P3H3a
Meet MODISAR	http://www.modisar.com/	Farm/Feed/Animal Management Software & Systems	P1H1c, P1H2a, P1H3a, P2H3a, P2H1c, P3H3a
With HerdBoss, you can...	https://www.herdboss.com/	Farm/Feed/Animal Management Software & Systems	P1H1c, P1H2a, P1H3a, P2H3a, P2H1c, P3H3a
Phoenix AgData	https://www.agdata.com.au/products/production/livestock/	Farm/Feed/Animal Management Software & Systems	P1H1c, P1H2a, P1H3a, P2H3a, P2H1c, P3H3a
NLIS / NAIT / CCIA Integration	https://herdmaster.abri.une.edu.au/features/detailed-features/nlis-nait-ccia-integration/	Data Integration	P1H1a, P1H1c, P1H2d, P1H3a, P1H3c, P2H3a, P2H3b
Stockbook Agrisphere	https://www.practicalsystems.com.au/farm-software/stockbook-agrisphere/	Farm/Feed/Animal Management Software & Systems	P1H1c, P1H2a, P1H3a, P2H3a, P2H1c, P3H3a
EasyKeeper - Simple and secure herd management	https://www.easykeeper.com/	Farm/Feed/Animal Management Software & Systems	P1H1c, P1H2a, P1H3a, P2H3a, P2H1c, P3H3a

Name	URL	Category	ISC strategic initiatives
Feedyard IT : ITS Global	http://www.itslivestock.com/	Farm/Feed/Animal Management Software & Systems	P1H1c, P1H2a, P1H3a, P2H3a, P2H1c, P3H3a
“Use NLIS to your advantage”	http://www.herdlink.com.au/nlis.shtml	Farm/Feed/Animal Management Software & Systems	P1H1c, P1H2a, P1H3a, P2H3a, P2H1c, P3H3a
Cattle software - Record Keeping Made Easy by CattleMax - CattleMax	http://www.cattlemax.com/	Farm/Feed/Animal Management Software & Systems	P1H1c, P1H2a, P1H3a, P2H3a, P2H1c, P3H3a
Cattle Software	https://cattleworks.com/	Farm/Feed/Animal Management Software & Systems	P1H1c, P1H2a, P1H3a, P2H3a, P2H1c, P3H3a
DigitalBeef - Herd Management Software. Strategic. Easy. Complete.	https://www.digitalbeef.com/	Farm/Feed/Animal Management Software & Systems	P1H1c, P1H2a, P1H3a, P2H3a, P2H1c, P3H3a
Medria Solutions	http://www.medria.fr/en/solutions/	Animal Welfare/Health	P1H3a, P2H1c
Cowlar - The smart collar for cows	http://cowlar.com/	Animal Data Tech	P1H3a, P2H1c
GPS animals tracker - Tracking and monitoring livestock	https://digitanimal.com/?lang=en	Animal Data Tech	P1H1a, P1H2d, P1H3c, P2H1c, P2H2b, P2H3b
Heat Detection & Health Management	https://www.gea.com/en/productgroups/milking-systems/heat-detection_health-management/index.jsp	Animal Welfare/Health	P1H3a, P2H1c

Name	URL	Category	ISC strategic initiatives
MEQ Probe is a new solution that utilises spectral analysis to objectively determine the quality of meat in seconds	https://www.meqprobe.com/	Verification/Safety	P1H1d, P1H1e, P2H2c, P3H2a, P3H2b, P3H3a
Source Certain - Origin Security - Perth, Singapore, United States	https://www.sourcecertain.com/	Verification/Safety	P1H1d, P1H1e, P2H2c, P3H2a, P3H2b, P3H3a
It's past time for beef industry traceability	http://www.beefmagazine.com/risk-management/it-s-past-time-beef-industry-traceability	Press/Coverage	P1H1a, P1H3a, P1H3c, P2H2b, P2H2c, P2H3a, P2H3b, P3H1a
growSafe	https://growsafe.com/our-platform/	Farm/Feed/Animal Management Software & Systems	P1H1c, P1H2a, P1H3a, P2H3a, P2H1c, P3H3a
Automating nutrition to improve animal health	http://www.terranutritech.com/	Animal Welfare/Health	P1H1f, P1H2e, P1H3a, P1H3d, P2H1c
Resonance	https://resonanceapp.com/solutions/	Supply Chain	P1H1c, P1H1d, P1H1e, P1H2a, P1H3a, P2H2c, P2H3c, P3H3a
Breedr - Precision livestock network	https://www.breedr.co/	Farm/Feed/Animal Management Software & Systems	P1H1a, P1H1d, P1H1e, P1H2a, P1H2d, P1H3a, P1H3c, P2H1c, P3H3a
Vence	http://vence.io/	Animal Data Tech	P1H1f, P1H2e, P1H3d
GYUHOSaaS	http://www.fujitsu.com/jp/group/kyushu/en/solutions/industry/agriculture/gyuho/	Animal Welfare/Health	P1H3a, P2H1c

Name	URL	Category	ISC strategic initiatives
HerdDogg	www.herddogg.com	Animal Data Tech	P1H1a, P1H1d, P1H2a, P1H2d, P1H3a, P1H3c, P2H1c, P2H2b, P2H3a, P2H3b, P3H2b, P3H3a
HerdInsights	https://www.herdinsights.com/	Farm/Feed/Animal Management Software & Systems	P1H1c, P1H2a, P1H3a, P2H3a, P2H1c, P3H3a
IceTag	http://www.icerobotics.com/	IoT/Comms Data Tech	P1H1c, P1H2a, P1H3a, P2H3a, P2H1c, P3H3a
Iota	http://www.iota-devices.com/	IoT/Comms Data Tech	P1H1f, P1H1e, P1H3a, P1H3d
IoTag	https://www.iotag.com.au/	Animal Data Tech	P1H1c, P1H2a, P1H3a, P2H3a, P2H1c, P3H3a
John Deere	www.deere.com	Farm/Feed/Animal Management Software & Systems	P1H1c, P1H2a, P1H3a, P2H3a, P2H1c, P3H3a
Libelium	http://www.libelium.com/	IoT/Comms Data Tech	P1H1c, P1H1h, P1H2a, P1H3a, P2H1c, P2H1e, P2H2b
LiveCare	http://www.livecare.xyz/new/	Animal Data Tech	P1H2a, P1H3a, P3H2b
MAIT	www.mait.com.au	IoT/Comms Data Tech	P1H1f, P1H1e, P1H3a, P1H3d

Name	URL	Category	ISC strategic initiatives
Meshed	www.meshed.com.au	IoT/Comms Data Tech	P1H1c, P1H1h, P1H2a, P1H3a, P2H1c, P2H1e, P2H2b
MOOnitor	http://www.moonitorcows.com/	Animal Data Tech	P1H3a, P2H1c
mOOvement	https://www.moovement.com.au/	Animal Data Tech	P1H1a, P1H3a, P2H2b, P2H3b
moow	moow.farm	Animal Data Tech	P1H2a, P1H3a, P3H2b
Myriota	www.myriota.com	IoT/Comms Data Tech	P1H1c, P1H1h, P1H2a, P1H3a, P2H1c, P2H1e, P2H2b
Nanoscent	https://nanoscentlabs.com/	Animal Data Tech	P1H1f, P1H2e, P1H3d
Nedap	https://www.nedap-livestockmanagement.com/dairy-farming/	Animal Data Tech	P1H1a, P1H2d, P2H1c, P2H3a, P2H3b
Nightwatch	http://www.nightwatch24.com/	Animal Data Tech	P1H3a, P2H1c
Observant	https://observant.net/	IoT/Comms Data Tech	P1H1f, P1H1e, P1H3a, P1H3d

Name	URL	Category	ISC strategic initiatives
Origo.farm	www.origo.com	IoT/Comms Data Tech	P2H1a
Out of box solutions	http://outofboxsolutions.com.au/services/agtech/	Animal Data Tech	P1H1f, P1H2e, P1H3d
Pacific Data Systems (SatVue)	www.satvue.com.au	IoT/Comms Data Tech	P1H1f, P1H1e, P1H3a, P1H3d
Pessl Instruments	http://www.pesslinstruments.com/	IoT/Comms Data Tech	P1H1f, P1H1e, P1H3a, P1H3d
PIP IoT	https://www.pipiot.com/	IoT/Comms Data Tech	P1H2a, P2H1c, P2H2b, P2H3a, P2H3b, P3H3a
Pycno	www.pycno.co.uk	IoT/Comms Data Tech	P1H3a, P3H2b
QuantifiedAg	http://quantifiedag.com/	Animal Data Tech	P1H1d, P1H1f, P1H3a, P2H1c, P3H2b, P3H3a
qwes HR	www.lely.com	Farm/Feed/Animal Management Software & Systems	P1H1c, P1H2a, P1H3a, P2H3a, P2H1c, P3H3a
Redi	http://www.precisionanimalsolutions.com/	Animal Data Tech	P1H1f, P1H1e, P1H3a, P1H3d, P2H2b, P2H3b

Name	URL	Category	ISC strategic initiatives
RFIT (now Agriscan)	www.rfit.com.au	Animal Data Tech	P1H1a, P1H1d, P1H2a, P1H2d, P1H3a, P1H3c, P2H1c, P2H3a, P2H3b, P3H3a
RMCam	https://www.rmtek.com.au/	IoT/Comms Data Tech	P1H1a, P1H1c, P1H1f, P1H2a, P1H2d, P1H2e, P1H3a, P1H3d, P2H1c, P2H3b
ROBeau Tech	http://www.robeau.tech/en/	IoT/Comms Data Tech	P1H1f, P1H1e, P1H3a, P1H3d
Rumiwatch	www.rumiwatch.ch	Animal Data Tech	P1H1d, P1H1f, P1H3a, P2H1c, P3H2b, P3H3a
Secure Track Sense	https://www.securetracksense.com/	IoT/Comms Data Tech	P1H1a, P1H1d, P1H2a, P1H3a, P1H3c, P2H1c
Smart Paddock	http://smartpaddock.com/	Animal Data Tech	P1H1f, P1H1e, P1H3a, P1H3d, P2H2b, P2H3b
SmartShepherd	https://www.smartshepherd.com.au/	Animal Data Tech	P1H1c, P1H2a, P1H3a, P2H3a, P2H1c, P3H3a
SmartStock	http://www.smartstock-usa.com	Animal Data Tech	P1H2a, P1H3a, P3H2b
smaXtec	https://www.smaxtec.com/en	Animal Data Tech	P1H3a

Name	URL	Category	ISC strategic initiatives
Stellapps	www.stellapps.com	Transaction/Commerce/Finance Software/Platforms	P1H1c, P1H1h, P1H2a, P1H3a, P2H1c, P2H1e, P2H2b
Taggle	www.taggle.com.au	IoT/Comms Data Tech	P1H1f, P1H1e, P1H3a, P1H3d
TekVet	www.tekvet.com	Animal Data Tech	P1H3a, P2H1c
Teralytic (Soil sensor)	https://www.teralytic.com/index.html	Crop/Pasture Management/Analytics	P1H3a
The Yield	www.theyield.com	Crop/Pasture Management/Analytics	P1H1f, P1H1e, P1H3a, P1H3d
THINK Autononmous	https://www.oracle.com/database/autonomous-database/think-autonomous.html	IoT/Comms Data Tech	P1H1c, P1H1h, P1H2a, P1H3a, P2H1c, P2H1e, P2H2b
Thing C	https://thingc.co/	Crop/Pasture Management/Analytics	P1H2a, P1H3a, P3H2b
Thinxtra	www.thinxtra.com	IoT/Comms Data Tech	P1H1c, P1H1h, P1H2a, P1H3a, P2H1c, P2H1e, P2H2b
Tru Test	http://livestock.tru-test.com/en-nz	Animal Data Tech	P1H1c, P1H2a, P1H3a, P2H3a, P2H1c, P3H3a

Name	URL	Category	ISC strategic initiatives
uSee	www.usee.com	IoT/Comms Data Tech	P1H1f, P1H1e, P1H3a, P1H3d
vetasyst	https://www.moonsyst.com/	Animal Data Tech	P1H1c, P1H2a, P1H3a, P2H3a, P2H1c, P3H3a
VitalHerd	http://www.vitalherd.com/	Animal Data Tech	P1H1c, P1H2a, P1H3a, P2H3a, P2H1c, P3H3a