Final report

Establishing new integrity system approaches & technology – Foundation Work Project 1b

Project code:	V.RDA.2007
Prepared by:	Dr Matthew Flynn, Hannah Castle & Philip Green. Greenleaf Enterprises
Date published:	2nd December, 2020

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

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

Abstract

This project was undertaken to scope the future integrity system, and to propose the roadmap for the Integrity Systems Company (ISC) to operationalise the IS20205 strategic plan. During the project, it was discovered that there is misalignment between the ISC strategic horizons and the future roadmap from a stakeholder perspective. This report presents an extensive number of findings supported by different data sources and analysis that underpin the conclusions and recommendations. The solutions proposed herein are comprehensive, however in brief they are a two-step process of 1) resetting the roadmap for 2021-2022 to deliver the primary value propositions for the integrity system; and 2) minor adjustments to the overall strategy. These recommendations, if followed are likely to position ISC for success over the short-to-medium term. Key to this will be a fresh approach to the communication of these adjustments to the red meat industry. Importantly, industry is likely to benefit as the Integrity Systems Company start to implement practical solutions aligned with industry value propositions. It is expected that after the basic integrity system is fully developed there will be opportunity to innovate and outcompete integrity systems from other countries.

Executive summary

Background

The core purpose of this project was to define the overarching requirements for the future state traceability and verification system with reference to the IS2025 strategic plan. This included, the architecture of the broader system framework, to identify:

- the scope of the future traceability and verification systems,
- the objectives and standards that will need to be met, and
- the key data collection points, storage requirements and analytics.

The roadmap to realising the IS2025 strategy will require ongoing stakeholder engagement to understand whole of supply chain value propositions and drivers of behaviour. Hence, in this project it was important to clarify with stakeholders their requirements for the future integrity system. This project primarily focussed on conceptualising the future integrity system from a user desirability lens, which is why stakeholder engagement activities were guided by the following key question:

What do users want in a future integrity system?

The primary use of the results of this project are to inform the roadmap for ISC.

Objectives

The key objectives of this project were achieved through scoping the high-level requirements of the future integrity system, in terms of traceability and verification. The project team adopted design led principles to determine the system requirements, and to engage with key industry stakeholders. The system was mapped extensively with respect to data collection points, the value of data, as well as the use cases for data. Moreover, the system was visualised as a realistic future traceability and verification web-based format. Finally, an in-depth risk assessment and mitigation strategy was completed in the form of a roadmap for implementation and trials beginning in 2021 through to 2025.

Methodology

The project methodology was multifaceted. Design-led innovation was the overarching method employed to understand a complex problem space and user value propositions. The project team followed a structured process to map supply chain data, review documents from past projects, undertake extensive stakeholder engagement in the form of interviews and workshops, map assumptions, and undertake thematic analysis. A risk assessment survey was completed. The results were ultimately prioritised using the MoSCoW method and subsequently developed into a roadmap and proposed trials.

Results/key findings

This project found misalignment between industry expectations and ISC strategy (specifically the horizons/roadmap timings), and that because of this there are some significant high risks areas. If left unresolved, these risks are likely to increase the barriers to adoption in the coming years.

The primary result of the project was that the red meat industry urgently requires an integrity system that can do its intended job. In the first instance the system must more fully provide biosecurity (through its ability to track and trace and quickly manage an outbreak situation) to underpin market access. The secondary value propositions are food safety, animal health and welfare, and

sustainability. After delivering the primary value propositions, these secondary value propositions will need to be integrated more deliberately over the coming years in terms of traceability and verification.

Benefits to industry

The main benefit to industry from this project is the recognition from ISC that the current system is yet to deliver the primary value propositions to the degree that it must. This recognition has already begun to influence ISC internal preparation for 2021, which should result in practical solutions for industry during the 2021-2022 period.

Future research and recommendations

This project has outlined a series of R&D trials through to 2025. ISC has already begun some of these trials in the form of sprints, some have been previously considered, and there are some new areas proposed. All proposed trials specifically address the findings of this project and if undertaken are likely to mitigate some of the significant challenges and high-risk areas identified.

Table of Contents

1. Background

The Integrity Systems Company (ISC) manages and delivers the Australian red meat industry's three key on- farm assurance and through-chain traceability programs:

- Livestock Production Assurance (LPA) program,
- LPA National Vendor Declarations (LPA NVD), and
- National Livestock Identification System (NLIS).

Together, these three elements ensure the food safety and traceability of Australian red meat for our domestic and international customers and protect Australia's access to over 100 export markets. The red meat integrity system provides on-farm assurance, animal identification and traceability from paddock to plate that guarantees the integrity of Australia's red meat industry. It protects the disease-free status of Australian red meat and underpins the marketing of our product as clean, safe and natural.

ISC has been focussed on implementing the Integrity Systems 2025 Strategic Plan (IS2025), which sets out the roadmap for bringing the current integrity systems into the future. The IS2025 has three key pillars of investments:

- Pillar 1: Ensuring our integrity system continues to deliver,
- Pillar 2: Pursuing and adopting new integrity approaches and technologies, and
- Pillar 3: Leveraging integrity data to add value through the chain.

To deliver some of the foundational work that will bring the investment portfolio towards the desired future state outlined in the IS2025, ISC engaged in four key project areas to help create the system for the future. These projects were primarily focussed on investment in research, development and adoption (RD&A) across the IS2025 Pillar 2 to 'pursue new integrity approaches and technologies', which has three investment areas:

- Real time traceability – the development of technologies to enable permanent, whole of life identification and real time tracking of livestock from birth to slaughter. The development of standards to enable borderless farm to fork traceability will also be an output of this investment area.
- Automated integrity – the development of new approaches to integrity including the automatic sensing of HGP's, residues and animal health issues in live animals and at processing
- Enablers – key underpinning initiatives to ensure the successful implementation and adoption of new integrity approaches and technologies, including an impact assessment, development of a risk framework, communication and adoption strategy and a governance framework to oversee the strategy and its implementation.

This project has been focused on ensuring that ISC has a clearly aligned roadmap of how to implement their overarching strategy. With extensive consultation and industry engagement, ISC wanted to understand the critical foundational building blocks, how to connect them, where to go and how to get there. Overall, this project has considered very strategic and high-quality ideas that can be practically tested in trials from February 2021 to deliver confidence in the future integrity system.

2. Objectives

The core purpose for ISC foundational project 1 was to define the overarching requirements for the future state traceability and verification system with reference to the IS2025 strategic plan. This included, putting specific attention into the architecture of the broader system framework, to identify:

- the scope of the future traceability and verification systems;
- the objectives and standards that will need to be met, and
- the key data collection points, storage requirements and analytics.

While technologies for traceability and product verification are different along the supply chain (particularly between live animals and meat products), they are part of the same overall integrity system. The compatibility and interoperability of standards and technologies was a key priority of the project research. The outcomes and recommendations from this project are intended as predecessors for ISC to start conducting proof of concept studies for individual technologies.

The key objectives of this project were to:

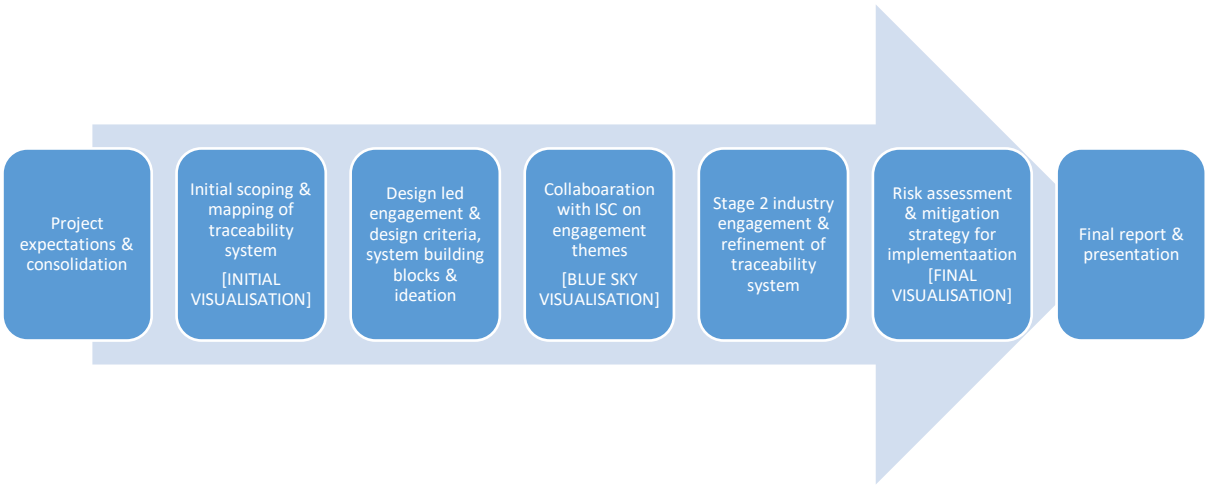
- Use various approaches, tools and expertise to scope the high-level requirements of the future integrity system, in terms of traceability and verification.
- Use design led principles to determine the system requirements, engaging with key industry and customer stakeholders.
- Engage with state jurisdictions and the federal Department of Agriculture, Water and Environment to scope out their requirements for the future system.
- Develop visualisation tools of the realistic future traceability and verification system – what does it look like and what will be required of supply chain stakeholders to make it a success?
- Conduct a risk assessment for implementation and success to be achieved within the given timeframe for implementation and a mitigation strategy.

3. Methodology

3.1 Overview of method

A structured project flow was followed with overlapping and iterative stages to support collaborative project meetings with ISC & foundational project partners at strategic points of the project (see Figure 1 which details each project milestone). The key methodologies used throughout the project have been described in the following sections.

Figure 1. Project flow

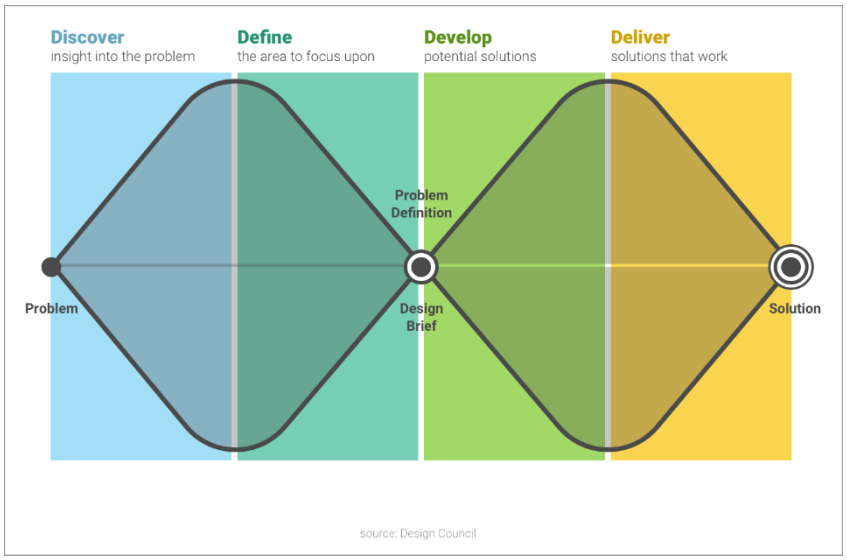


3.2 Design led innovation

This project selected design-led innovation (DLI) as an appropriate method to address the project objectives. DLI can deal with complex commercial problems because it is *"a process of creating a sustainable competitive advantage, by radically changing the customer value proposition"* (Bucolo & Matthews 2011). To understand the red meat industry's value propositions for the future integrity system, the consultant used the double-diamond method in Figure 2 (Design Council 2015). The double-diamond helped to consolidate many disparate but valid perspectives across industry. A two-stage process of converging and diverging was undertaken multiple times throughout the project to explore the problem space and opportunities and to define the specific way value will be created in the future.

The first diamond defines "Where to play", identifying the opportunity spaces that could create the greatest value. Then in the second diamond, the testing of future scenarios and system requirements were used to help define "How to win" in the best playing field. This approach considered the integrity system design, interaction between technologies and data sources, users' behaviour towards data and data provision methods, multiple service providers and commercial delivery to create the most value from the red-meat value chain, industry capability and systems readiness.

Figure 2. Double-Diamond Method



3.3 Supply chain system data mapping

A key outcome of this project was to scope the types of data, how they interact within the supply chain and how valuable certain types of data are in terms of their contribution to traceability and verification. The system data map was created to identify and prioritise:

- **Items** within the supply chain that can be traced,
- **Types of data** for each item and the potential value they might create if captured, and
- How data within the supply chain may be **linked and shared**.

The GS1 Global Traceability Standard (which has used the basis of the ISO 9001:2000 definition of Traceability) defines traceability as *'the ability to track forward the movement through specified stage(s) of the extended supply chain and trace backward the history, application or location of that which is under consideration*' (GS1 2012). The mapping of data within the red meat supply chain for ISC has incorporated some elements of the structure of the GS1 standards to determine the future integrity system requirements, these are explained in detail in Appendix 8.1.

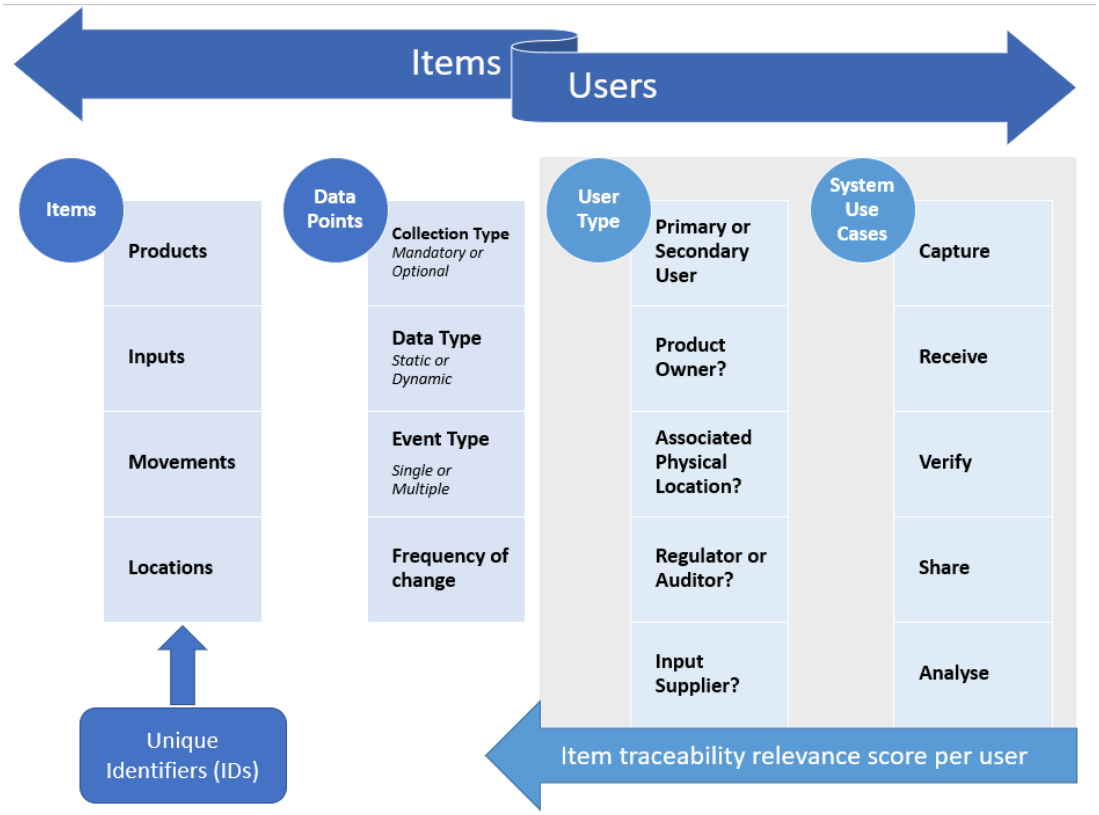
The system user map has been created alongside the system data map to identify:

- The main **users** of the system,
- What supply chain **items** are relevant to them, and
- How they **interact** with the system.

The term user includes any stakeholder that could potentially use the Future Integrity System.

In order to prioritise which users can add the most value to, or benefit the most from, the future integrity system, the users have been grouped based on their similar functions within the red meat supply chain. This includes internal stakeholders that directly interact with supply chain items and external stakeholders who provide inputs or services and/or regulate supply chain activities. Each user has been compared based on several different metrics detailed in Figure 3 to highlight the different roles and responsibilities of users within the system. The framework for mapping & system users is detailed in Appendix 0.

Figure 3. System mapping framework - items, data & user types



3.4 Stakeholder engagement

The stakeholder engagement process built directly on work already completed during the Foundational Work projects and specifically included a document review of previous projects and relevant research and analysis of themes relevant to the objectives of the project.

The stakeholder engagement process for Project 1 is explained below (Figure 4).

Figure 4. Stakeholder engagement process

3.4.1 Engagement themes

Underpinning themes were initially derived from the work already completed during the project and developed to guide stakeholder engagement (see Table 1). Notably, the themes and their descriptors were linked to various stakeholders along the supply chain with consideration in the Future Integrity System (FIS).

Table 1. Engagement themes

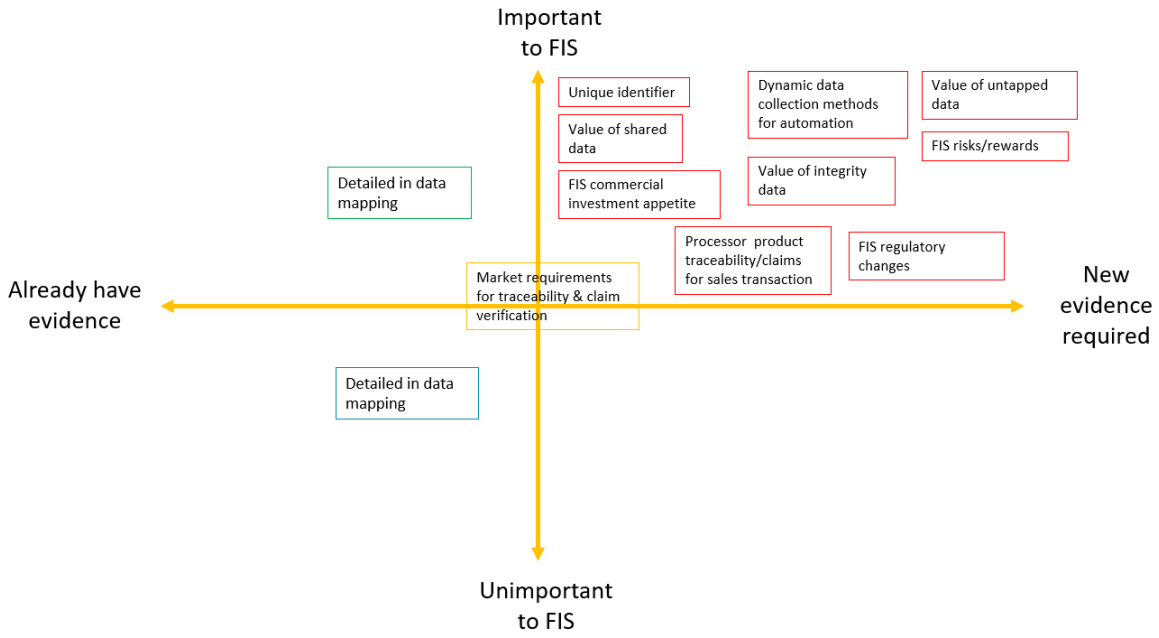
Theme	Descriptor
Value adding data for industry good	Assessing the value of data: • Data point linkages to product verification claims • Integrity value averaged ratings on specific data areas • Level of verification • Frequency of data collection • Prioritising data points/areas
Risks & rewards of the FIS for food processors	Current system • Usage of current integrity system in business • Data/evidence to verify claims on brand • Integration with industry systems (MSA, LDL, NLIS) • Customer/sales experiences based on capability to verify brand claims • Blind spots in current traceability Future system • Integrity systems in 10 years (Must haves) • Level of investment in integrity systems • Motivation for investment • Major risks • Major rewards • Company integrity related activities • Third party solution providers • Blockers to progress
Untapped value for the FIS	Current system • Current level/type of interface with integrity system Future system • Untapped value • Important data • Future ideas/solutions
On-farm risks and rewards of FIS	• Important information for decision support • Future vision for NLIS, LPA & NVDs • New ideas for the future • Major risks • Major rewards • Integrity system in 10 years
Regulation for the future	Future system • Integrity systems in 10 years (Must haves) • Level of investment in integrity systems • Motivation for investment • Major risks • Major rewards • Blockers to progress

3.4.2 Assumptions mapping

In the early phases of the project information was collected relevant to the five themes in Table 1, however there were assumptions and gaps in knowledge that needed to be clarified during stakeholder engagement. The gaps and assumptions were mapped to prioritise the types of questions

and information that needed to be uncovered during consultation. Figure 5 presents the results of an assumption mapping exercise. The top right quadrant in red shows the most important evidence that was collected during engagement. The yellow box refers to somewhat important information that was partially collected prior to consultation. The blue and green box represents data that was collected from research in other projects and the broad scoping exercise.

Figure 5. Assumptions mapping



3.4.3 Participants

Organisations and participants who were able to inform the conceptualisation of the future integrity system were intentionally selected for project consultation. Selected participants were also identified for their expert opinion as it relates to the themes and the prioritised assumption mapping.

Table 2. Participant groups aligned with engagement themes and assumptions

Organisations/Participants	Themes	Assumptions
Processors **AMIC** **Individual companies**	Risks & rewards of FIS for food processors	• FIS risk/rewards • Dynamic data collection methods • Unique identifier • Value of shared data • FIS investment appetite • Product traceability/claims for sales • Customer requirements for traceability/claim verification
Service Providers - Feedlots, Saleyards, Agents, Transporters, Technology providers	Untapped value for the FIS	• Value of untapped data • Value of shared data • Future ideas

Producers	On-farm risks and rewards of FIS	• Value of integrity data • Dynamic data collection methods • Value of shared data
Government	Regulation for the future	• FIS regulatory changes • FIS risk/rewards

3.4.4 Data collection

The methods presented in this section were used to collect industry perspectives on the requirements of the future integrity system and to prioritise data points for the future system (see Table 3). Collectively, these methods helped to answer the question, "What do users want in a future integrity system?"

Table 3. Data collection methods

Participant Group	Workshops[1]	Interviews[2]	Online poll[3]	Insights collated in system data map	Valuing the supply chain data[4]
Processors	☑	☑	☑	☑	
Service providers		☑		☑	
Government		☑		☑	
Producers	☑	☑	☑	☑	
Consultant team					☑

It should be noted that the consultant adjusted the consultation process to collaborate with ISC and Deloitte on a combined approach. These changes did impact on the consultant's ability to achieve the milestones as planned, however there was no overall negative impact. This involved reducing the amount of consultation and undertaking consultation on behalf of ISC to integrate the outcomes of their internal sprint (Appendix ISC sprint strawman). As such, the themes and assumptions were combined to inform one method for consultation.

Table 4 shows the combined themes and questions for consultation that were used in the workshops, interviews and online polls for all participants indicated in Table 3.

[1] Via online video conference
[2] Via online video conference or phone call
[3] As part of online video conference workshop, using Poll Everywhere survey software
[4] Based on collated document review and insights collected in stakeholder engagement

Table 4. Combined final themes and questions for stakeholder engagement

Final interview questions	Response type
Value propositions for the future	
1. Can you describe what you see as the most important value contribution of the integrity system in future?	Open-ended
2. Rank the following list from most important (at top) to least important (at bottom): • Biosecurity • Food safety • Animal health & welfare • Market Access • Provenance • Sustainability	Ranked value propositions in order from most to least important
Role clarity for the future	
3. Do you agree that ISC's role is to collect data and ensure that it can be accessed and used by industry to support decision making? • *Follow up question: if you answered no to the previous question, what do you believe the role of ISC is?*	Yes or No *Follow up question: open-ended*
4. What do you think the ISC's future system should be doing?	Open-ended
5. Do you agree that ISC must enable solution providers and commercial companies to leverage their data platform for innovation? • *Follow up question: if you answered no to the previous question, what do you believe the role of ISC is?*	Yes or No *Follow up question: open-ended*
Biosecurity scenario	
6. In the event of a future biosecurity threat, what would a successful industry response look like? **Probes (optional)** • What critical information would be needed to minimise any negative impacts on industry? • How and when should this data be collected? • When would it be most useful during a biosecurity threat? • What type of decisions/actions would it help to enable a response?	Open-ended
Customer/consumer trust	
7. Today's customers/community are increasingly sceptical about the practices of food production companies. How	Open-ended

Final interview questions	Response type
do you see the red meat industry in the future to ensure customer trust? **Probes (optional)** • Who needs to be involved in collaborating to increase trust in the supply chain? • What types of supply chain data and evidence would best support your company to verify the claims you make on your products and help with customer trust?	
Data driven decision making	
8. How would you describe your organisation's motivation for data-based decision making?	Select one answer only from: • Highly Motivated • Motivated • Low Motivation • Unsure • Not Motivated
Integration and networking	
9. How important is it for the future system to be able to integrate with different technology solutions?	Select one answer only from: • Extremely Important • Very Important • Important • Somewhat Important • Not Important at all
Investment appetite	
10. In the future, what level of investment is your company prepared to make in systems that trace and verify products in your supply chain?	Select one answer only from: • Very High • High • Medium • Low • None
Blockers to the future	
11. What might be some of the main blockers to evolving the integrity system for the future?	Open-ended
Enablers to the future	
12. What might act as a catalyst to enable the development of the future system?	Open-ended
Pathways to the future	
13. If you could adapt Australia's integrity system for the future, what would you like to see included to help you do your job/grow your business?	Open-ended

Final interview questions	Response type
14. What kinds of integrity initiatives is your company working on to prepare you for the future?	Open-ended
15. What must be included in the integrity system in 10 years?	Open-ended
16. What do you believe ISC needs to get done in the next: (Poll – word cloud) • 2 years _____ • 5 years _____ • 10 years _____	Open-ended

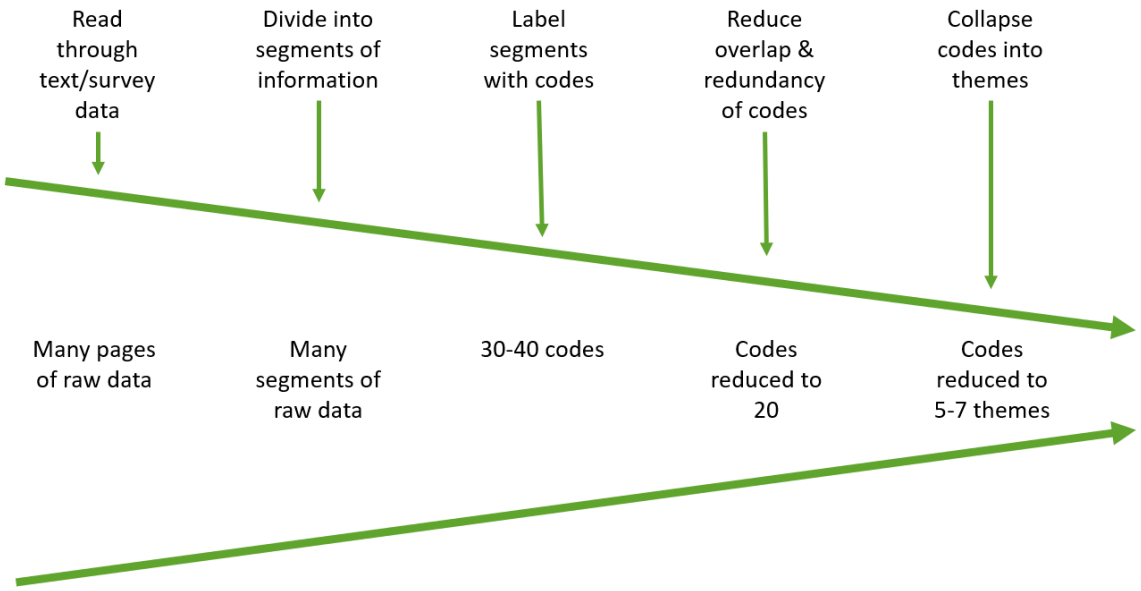
3.4.4.1 Collating insights in system data map

Supporting insights from consultation (Stage 1 and Stage 2) with different industry segments were mapped against the relevant items within the supply chain system map. General consultation insights about 'system requirements' and ISC's role were also included as separate themes. These were used to support the interpretation and analysis of consultation insights to finalise the integrity value rating and prioritisation of system requirements as described in Appendix 8.1.2 (System data integrity value rating & prioritisation).

3.4.5 Analysis and interpretation

The project followed a structured process to analyse and interpret the data collected during stakeholder engagement. All data collected was well organised in folders and transferred into a single excel file so that it could be analysed in a systematically. This included data from workshops, one to one interviews and online poll responses. The dataset was then coded into minor and major themes following the process outlined in Figure 6.

Figure 6. Stakeholder engagement data coding process



Interpreting the meaning of the results was undertaken individually and iteratively by different team members working within the project. This was achieved by layering the themes and by building on the

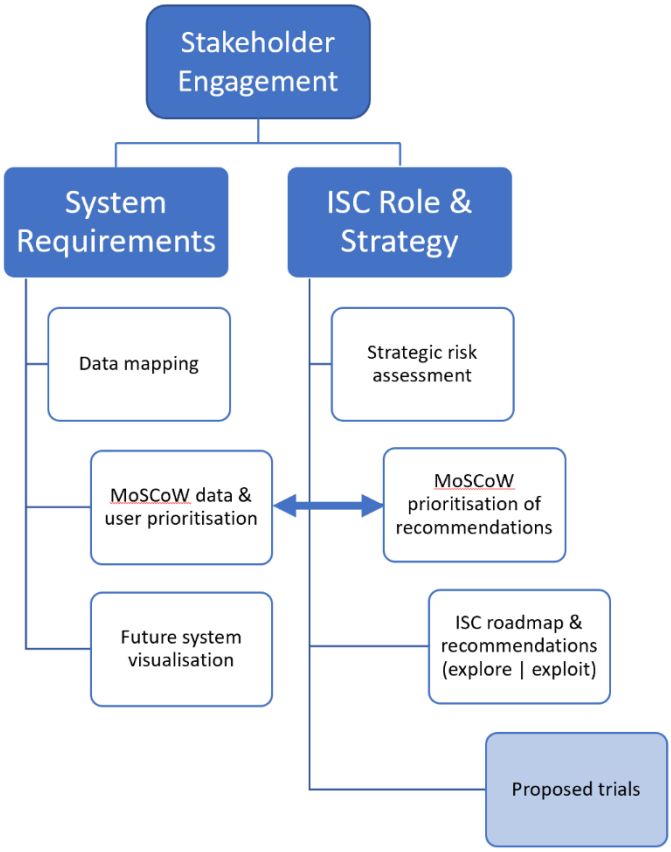
major and minor themes and interconnecting them into a conceptualised future system. That is, the strategic and operational value propositions and drivers; the system building blocks, data points, collection and storage requirements and the potential risks and rewards.

Individual interpretation was then cross checked to identify any potential misinterpretation or bias. Coinciding with this process was a mid-term review across the four Foundation Work projects which also included ISC project managers. The findings from each project were presented as well as discussion time and questions. There was considerable overlap across findings. This workshop helped to consolidate the interpretation of results.

3.5 Prioritised roadmap, risk assessment & mitigation strategy

Once the stakeholder engagement findings had been consolidated and workshopped with ISC, the project team held a final internal workshop to present the results and allow for further challenge of the outcomes. As a collective, the team worked through the results and posed specific recommendations, their risks and a roadmap for implementation. This included the consideration of several risks that were identified throughout the project with delivering the future traceability system and the strategic alignment of the Integrity Systems Company (ISC). Figure 7 provides an overview of the methodology and outputs generated as part of the final stages of the project.

Figure 7. Project framework to develop implementation roadmap



The findings analysed and interpreted from stakeholder engagement were firstly used to determine what the future system requirements would need to be to enable the system to deliver on its key value propositions. Secondly, stakeholder engagement results were used to evaluate what industry

sees the role of ISC to be and how well its strategy is aligned to the value propositions they want delivered in the next 2, 5 and 10 years.

3.5.1 MoSCoW prioritisation

For each of the MoSCoW prioritisation activities as part of this project (see Figure 7), the following rating was used based on Clegg's (1994) MoSCoW method for prioritisation.

- **Must have** - Critical to the current delivery timebox (2021-2022) for integrity system success. If any of these are not included the future integrity system will be considered a failure.
- **Should have** - Important, but not necessary for delivery in the current time box (2023-2025).
- **Could have** - Desirable but not necessary and could improve user experience. These will be included if time and resources permit.
- **Would have** - Agreed by stakeholders as least critical and lowest pay-back items, or not appropriate at the time.

The methodology for mapping the system data & user requirements can be seen in Appendices 8.1.2 and 8.2.2 respectively.

3.5.2 ISC role & strategic risk assessment

A structured process was followed to analyse project risks and develop a mitigation strategy. This involved four steps:

1. Mapping key insights from stakeholder engagement against the pillars and horizons within the Integrity System 2025 and Beyond strategic plan to identify potential risks;
2. Analysis of risks associated with the exploration of new integrity system versus risks of exploitation of the existing system;
3. Risk assessment survey; and
4. MoSCoW prioritisation activity to inform the mitigation strategy which is detailed in the project roadmap.

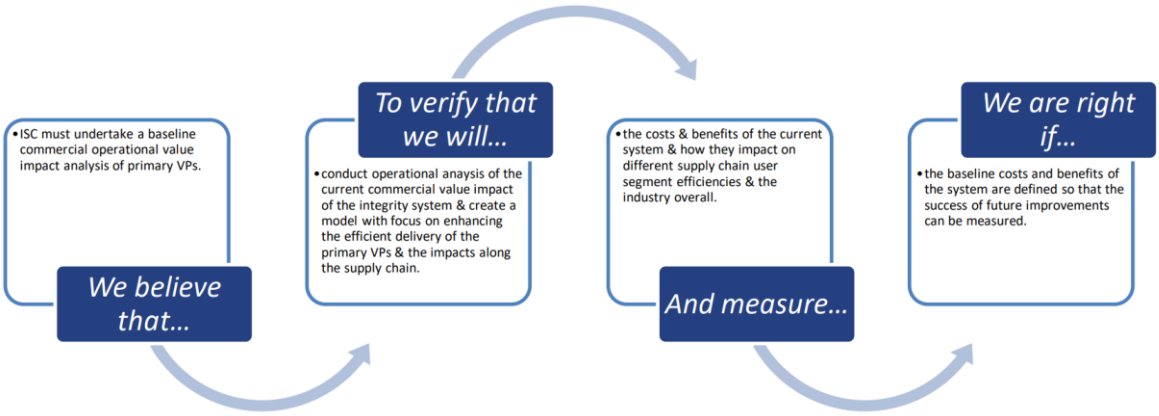
3.5.3 Future system visualisation

To communicate to a broad range of stakeholders how the future system might look and function when ISC and industry implements the proposed roadmap and recommendations, a range of concepts for digital communication have been visualised in an online dashboard format. The key value propositions, system users, data interactions and traceability requirements have been visualised based on the consolidated findings from each of the MoSCoW prioritisation activities and project roadmap. These visualisations are conceptual in nature, and not comprehensive, however are intended to be built on intuitively in future for a real-time communication and extension tool for ISC.

3.5.4 Proposed trials

The trials proposed in this final report are based on Bland and Osterwalder's (2020) method to test business ideas. An example of the method is presented in Figure 8. Trials were also divided up across desirability, feasibility and viability areas.

Figure 8. Trial methodology



4. Results

There was a considerable amount of qualitative raw data produced from the data sources across this project. The results presented in this section are the summary of the full dataset. Extracts from the raw data are inserted within to support the summarised results[5].

4.1 The most important value propositions

Stakeholders confirmed that the most important value proposition is to have in place an *integrity system that can do its intended job*. In the first instance the system must provide *Biosecurity* (through its ability to track and trace and quickly manage an outbreak situation) to underpin *Market Access*.

A future integrity system that is *accessible and runs on timely and validated data* will create additional benefits for food safety and animal health and welfare. This includes government and industry having access to the system.

Processors clearly indicated that the key value propositions of the integrity system are biosecurity and market access. These value propositions combine to protect against industry-wide economic impact from biosecurity threats. They also help to protect existing business models of Australian brands. In this way, brands can maintain strong market position by protecting themselves from competitors with inferior integrity systems and exploit the associated strengths with their customers.

> *"I want this integrity system to do its job and then when we need it in future, say in a biosecurity event, it should be able to respond. I do not believe it can do that yet."*

Producers emphasised the importance of being able to trace and access validated data along the end-to-end supply chain for biosecurity purposes from a single portal / linked database.

[5] Extracts are clearly indicated *in italics* or as *quotes* within the results section of the report.

"Being able to quickly track and isolate animals impacted in biosecurity threats."

Food Safety / Market Access / Provenance / Sustainability etc. are good secondary value adds, but from a whole of industry perspective we want to be able to minimise the risk of a biosecurity breach.

Feedlots recommended strengthening the current system and the core functions of NLIS and LPA to underpin market access, and customer/consumer confidence.

4.1.1 Less time critical value propositions

Other value propositions are important but not as critical. For example, food safety, animal health and welfare, and sustainability. These secondary value propositions will need to be integrated more deliberately into the business models of brands over the coming years. To achieve this, Australian brands will require more from the integrity system.

"ISC does not need to do provenance, brand owners can do that themselves. Need to focus on biosecurity and market access."

"I see sustainability as a good voluntary module that could be added"

The alternative is to wait until competitor brands disrupt Australia's position with superior integrity systems. This scenario could emerge during a biosecurity crisis. Countries who prepare their systems in advance will likely re-emerge out of a crisis ahead of countries that persist with outdated systems.

4.2 Role clarity for the future activities of ISC

Generally, across workshops and interviews there was concern that the role of ISC is too broad yet also lacked certain accountabilities for some of the key activities required to deliver system compliance. This was particularly evident regarding data collection and the access and use of data. There was a great deal of support for the current ISC *initiatives/programs which contribute to market access and biosecurity* outcomes for industry and for ISC to *provide the basic systems that allow commercial operations along the supply chain to communicate with each other effectively and quickly.*

"The organisation should be industry directed with a governance structure... with each sector of the supply chain represented"	*"Need to work with government"*	*"Other agencies interact so they need to be included"*
"ISC could administer the national system (for all FMD susceptible species) if they had the database to do it"	*"Not ISC's job to collect data, it's more about allowing data to move around and be shared"*	*"Their role should be the keeper and enforcer of standards"*

The key insights from stakeholder engagement regarding ISC's role clarity have been consolidated into the following sections based on the high-level themes and functional activities identified.

4.2.1 Delivering industry value propositions

The primary responsibility of ISC is to deliver the system enabling value propositions identified by industry in section 4.1. Integral to ISC's role is their interconnection with other organisations accountable for parts of the integrity system. ISC will need to forge relationships, cross boundaries, and identify information gaps to design and build the future integrity system. This will require ISC to working in conjunction with federal and state governments and other organisations (e.g. AHA) that have certain levels of accountability for the system value propositions.

"ISC does not have control of a huge scope of biosecurity (AHA and governments). Just collecting data will not work. Only dealing with 30% of issues. ISC controls NLIS, LPA etc. Other agencies interact so they need to be included. Fancy databases will not fix this. Need to look at biosecurity holistically."

To create the most value for the red meat industry, stakeholders identified that ISC might consider:

- The establishment of a *governance board*, with broad representation from members with legislative accountability relative to maintaining integrity and members representing industry, to confirm the explicit role and accountabilities of ISC.
- Forging deeper working **key partnerships** and interoperability with accountable bodies, and
  - Commercial stakeholders along the supply chain,
  - Non-commercial partnerships with solution providers,
  - *Provide APIs*; and
  - Offer *data message standards* for easy exchange.
- Hold the necessary **key resources** to efficiently deliver on the key value propositions for industry, which includes:
  - System technologies and data structures, secure data storage, and human capability.
- Perform the **key activities** to a standard that is acceptable to the governing body and industry such as,

- Coordinate research and development (R&D) into the integrity system,
- Manage integrity standards to maintain, implement and monitor compliance,
- Verify and manage the registration process for IDs and traceability technologies, and
- Manage and incentivise adoption of the integrity system through behavioural science and deep understanding of user segments.

4.2.2 Data management

It will be important for ISC to clarify the scope of their role by explicitly defining the boundaries of data collection. This could be achieved through pilots that include various stakeholders along the supply chain to trial different use cases to determine[6]:

- what is collected;
- the accuracy of data;
- how data is identified (unique IDs);
- how users/owners of data are identified (unique owner IDs);
- what de-identified information/insights/benchmarks could be derived;
- who could access insights/reports;
- what type of decisions could be supported; and
- what actions may be associated.

"Collection of data to support decision making is too broad a remit."

"Clarity in who will have access and how it will be used is the big question."

"Real time validated specific data about any animals' history I own or have owned."

4.2.3 Adopt a behavioural science lens

Participants recommended that ISC adopt a *behavioural science lens* to better understand non-compliance from poor performers in the supply chain. Participants also suggested that ISC look to understand the specific *'work-around'* practices that companies use to verify reports and data from ISC systems.

"When we get the NLIS data we have to spend 24 hours or so dealing with verifying the data".

[6] The system data map that has been provided as a supporting document to this report should be considered as a comprehensive tool to support the future prioritisation of data collection and trials with industry.

"I don't think producers are purposely not adopting the system, they just don't know how to use it and it's not easy for them to do their jobs"

4.2.4 Integrity standards

There was agreement among participants that ISC needs to be the *keeper and enforcer of integrity standards*. This needs to be underpinned by the collection of non-commercial data in a standard format across the supply chain, particularly on individual live animals. However, it is also important to consider this in combination with establishing a governance board and forging key partnerships with accountable bodies to clarify which integrity standards ISC is responsible for (see section 4.2.1 on Delivering industry value propositions).

"Their role should be the keeper and enforcer of standards. The only data that should be collected is for the verification of standards such as food safety and the keeping of registers such as PIC's etc. that enable verification."

4.2.5 Integrate with third party solution providers

There was a clear remit from industry for ISC's to integrate with third party solution providers and provide the necessary API secure access. Processors are using solution providers to build their internal commercial systems and they need access to ISC's system to do this.

Solution providers should receive message format requirements and data standards from ISC. These need to be current and in digital formats for verification of data inputs that are static such as PIC, address, geo-location, and destination. ISC would benefit in adopting examples where APIs are already working in other industries between government and solution providers.

"You could have the best data, technology, or platform but if it is only accessible to a single platform then it might not have much relevance to other systems or parts of your business."

4.3 Biosecurity scenario response

The integrity system needs to be able to provide data rapidly to respond to biosecurity threats on a localised level, based on changing requirements. This will need to ensure coverage to control the response and threat of further outbreak.

All participants were asked for their perspective for how Australia could best respond to a biosecurity threat. The combined elements of those perspectives are presented below.

It was recommended that ISC should be able to *identify localised areas* to *enable a rapid response* to any biosecurity threat. This will help with the flow of accurate information and to *quickly isolate areas affected*, including the locations, animals, and people.

Such a response will help to *minimise the economic impact* on livestock prices and minimise the risk of *closure of international markets*. Key partnerships with federal and state governments will enable easy access to timely information and two-way feedback.

"During a biosecurity threat it is critical that government and industry can access the same up-to-date validated information, including the location, owners, animals affected and their movements."

"Within 24 hours there should be a quarantine policy, procedures and action plans implemented."

4.4 Customer and consumer trust in the integrity system

The integrity system plays an important role in underpinning customer trust in 'brand Australia'.

Brand owners need to be able to utilise the fundamental systems to enable and underpin additional value propositions. This is achieved in part through independent accreditation systems like MSA and LPA that help customers trust in the consistency of Australian red meat. At the same time Australian brands are trying show differentiation when they sell into the same markets (domestic and export), and further differentiate from international competitors.

Consumers increasingly want to know where their product is from and how their product is grown and what has been added to it. *A good clean data set* within an integrity system or a supply chain can provide the information to ensure you are meeting consumer expectations. For example, some *customers may question halal certification and could verify through the integrity system* if it were able to show the process/checks of halal level certification. There is value to be gained by capturing this type of data and linking it to livestock and red meat products.

"The integrity system needs to do its intended job because we sell on trust."

"There are too many holes in the current system."

"Competitors are catching up and we will need to prove that the system works. Even though the rhetoric for the last 10 years has been you can trust us because we have the NLIS system, it has never been properly tested or proven that it can do what it says."

4.5 Stakeholder motivation for data-driven decision making

All stakeholders were motivated toward using data and information to support them with decision making. Some large processors and a producer cooperative were found to be heavily invested in data-driven decision making.

However, there was also some level of concern about relying too heavily on unverified information. For example, animal health data was stated to be a huge issue with incorrect data and conditions.

4.6 Stakeholder investment appetite for integrity systems

Producers and feedlots were found to be motivated toward integrity systems but lacked the capital to invest. One feedlot company interviewed said that they are looking to make a high investment in the future and that large feedlots are early adopters and were already investing. A producer cooperative in Western Australia (WA) was investing as much as they could through grants. They described how it had taken three years to get 60% of their sheep producers to use electronic IDs. Another highly motivated producer spoke about his company's interest in genetics and the data associated and potential information flow that that could assist with genetic management and improvements.

> *"We think the level of traceability for our branded product now satisfies our customers and consumers. And I honestly do not think now there is a market for enhanced traceability"*

In contrast, the investment appetite from processors in integrity systems remains low to medium. This is a similar finding to previous R&D projects (McKinna Report 2020; Greenleaf 2018). The consistent finding in these projects (with extensive consultation and data collection) was that there needs to be value propositions beyond traceability to justify investment in integrity technologies.

Processors tended to narrowly define integrity systems and their associated technologies as traceability.

One company (Stockyard Beef) recently described in an interview posted on the MLA website how they are piloting blockchain technology for integrity in three premium export supply chains.

> *"The project is allowing the company to collaborate a lot better with in-market distributors and their inventory systems. The real value is the ability to engage with retailers and consumers. The project offers so much more than traceability, provenance and compliance...it will also allow us to provide marketing and promotional materials directly to the end consumer who is already engaged by scanning our QR code."*

A small number of companies are investing in integrity systems because they recognise that every market is different and requires a different business model. Premium high-end markets and their consumers are more likely to compete on additional value propositions like integrity systems with direct to consumer capability.

Overall, the results showed that companies require easy access to integrity data so they can choose to integrate with their own commercial data. In this way, companies can make market decisions to support their sales strategies and investments for competitive advantage.

4.7 Blockers to evolving the integrity system for the future

Results on blockers to evolving the integrity system should be considered as part of the more comprehensive exploration of blockers to industry adoption in Foundational Work Project 4.

The results below are a synthesised list (not prioritised) of the most significant blockers identified during stakeholder engagement for this project.

- **Technical and physical infrastructure problems** - associated with what and how data is recorded as well as the speed of the technical system.
- **Unwillingness to share information** – appears to be based around a perceived imbalance of power, knowledge and fear associated with the buy and sell negotiation. However, stakeholders were found to be willing to share integrity data and carcase performance data.
- **Fragmented supply chains** - main problems included a lack of cohesion, unclear scope of work, unclear user roles and accountabilities, and different jurisdictional approaches.
- **People capability gaps** - people not knowing how to use the system, poor experiences with the helpline, lack of system reporting on poor performers; and an inability to improve the non-compliant producers, hobby farmers, rescue farms.

"ISC is stuck in previous/historic remit. Everyone has their own work arounds because their system does not work. Audits are not transparent. Need to do exception reporting."

"Until state & territory governments fix their responsibility around the legislation and enforcement as a building block, then industry cannot alone fix the system."

"Not getting the basic stuff right. Until that is done everything else will fail. LPA and NLIS should be the focus."

4.8 Enablers to evolving the integrity system for the future

The results below are a synthesised list (not prioritised) of the most important enablers:

- **Data sharing standards** and data messaging formats
- **Commercial enablers** – without getting involved in commercial transactions the future system can help facilitate communication to enable commercial operations.
- **Disaster/crisis enablers** – scenarios where errors are exposed in the existing system and or case studies that show off-shore animal health and welfare issues and incidents that could have been prevented by the Australian integrity system.
- **Technology system enablers** – the system itself will be an enabler if it proves to be effective, reliable, useable, and repeatable. The system should be able to handle all species that are susceptible to FMD. The system/technology should adopt learnings from other industries.
- **Individual ID** – Mandating ID for all animals will enable the future system. Be open to using alternate methods of identification such as photo ID. Proactive approach prior to issue/transaction and integrity breakdown.

- **Behavioural science** – design and build the future system based on the processes/jobs to be done by the users of the system. Understand the slow cultural change to digital and the process improvement needed to support.
- **Central regulatory statutory body** – set and hold standards centrally with authority linked to the states and remove constitutional issues. Recommendations from SAFEMEAT Annual Report 2018-19 including harmonisation of NLIS requirements across all states and territories with a focus on current inconsistencies and exemptions; a national approach to compliance and enforcement of livestock identification and movement recording; and a nationally consistent data collection and entry requirement system.
- **Clarify ISC scope of operation –** ISC will be an enabler if they clarify their scope of work and refine it to the main value propositions for biosecurity and market access. This should be clarified prior to building the platform/database.

"The integrity system should be in the background, other than the extension programs and communication. It should run off good connectivity etc. Nice to think that they have overcome ridiculous roadblocks, like will they introduce lairage scanners into plants or scanners on trucks. All of these should be overcome, and the system just functions in the background."

4.9 Pathways to the future

The results below are a synthesised list (not prioritised) of the pathways for development:

- **Refine the current system to deliver on user expectations to maximise biosecurity and market access outcomes** – deliver the basic system to support biosecurity and market access right so industry can trust that it works. Stakeholders need to know what they are buying, what information and data to make buying decisions. The basic system should improve the quality of supply. It also needs to be customised to users and have functionality for exception reporting.
- **Capture and validate current data in near real time** – needs to be accurate, validated, real time, historical, with access to performance and health data.
- **Create a single interface with relevant information and user dashboards** – need dashboards that present customised information for different user segments; ISC should not transfer information but allow users to choose to share information from available datasets; include MSA, NLIS, LDL, LPA all in one portal; should be able to scan animals and check in real time on dashboard to verify accuracy.
- **Enable non-commercial supply chain interactions** – should be non-commercial
- **Enable interaction/feedback loops with stakeholders/customers** - communication; integrate customer feedback and engagement with retailers and customers. E.g. Animal health / LDL
- **Integrate service providers** – need to increase access to third party solution providers.
- **Incentivise positive behaviour for compliance** – need to increase LPA audits and other interventions that encourage high standards.
- **Integrate customer & consumer feedback** – Provide greater transparency between producers/processors and customers so that information flow is closed and shared. Integrate

customer and consumer feedback in the LPA process and or wherever appropriate. Suppliers need feedback from customers so they can adapt and change – ISC can help by providing algorithms and ideas but do not have a role in transferring information between supply chain stakeholders.

- **Scope future optional value propositions** - *e.g.* sustainability module in LPA; needs to include all species.
- **Define ISC role and increase people capability to deliver for industry** – need to employ new people with the skillsets and capability to deliver on the mandate for industry.

4.10 Key findings from system data mapping

A supporting excel document titled 'Future System Data Mapping' has been submitted as part of this project which provides a comprehensive and detailed explanation of the items, users and 179 data points that have been included for consideration in the future integrity system. The sections that follow provide some further explanation at a high level of the work that has been done to understand and prioritise the future system requirements. In addition, Appendix 8.1.3 lists the data points that have been prioritised as 'Must-have' for inclusion in the immediate enhancement of the integrity system with some additional supporting comments for consideration by ISC based on the stakeholder engagement.

4.10.1 System traceability & data prioritisation

Integrity Value Rating

The document review and synthesised qualitative stakeholder engagement insights were used to rate each data point based on its potential value contribution to the key outcomes the system will deliver on in the future. Therefore, the overall integrity value of each supply chain item was assessed to assist in prioritising the roadmap priorities for ISC.

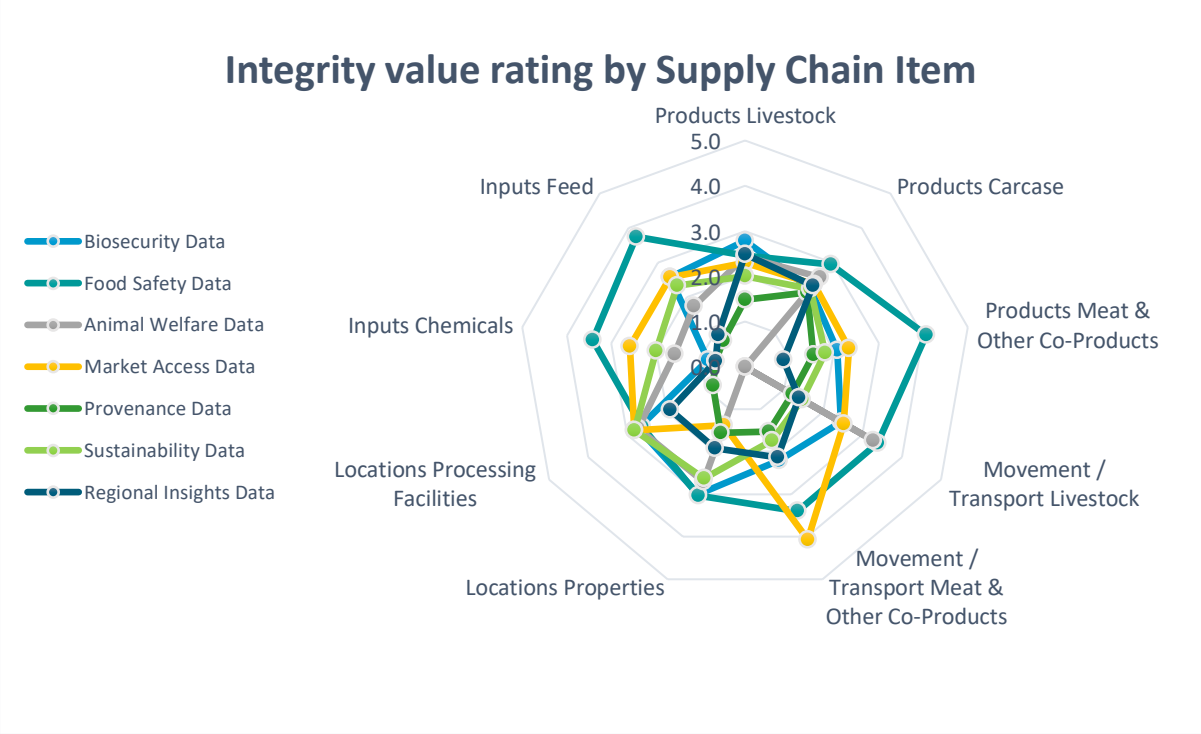
Figure 9 shows what rating each item has overall for the different value propositions[7]. In terms of The most important value propositions identified by industry (biosecurity and market access), the existing items that are traceable in the supply chain are already delivering the critical data collection for industry. This includes the mandatory data collected about livestock, properties and livestock movements. It should be noted, that the overall integrity value potentially did not rate as highly for some of these due the volume of optional data points that could be captured in future to support the Less time critical value propositions.

There is clear indication from the results that livestock inputs for feed and chemicals have the potential to add a new level of integrity verification for animal welfare and food safety if they were to be included in a future system. This was strongly supported by the processing sector with comments such as "*the most applicable data to [us] is animal welfare and residue control"* and "*the main cause of rejections historically has been chemical residues*". This was also supported strongly by non-processor brand owners, who indicated the benefit in the future system being able to "*get this data and verify claims*". Some producers also indicated an interest in this space by suggesting to "*include considerations for commodity biosecurity which is related*" and "*including digital chemical/treatment records linked to mobs".*

In terms of other Less time critical value propositions, information about activities and events that are location specific (i.e. on properties or at a processing facility) showed a high integrity value for sustainability verification.

[7] Each supply chain item's integrity value is equal to the average integrity value rating from 0-5 (0 being not valuable at all and 5 being critical to the future system value proposition) for all data points that are considered in relation to that item.

Figure 9. Integrity value rating by supply chain item



Livestock traceability & verification

Based on the findings from consultation, there was a clear interest from stakeholders to maintain and enhance the traceability of data relating to livestock, the movement of livestock and the location of livestock. In addition to this, the processing sector, would like to see future inclusion of validated data about chemical and feed inputs in a proactive manner when purchasing and receiving livestock to support animal welfare, food safety and marketing claims. Purchasers of livestock want the quality and market declarations on NVDs/eNVDs to be validated by linked integrity data in future.

With biosecurity the most critical focus for livestock traceability, government stakeholders stated that:

> *"On the whole, states and territories have legislated for the information that they need captured"*

In support of this, further consultation with industry segments found that the existing data captured for biosecurity purposes via the NLIS, NVD and PIC systems, was sufficient; however, the main issues are with the right users being able to access this data, that it has been automatically validated and it is available in near real-time (see sections 4.2.1 Delivering industry value propositions and 4.2.2 Data management)

To capture true lifetime traceability of an animal and isolate timelines of livestock interaction in the event of a biosecurity threat, the only additional data point that is recommended for immediate inclusion is the birth date of an animal. This is captured in other livestock traceability systems globally for different purposes and voluntarily by many individual supply chain participants in Australia. However, due to the complexity and variation in our production supply chains it has not historically been considered practical to mandate the capture of this data nationally in Australia. ISC must work

with industry to identify a suitable way to collect this valuable piece of data and link it to the time an individual animal becomes 'active' within the system. The timing and accuracy of capturing this piece of data should be endorsed by industry (for example, the month and year of birth could be agreed as the minimal data capture requirement and the timing of data capture might be best practice at the time of marking/weaning but at a minimum when it leaves the birth property). Given that industry supported '*getting individual animal management rather than mob management*' for all species as part of the future system, capturing birth date could be considered as part of a phased roll out for individual EIDs for all species nationally.

Birth date in addition to 39 other data points that are currently captured in relation to livestock traceability (including movements and locations) must be included for mandatory data capture in the future system (see Appendix 8.1.3 Must-have data capture considerations for future integrity system).

Traceability of meat & other co-products

Initially 11 sub-items were included for consideration in the future traceability system, grouped as either a product, input, movement or location. After stage 2 consultation, 2 sub-items were removed from the future system requirements: (1) packaging & material inputs and (2) ingredient inputs. There was no interest from industry around including these two items in the future traceability system. In addition to this, there was a low interest in including product traceability for food safety purposes in the short term, because industry felt that their own commercial systems and processes were adequate in satisfying customer and market requirements.

> *"We think the level of traceability for our branded product at the moment satisfies our customer and consumers"*

However, there was some indication that '*it will soon be the cost of doing normal business*" and therefore if it is not considered for the future integrity system (longer term horizon) it will cost brand owners to do this independently. Consequently, no data for meat & other co-products traceability has been included in the 'must' category in Table 5, however it has been captured in the 'should' and beyond for further exploration by ISC.

Table 5. Future integrity system number of data points prioritised per traceable item

Traceable Items	Must	Should	Could	Would	Total
Products					
Livestock	12	5	14	6	**37**
Carcase	6	6	2	7	**21**
Meat + Other Co-Products		5	3	7	**15**
Inputs					
Chemicals		5	1	6	**12**
Feed			6	6	**12**
Movements / Transport					
Livestock	10	9	5	5	**29**
Meat & Other Co-Products		6	6	3	**15**
Locations					
Property	9	4	4	10	**27**
Processing Facility	3	1	1	6	**11**
Total	**40**	**41**	**42**	**56**	**179**

4.10.2 System user prioritisation

User types

2 types of users were defined in the system mapping:

> **Primary User**: An owner of red meat products/locations or a regulator within the red meat supply chain.
>
> **Secondary User:** A stakeholder that can contribute to the traceability or verification of products within the red meat supply chain.

System Use Cases

As part of the project, specific types of use cases have been identified to classify how different users will interact with the future integrity system. These are:

1. **Capture -** any user that is responsible for or could assist in the capture of data for the integrity system,
2. **Receive** - any user that needs to or could receive data (raw, de-identified or aggregated) to support mandatory or optional traceability outcomes.
3. **Verify** - any user that currently or in future could verify the accuracy and integrity of data.
4. **Share** - any user that could share data with other system users for mandatory or optional traceability outcomes.
5. **Analyse -** any user that could analyse data to support industry or commercial outcomes.

For each user, a simple score of 1 or 0 was applied to determine if they had a use case for any of the above functions within the system (1) or not (0). The purpose of this was to support ISC in prioritising user engagement and user features for those users that have the potential to contribute to the overall system the most. These results are summarised below in Table 6.

Table 6. System use cases by user

User	User Type	Capture	Receive	Verify	Share	Analyse
Producer	Primary	1	1	0	1	1
Feedlot	Primary	1	1	0	1	1
Live Exporter	Primary	1	1	0	1	1
Processor	Primary	1	1	0	1	1
Customer	Primary	1	1	0	1	1
Consumer	Primary	1	1	0	1	1
Saleyard	Primary	1	1	0	1	1
Transporter	Secondary	1	1	0	1	0
Livestock Agent	Secondary	1	1	0	1	1
Vet	Secondary	1	1	1	1	0
Inspector	Secondary	1	1	1	1	0
Advisor	Secondary	0	1	0	1	1
Solutions Provider	Secondary	1	1	0.5*	1	1
State Government	Primary	0	1	1	0	1
Federal Government	Primary	0	1	0.5*	0	1
Integrity Systems Company	Primary	0	1	1	0	1
Industry/Other System Accreditor	Secondary	1	1	1	0	1
Chemical Supplier	Secondary	1	0	0	1	0
Feed Supplier	Secondary	1	0	0	1	0

There were some exceptions to a 1 or 0 rating that need to be considered in future exploration (indicated with * in Table 6).

Firstly, solutions providers with technology (i.e. hardware) registered in future by ISC may be able to automatically verify data on behalf of the integrity system (based on verification standards and methods approved by ISC). This will depend on future projects and the findings from research in the existing concurrent projects 2 and 3. However, in general all other solutions providers would not verify data but predominately assist in the data capture, receiving, sharing and analysing process (software).

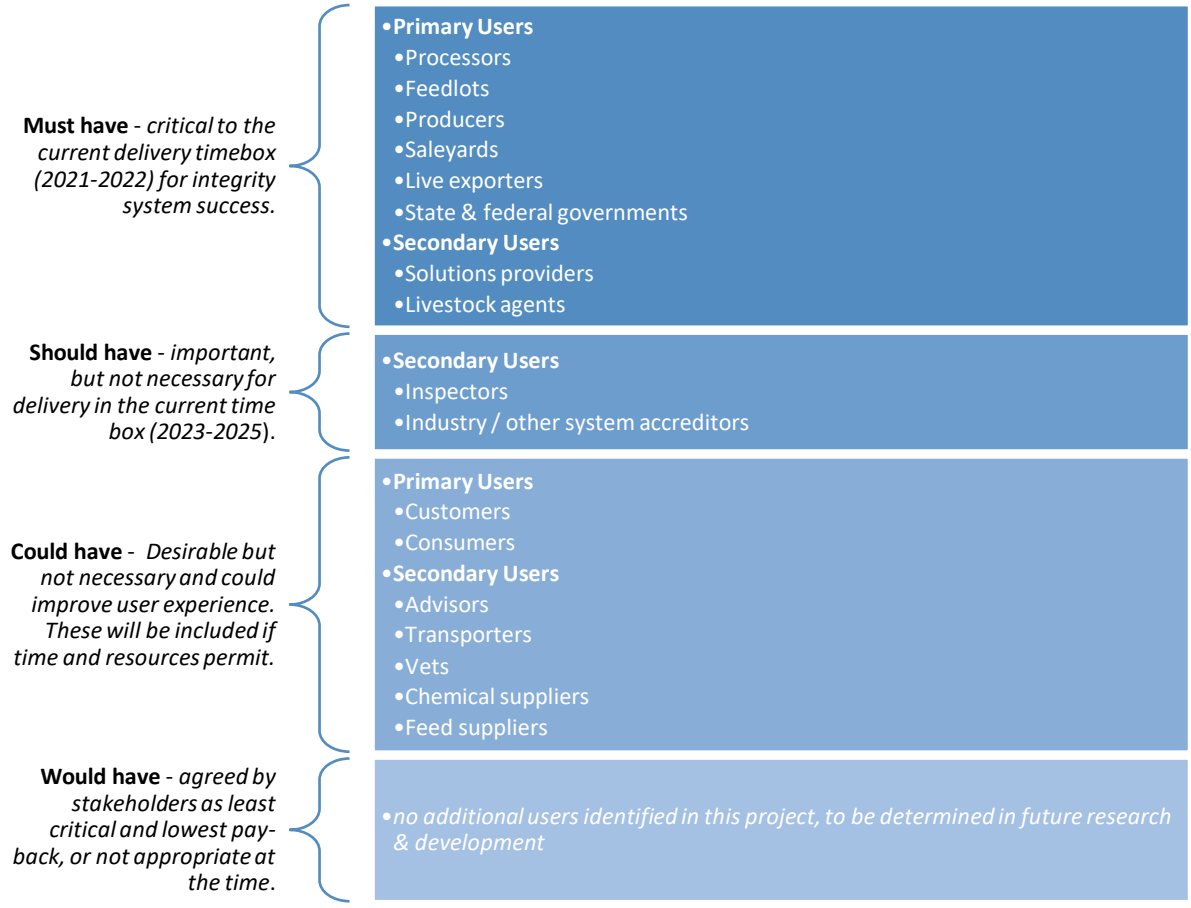
Secondly, federal government on-plant inspectors could use the system to conduct their inspections and verify livestock, carcase and product data. Typically, in future, the system should allow federal and state government departments to receive and analyse real time validated national and regional data to support market access & biosecurity value propositions.

It should also be noted that there is interest for a future system to allow consumers to capture feedback and link it within the system. This would not necessarily require any high-level verification but does provide a pathway for consumers to engage in two-way feedback.

System User Prioritisation

Based on the overall system use case rating which is a combined score from the system use case and item traceability relevance (see appendix 8.2.2 System user prioritisation), it is recommended that ISC prioritise engaging with the following system users in Figure 10 below.

Figure 10 MoSCoW future integrity system user prioritisation



5 Conclusions

This section of the report summarises the key insights and risk implications for the integrity system. A structured process was followed to analyse project risks and develop a mitigation strategy. This involved four steps:

- Mapping of key insights from the stakeholder engagement against the pillars and horizons within the Integrity System 2025 and Beyond strategic plan to identify potential risks;
- Analysis of risks associated with the exploration of new integrity system versus risks of exploitation of the existing system;
- Risk assessment survey completed by the consultant (industry experts); and
- MoSCoW prioritisation activity to inform the mitigation strategy which is detailed in a project roadmap.

5.1 Key insights and risk implications for ISC

Comparison between the pillars and horizons in ISC's strategic plan and the summarised themes from stakeholder engagement produced key insights and risks for consideration. The key insights are compared with Horizon 1 (1-2 years) within the strategic plan, followed by Horizon 2 (2-5 years) in the following tables (Tables 7 – 10). Not all insights and risk implications relate to all Horizon 1 and 2 activities, hence some have not been addressed. Horizon 3 was not compared as these items mostly relate to broad industry adoption which is beyond the scope of this project.

This task was a foundation to support the other elements of the overall project risk assessment (as detailed in Figure 7. Project framework to develop implementation roadmap).

Table 7. Pillar 1/Horizon 1- ensuring our integrity system continues to deliver

Priority	Horizon 1	Key insights from stakeholder engagement	Risk
A collaborative & national approach to integrity	Achieve a truly national system for livestock identification and traceability	Critical part of ISCs role to interconnect with other organisations accountable for the integrity system	**Perception that ISCs current approach is somewhat fragmented from other accountable organisations & that there may be gaps in the system**
	Investigate desktop auditing technologies and reporting tools to drive efficiencies in program compliance activities	Increase in person auditing *Incentivise positive behaviour for compliance* – need to increase LPA audits and other interventions that encourage high standards.	**Industry concern about user behaviour & compliance with standards**
Responding to consumer &	Surveying model developed to determine	Suppliers need feedback from customers so they can adapt and change –	**Take care in how consumer/customer demands and**

customer demands	consumer preferences for integrity attributes	ISC can help by providing algorithms and ideas but do not have a role in transferring information between supply chain stakeholders.	**preferences may be integrated into the future system**
	Assess how the integrity system can integrate sustainability and environmental objectives	Industry perspective is that the system does not yet deliver adequately on the important value propositions of biosecurity & market access.	**Do not work on sustainability & environmental objectives until the key value propositions are delivered to a high standard**
Recognising the value of integrity	Development of a stakeholder consultation and communication framework	*Behavioural science* – design and build the future system based on the processes/jobs to be done by the users of the system. Understand the slow cultural change to digital and the process improvement needed to support.	**Need to get a commercial context working knowledge of user requirements for UX/UI design**
	Development of a culture and leadership plan to support cultural shift within the industry	Cultural practices vary greatly along the supply chain	**Cultural transformation plans need to be customised to user segments**
	Research and development of investment models for the integrity system	Investment appetite from processors in integrity systems remains low to medium Incentivise producer investment through collaborative proposals/ grants	**For processors, need to pitch beyond traceability value propositions linked to market demands for integrity, but must be done following the delivery of key value propositions** **Producer will not have the capital to invest in integrity systems**
	Establish an expert panel/working group to oversee the Integrity System 2025 Strategy	Processors commented that ISC should be industry directed.	**Require an accountable governance framework and with industry leaders willing to share openly & innovate for the future**

Table 8. Pillar 1/Horizon 2- ensuring our integrity system continues to deliver

Priority	Horizon 2	Key insights from stakeholder engagement	Risks
A collaborative & national approach to integrity	Align legislation and program rules with new technologies and new approaches in the delivery of the integrity system	*Central regulatory statutory body* – set and hold standards centrally with authority linked to the states and remove constitutional issues. Inconsistencies and exemptions; a national approach to compliance and enforcement of livestock identification and movement recording; and a nationally consistent data collection and entry requirement system.	**Lack of harmonisation of requirements across all states and territories.**
Responding to consumer & customer demands	Systems to underpin provenance and country of origin researched and trialled	ISC does not need to do provenance but brand owners can do that themselves.	**ISC needs to have a very clear value proposition for working on provenance systems, i.e. make clear how it underpins brands** **ISC needs to clarify their role in provenance and not compete with companies or solution providers already offering provenance**
	Proof of concepts for underpinning sustainability and environmental claims developed	*Scope future optional value propositions - e.g.* sustainability module in LPA	**There is support from industry for sustainability claims, but after delivering on the system and biosecurity & market access**
Recognising the value of integrity	Integrity system value proposition identified for each segment	*Behavioural science* – design and build the future system based on the processes/jobs to be done by the users of the system. Understand the slow cultural change to digital and the process	**Misalignment between Horizon 1 and industry expectations.**

		improvement needed to support. This should be built into trials in 2021 & include testing UI/UX mock-ups.	

Table 9. Pillar 2 – pursuing and adopting new integrity approaches and technologies

Priority	Horizon 1	Key insights from stakeholder consultation	Risks
Pursuing new technologies	R&D into real-time product verification opportunities (e.g. feeding regimes, HGP treatments, chemical residues etc.)	*Capture and validate current data in near real time* – needs to be accurate, validated, real time, historical, with access to performance and health data.	**Need industry supported criteria for technology options to ensure commercial feasibility & viability**
Driving new technology and system adoption	Pool of early adopters identified and working collaboratively on adopting new technologies	ISC should adopt examples where APIs are already working in other industries between government and solution providers. Large feedlots are early adopters and were already investing WA producer cooperative is investing as much as they can through grants. They described how it had taken three years to get 60% of their sheep producers to use electronic IDs.	**Risk of not working with value chains that are already adopting technologies. (Establish trials with early adopters who can champion and share learnings for industry-wide good)**

Table 10. Pillar 3 – leveraging integrity data to add value through the chain

Priority	Horizon 1	Key insights from stakeholder engagement	Risks
Effective decision making through integrity data and insights	Analysis and scoping of integrity system data and data platform opportunities	In regard to data, ISC need to clarify • what is collected; • the accuracy of data; • what information/ insights/benchmarks could be derived; • who could access insights/reports; • what type of decisions could be supported; and • what actions may be associated.	**Not clarifying the scope of ISCs role as it relates to data.**

5.2 De-risking the integrity system

The risk assessment presented in this section is approached from the perspective of implementing the current ISC strategic plan/current performance against the summarised results from stakeholder engagement. The areas of focus following this project are broadly what needs to be de-risked through proposed trials in 2021. Widespread industry adoption will depend on identifying the areas of focus that are most likely to have practical solutions and align with the stakeholder value propositions.

5.2.1 Explore/Exploit continuum

Perhaps the highest risk for ISC in implementing their strategy is the decision of whether to prioritise exploration of new initiatives over the thorough exploitation of the existing system (Figure 11). In part, this is a question of timing, considering the current industry, market, and macro-economic forces. This does not mean that ISC cannot work on elements of exploration and exploitation simultaneously.

Emphasising exploration would be an acceptable strategy if the value propositions of the current integrity system were already being delivered to a standard that is acceptable to the users of the system. However, the stakeholder feedback tends to indicate that this is not the perspective of industry.

Figure 11 lists the characteristics of the explore and exploit continuum. The explore side of the continuum is uncertain and generally higher risk and requires an experimental culture and methods. In contrast, the exploit side is focussed on predictability, efficiency, accuracy, and a culture of management.

The current approach of ISC is balanced toward exploration, hence the Foundation Work projects were intended as ‘different ways to frame the problem space’ and to provide ISC with ‘blue sky thinking’. ISC’s internal innovation sprints and proposed trial of high-quality ideas in 2021 are also consistent with the explore characteristics.

Figure 11. Explore/exploit continuum

Search & breakthrough	**Focus**	Efficiency & growth
High	**Uncertainty**	Low
Investment high-risk	**Financial Philosophy**	Safe investment
Iterative experimentation, embracing speed, failure, learning & rapid adaptation	**Culture & Processes**	Linear execution, embracing planning, predictability & minimal failure
Explorers who excel in uncertainty, are strong at pattern recognition, & can navigate between big picture & details	**People & Skills**	Managers who are strong at organising & planning & can design efficient processes to deliver on time & budget

It should also be noted that Pillar 1 in the strategic plan is about ***ensuring our integrity system continues to deliver*****.** Some of the initiatives listed in Pillar 1 were raised during stakeholder consultation, for example to ***achieve a truly national system for livestock identification and traceability*** **and** ***implement real-time compliance monitoring methodologies***. The concern from industry is that these are not yet completed. These initiatives are critical to exploiting the current system and are also supported by the data and system user prioritisation.

It is recommended that ISC rebalance toward the exploitation of the existing system, whilst only undertaking a few clearly defined exploratory projects that have the potential for high impact. Focussing too much on exploration is a high-risk strategy and is not likely to be well supported by industry. If not, industry may become an ever-increasing blocker to the adoption of new initiatives.

5.1.2 Strategic risk assessment

The strategic risk assessment in this section was based on a comparison of ISCs strategic plan and the aggregated results from stakeholder engagement completed during this project. The risk dimensions and items within the risk assessment were adapted from the Osterwalder (2020) performance assessment and project scorecard (Figure 12 below). To thoroughly understand this section, it is important to read the risk assessment items that are presented in Appendix 8.4. Osterwalder's *performance assessment* relates to the exploitation side and the *project scorecard* is used to evaluate new exploratory risks within projects. The results of the risks assessment are presented in Figure 13.

Figure 12. Risk dimensions

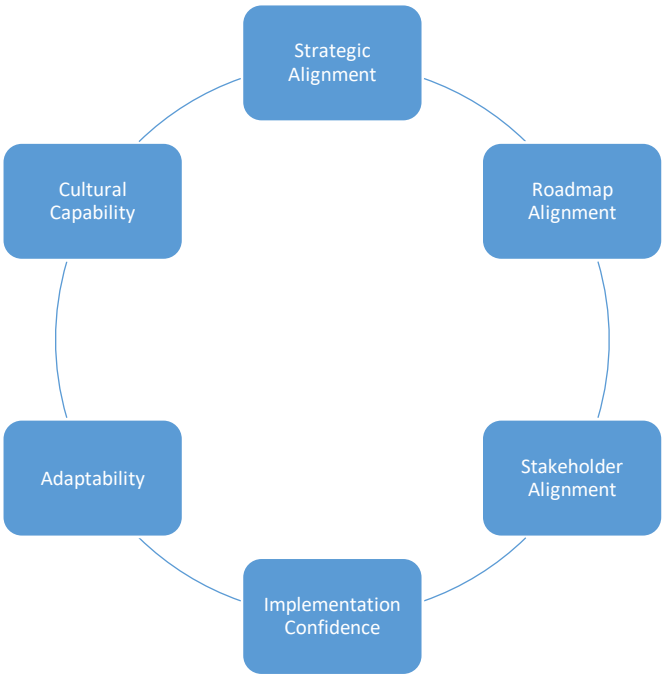
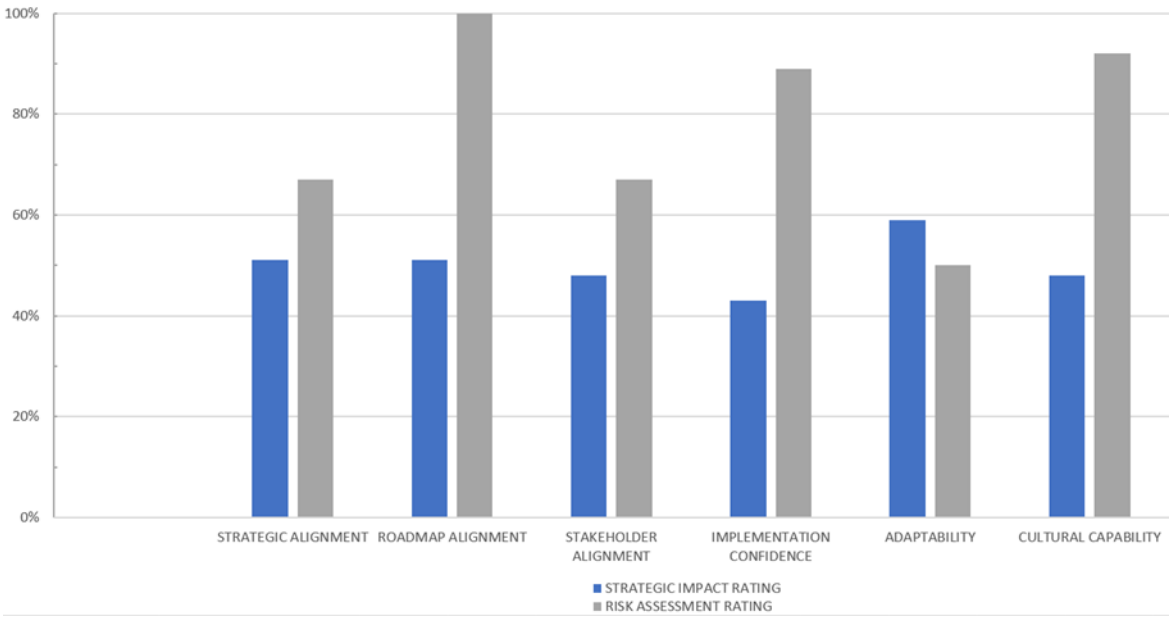


Figure 13. Risk assessment results



High level risks

The results in Figure 13 showed that the highest risk for ISC was the low level of ***Roadmap Alignment*** between what ISC stated in their strategic horizons to 2025 and beyond and industry stakeholder expectations about what ISC should be focussed on.

There was also considerable risk with the overall ***Cultural Capability*** within the industry, which identified various barriers and behaviours to adoption.

The following enablers suggested by stakeholders may help to mitigate the high risks areas:

- ***Clarify ISC scope of operation*** – ISC will be an enabler if they clarify their scope of work and refine it to the main value propositions for biosecurity and market access. This should be clarified prior to building the platform/database.
- ***Behavioural science*** – design and build the future system based on the processes/jobs to be done by the users of the system. Understand the slow cultural change to digital and the process improvement needed to support.
- ***Central regulatory statutory body*** – set and hold standards centrally with authority linked to the states and remove constitutional issues. Recommendations from SafeMeat Annual Report 2018-19 including harmonisation of NLIS requirements across all states and territories with a focus on current inconsistencies and exemptions; a national approach to compliance and enforcement of livestock identification and movement recording; and a nationally consistent data collection and entry requirement system.

Medium level risks

Strategic Alignment and ***Stakeholder Alignment*** were assessed overall as a medium level risk. Strategic Alignment risks assessed the degree of alignment between the ISC strategic vision, pillars, initiatives, and stakeholder expectations. These elements of the strategic plan inform the three horizons.

Although Stakeholder Alignment was overall rated a medium risk, two out of four items were rated high risk. Stakeholder Alignment is a critical area of risk for ISC because it includes the degree to which the value proposition resonates with the critical stakeholder segments. Raw data results on the value proposition alignment with stakeholders was rated as a high risk (i.e. limited to little relevance). Another area of high risk was the concern that ISC have not developed the right relationships to retain stakeholders/users and repeatedly create value.

Low level risks:

Encouragingly, ISCs ability to adapt to global industry, market and macroeconomic forces and trends was assessed as a low risk. In this way, there is confidence that ISC is well positioned to compete against international competitors and their integrity systems. Similarly, there was confidence in ISCs strategy to deal with emerging market shifts and trends in technology, regulatory and cultural.

5.3 MoSCoW prioritisation

This section of the risk assessment prioritises the aggregated recommendations from the stakeholder engagement (see below in Table 11). In line with the system data & user prioritisation, this activity was completed using Clegg's (1994) MoSCoW method for prioritisation, which is restated below:

- **Must have** - Critical to the current delivery timebox (2021-2022) for integrity system success. If any of these are not included the future integrity system will be considered a failure.
- **Should have** - Important, but not necessary for delivery in the current time box (2023-2025).
- **Could have** - Desirable but not necessary and could improve user experience. These will be included if time and resources permit.
- **Would have** - Agreed by stakeholders as least critical and lowest pay-back items, or not appropriate at the time.

Table 11. MoSCoW prioritisation of aggregated stakeholder recommendations

Stakeholder Recommendations	Must-have	Should-have	Could-have	Would-have
Most important value propositions				
Integrity system to do its intended job	✓			
Biosecurity	✓			
Market access	✓			
Track & trace validated data along the end-to-end supply chain	✓			
All linked user data accessible via a single portal and/or direct APIs	✓			
Less time critical value propositions				
Food safety		✓		
Animal welfare		✓		
Sustainability			✓	
ISC ROLE				
Delivering Industry Value Propositions				
Deliver the integrity system's most important value propositions by the end of 2022	✓			
Deliver the less critical value propositions after the most important value propositions (2022 - 2025)	✓			
Key partnerships				
Forge interconnections/working partnerships and interoperability with legislated and accountable bodies (all government levels, AHA etc)	✓			
Forge non-commercial working partnerships and interoperability with commercial stakeholders along the supply chain	✓			
Forge non-commercial working partnerships and interoperability with third party solution providers	✓			
Work with independent accreditation bodies to create synergies in capturing, sharing and verifying data for industry secondary VPs			✓	
Key resources				
Ensure internal human capability to deliver on the most important value propositions	✓			
System technology and data structures that support an efficient integrity data sharing platform	✓			
Secure data storage that preserves and protects validated traceability data	✓			

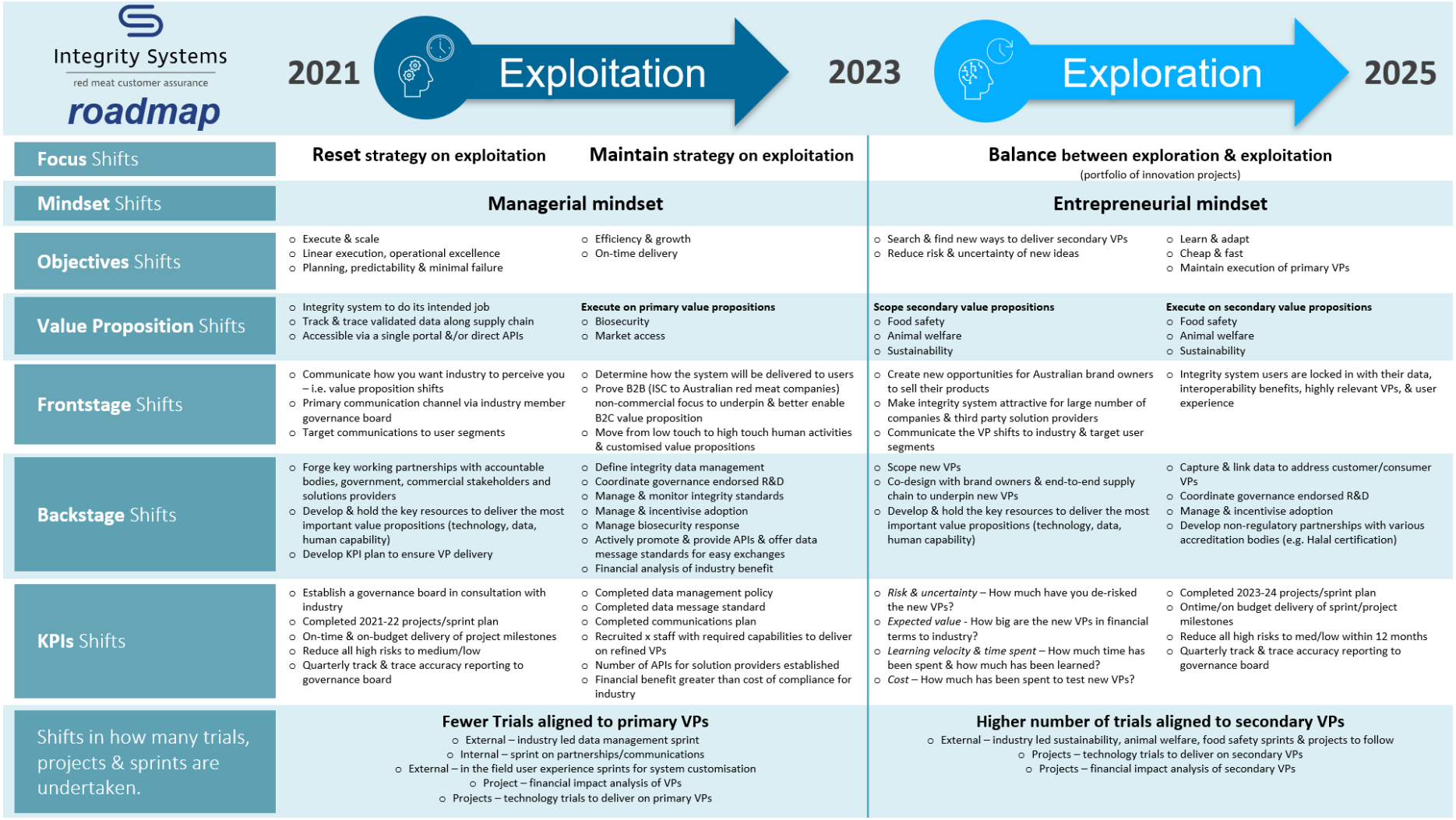
Key activities				
Perform designated key activities to a standard that is acceptable to the governing body and industry members	✓			
Coordinate industry endorsed research and development on the integrity system	✓			
Manage integrity standards aligned to accountability to maintain, implement and monitor compliance	✓			
Verify and manage the registration process for automated technology that can be used to capture and validate integrity data	✓			
Manage and incentivise adoption of the integrity system through behavioural science and deep understanding of user segments	✓			
Data management				
Define the boundaries of data collection with endorsement from the governing body and industry members (i.e. Clarify what data ISC's system will collect and store on behalf of industry participants)	✓			
Establish the standards for generating & verifying unique IDs and the identification of supply chain items and users/owners of items within the system	✓			
Through various approaches, pro-actively verify the accuracy level of data collected	✓			
Provide APIs and offer data message standards for easy exchange	✓			
Clarify the purpose and benefit of collating de-identified insights & benchmarks	✓			
Be clear and transparent about who can access aggregated insights and reports	✓			
Communicate clear and practical examples of the types of data-driven decisions that the system can support for different industry segments (to encourage more broadscale adoption of voluntary data capture & sharing)			✓	
Behavioural science				
Thoroughly understand non-compliance from poor performers in the supply chain		✓		
Understand work-around practices that companies use to verify reports and data from ISC systems		✓		
Ensure in depth understanding of all user segment jobs, pains, and gains relevant to the most important value propositions	✓			
BIOSECURITY RESPONSE				

Integrity system can provide data rapidly to respond to biosecurity threats on a localised level, based on changing requirements	✓			
During a biosecurity threat it is critical that government and industry can access the same up-to-date validated information, including the location, owners, animals affected and their movements.	✓			
Within 24 hours there should be a quarantine policy, procedures and action plan implemented	✓			
CUSTOMER/CONSUMER TRUST				
Underpin brand Australia	✓			
Brand owners want to be able to utilise the integrity system to underpin additional value propositions with validated linked data (e.g. animal welfare claims, provenance)		✓		
Capture and link data to address customer/consumer value propositions (e.g. halal certification, certified grass-fed)			✓	
STIMULATE INVESTMENT				
Design methods to incentivise key industry stakeholders to invest in the integrity system		✓		
R&D integrity projects beyond traceability & linked to the market end			✓	
ENABLERS				
Define ISC role and increase people capability to deliver for industry	✓			
Individual sheep identification methods	✓			
Integration of service/solution providers	✓			
Incentivise positive behaviour for compliance	✓			
Non-commercial supply chain interactions with two-way feedback loops (animal health, LDL)		✓		
Integration of customer/consumer feedback			✓	
Scope future value propositions e.g. sustainability, include all FMD susceptible species			✓	

5.4 Roadmap to mitigate risk

Figure 14 is both a proposed roadmap for ISC to implement and a risk mitigation plan to help reduce the high risks identified in the risk assessment. Specifically, the roadmap aligns ISC with stakeholder expectations, addresses cultural challenges, and should improve industry confidence in ISC to execute. The roadmap resets the strategy to focus on exploiting the primary value propositions in 2021-2022 and then moves to exploration of secondary value propositions through 2023-2025.

Figure 14. Roadmap and risk mitigation plan



5.5 Key findings

The key findings from this project are:

- The primary value proposition is to have in place an integrity system that can do its intended job. In the first instance the system must provide biosecurity (through its ability to track and trace and quickly manage an outbreak situation) to underpin market access.
- The secondary value propositions are food safety, animal health and welfare, and sustainability. After delivering the primary value propositions, these secondary value propositions will need to be integrated more deliberately over the coming years in terms of traceability and verification.
- ISCs main role is to rapidly deliver the primary value propositions to protect the Australian red meat industry. To achieve the value propositions the following must be achieved:
    - Develop an explicit data management policy that is communicated to industry,
    - Keep and enforce integrity standards,
    - Interconnect with other organisations accountable for the integrity system,
    - Enable solution providers to easily integrate with the integrity system, and
    - Maintain a non-commercial role.
- The integrity system needs to be able to provide data rapidly to respond to biosecurity threats on a localised level, based on changing requirements.
- ISC has a role in underpinning Australian red meat food products with independent systems to increase customer's trust in Australian red meat.
- Industry stakeholders are highly motivated toward using data and information to support with decision making, however there are serious concerns about the accuracy of data and use of unverified information within the integrity system.
- Red meat industry investment appetite for integrity systems remains low to medium.
- Misalignment between IS2025 strategy and stakeholder expectations has resulted in a several high-risk areas.

6 Future research and recommendations

6.1 Practical recommendations from project insights

- Establish a **governance board** with high-calibre and diverse representation from industry and mandate from government for biosecurity and market access in consultation with industry as soon as possible.
- Reset the IS2025 **strategy** to align with governance and industry expectations.
- Focus and prioritise ISC **key activities** to deliver the primary value propositions. This will likely mean ceasing some activities, refining plans, objectives and KPIs, and commencing new activities.
- Develop and hold the **key resources** to deliver on the primary value propositions. This will likely mean restructuring and redirecting current resources (technologies, data, human resources).
- Develop and strengthen **key partnerships** with organisations accountable for delivering parts of the integrity system.

- **Communicate** with industry about the strategic shift in focus, how ISC will deliver the primary value propositions, and how ISC will relate to the different user segments of the integrity system. This a significant recommendation and will involve new emphasis on communicating and marketing to industry the intentions and activities of ISC. A communication strategy and operational messaging will assist to increase industry confidence in ISC's ability to deliver on the primary value propositions.
- Design and manage a set of **key performance indicators** to ensure delivery of the primary value propositions.
- Develop and communicate **policy** on how ISC will: 1) manage industry data, 2) actively promote, and provide APIs and data message standards for easy exchanges, and 3) keep and enforce integrity standards.
- Undertake baseline **commercial analysis** on the impact and benefit of the integrity system on the Australian red meat industry. This is intended to be commercial analysis at an operational level not from a whole of industry value. In this way it should for example, unpack costs on producers and other stakeholders, savings in terms of time saved using the integrity system, analysis of work-around-practices, and the likely benefits from future system features and improvements.

6.2 Future R&D

The suggested future trial areas below are divided into three areas: desirability, feasibility and viability. The trial areas may be operationalised as R&D projects or an innovation sprint depending on the problem being addressed. The proposed projects and/or sprints are mitigation approaches to de-risk the high-risk areas identified in the project. Together, these three areas cover the evidence gaps in knowledge identified during this project that need to be addressed throughout 2021-2025.

Market Risk – The desirability area covers evidence gaps in the market. The risk is that the market that ISC is targeting, which in the context of this project is the integrity system users, is too small. In other words, too few users want the value propositions; or ISC cannot reach, acquire, and retain the targeted users. Three desirability trials are proposed below to address these evidence gaps.

Infrastructure Risk – The feasibility area covers the risk that ISC cannot manage, scale, or get access to key resources, key activities, or key partners. There were several high risks identified during the project in this area, hence there are five trial areas proposed.

Financial Risk – The final area, viability covers the risk that ISC cannot generate more value for industry than the costs incurred in levies, other funding sources, and in efficient use of revenues.

6.2.1 Trial experiment components

The final section of this report presents a series of proposed trials. There was an intention prior to the beginning of this project that there would be a series of trials conducted in 2021.

Table 12. Proposed desirability trial experiments

Trial #	1D	2D	3D
Trial Date	**2021**	**2021**	**2023**
STEP 1: HYPOTHESIS			
We believe that…	ISC must reposition themselves within industry to build new key partnerships with organisations accountable for parts of the integrity system to deliver on the primary VPs.	different user segments must have customised dashboards & system journey maps that fine-tune the best, most intuitive UIs that deliver seamless experiences.	industry desire additional / secondary VPs for verified animal health, food safety & sustainability claims after ISC delivers on the primary VPs.
STEP 2: TEST			
To verify that, we will…	internally identify key organisations to partner with, the problem space & potential practical solutions, and conduct meetings with key partners to formulate shared vision & role clarification.	conduct field research with different user segments to scope & fully visualise dashboards & journey maps, & uncover work around practices.	conduct industry led sprints on each new VP to scope requirements (before *internal sprint is conducted as part of 5F).*
STEP 3: METRIC			
And measure…	the number of organisations who are willing to be a key partner, and the speed to which ISC can engage key partners.	the number of user segments interviewed, dashboards created, clickable customer journeys created, number of work around practices uncovered & understood.	the number of sprints completed (minimum 3) and fully scoped secondary VPs based on thorough industry engagement.
STEP 4: CRITERIA			
We are right if…	the key partners identifed show practical commitment to working collaboratively with ISC to deliver on the primary VPs.	user segments endorse the proposed system changes to improve user experience & data validation at point of use.	the new functional products & services developed by ISC align with the majority of user VPs.

Table 13. Proposed feasibility trial experiments

Trial #	1F	2F	3F	4F	5F	6F
Trial Date	**2021**	**2021-22**	**2021-22**	**2022**	**2023**	**2024**
STEP 1: HYPOTHESIS						
We believe that…	the industry & an ISC governance board must endorse how ISC manages data as part of clarifying the scope of work & accountabilities for ISC.	industry organisations must connect to ISC's digital platform through APIs & data message standards for easy exchange of information.	ISC must trial cost effective technologies capable of near-real-time track & trace of validated data along the end-to-end supply chain to enable the primary VPs.	ISC is responsible for registering new technologies & solutions providers that can verify traceability data under final approval authority by governance board	ISC should align their internal capability to deliver on the secondary VPs for the industry.	ISC should build new voluntary modules and/or data capture capability into the system to address seconday VPs.
STEP 2: TEST						
To verify that , we will…	conduct an internal sprint/s to produce a data management policy and procedure.	conduct a project on how to promote & provide APIs & data message standards for easy exchange with different types of solution providers, companies, producers etc.	conduct numerous technology based sprints & projects to trial technologies & activities to deliver on the VPs.	conduct an internal sprint/s that *takes into account insights from work done in sprints/trials for 3F* to identify the types of technologies that can be used and what criteria they will be measured on for approval.	conduct an internal sprint & project to scope out system features for secondary VPs (*a prerequisite is to have first completed industry led sprints as part of 3D*).	conduct an internal project to build out and implement system features for secondary VPs.
STEP 3: METRIC						
And measure…	the creation of a data management policy & procedure.	an acceptable number and type of organisations connect and	the identification of a range of technology providers willing to test & invest at a	the creation of a technology registration policy & procedure that is adaptable in	the degree to which ISC can conceptually align their system with user requirements	the degree to which ISC can deliver new modules and data capture capability

		receive two-way information.	broad scale across the red meat industry, and an acceptable number of supply chain trials have been conducted.	identifying & efficiently testing new technologies, and the number of new technologies that are registered to verify & track data along the supply chain.	within an acceptable timeframe	within an acceptable timeframe e.g. 2024.
STEP 4: CRITERIA						
We are right if…	industry and ISC governance board endorse the data management policy & procedure for implementation.	user segment VPs for data sharing and integration are met to an acceptable level.	we have in place supply chains who are using a range of registered technologies to track & trace validated information to meet the primary VPs.	technology/solutions providers understand the technology registration policy & procedure and the number and diversity of providers applying for registration is increasing.	most stakeholders within a supply chain confirm the value proposition & fully scoped UX/UI .	supply chains are trialing new modules/data capture & engaged in user-centred design feedback.

Table 14. Proposed viability trial experiments

Trial #	1V	2V	3V
Trial Date	**2021**	**2023**	**2024**
STEP 1: HYPOTHESIS			
We believe that…	ISC must undertake a baseline commercial operational value impact analysis of primary VPs.	ISC must undertake a commercial value forecast on developing the system further to include the proposed secondary VPs.	ISC must undertake a commercial value impact analysis of the secondary VPs and enhancements to primary VPs.
STEP 2: TEST			
To verify that , we will…	conduct operational anaysis of the current commercial value impact of the integrity system & create a model with focus on enhancing the efficient delivery of the primary VPs & the impacts along the supply chain.	using the baseline model and scoped system additions (*from 3D/5F*), forecast the cost benefits of the secondary VPs along the supply chain.	using the baseline & forecast cost/benefit model *from 1V & 1F* create and conduct a structured process to regularly measure the commercial impact of the system.
STEP 3: METRIC			
And measure…	the costs & benefits of the current system & how they impact on different supply chain user segment efficiencies & the industry overall.	the expected costs & benefits of the secondary VPs & impact on different supply chain user segment efficiencies & the industry overall.	the actual costs & benefits of the enhancements to the primary VPs & inclusion of the secondary VPs, and the overall impact on different supply chain user segment process efficiencies & for the industry overall.
STEP 4: CRITERIA			
We are right if…	the baseline costs and benefits of the system are defined so that the success of future improvements can be measured.	the forecasted costs & benefits have been defined and endorsed by industry *prior to building new features as part of a project for 6F*.	ISC is delivering significant commercial value to industry and can measure & report on this regularly & using a consistent method.

7 Bibliography

Bland, David & Osterwalder, Alex (2020) Testing Business ideas. Strategyzer.com/test

Bucolo, Sam & Matthews, Judy H. (2011) Design led innovation: exploring the synthesis of needs, technologies and business models. In: Proceedings of Participatory Interaction Conference 2011, 13-15 January 2011, Sonderborg, Denmark.

Creswell, John (2012) Educational Research: Planning, Conducting, and Evaluating Quantitative and Qualitative Research.

Design Council (2015) https://www.designcouncil.org.uk/news-opinion/what-framework-innovation-design-councils-evolved-double-diamond

FarmIQ Systems (2018) Supporting industry compliance and productivity gains through integrated online systems. MLA.

Greenleaf (2019) Understanding future feedback mechanisms. MLA.

Greenleaf (2018) Digital integrity systems: Connecting international consumers with Australian red meat industry for increased value. MLA.

GS1 (2012) GS1 Standards Document: Business Process and System Requirements for Full Supply Chain Traceability, GS1 Global Traceability Standard (Issue 1.3.0, November 2012).

KPMG (2019) Data platform Industry Requirement. MLA.

McKinna (2020) Commercial application of supply chain integrity and shelf life systems. MLA.

MLA (2020) Blockchain technology to enhance industry integrity. https://www.mla.com.au/news-and-events/industry-news/blockchain-technology-to-enhance-industry-integrity/

Osterwalder, Alex et al (2020) The Invincible Company. Strategyzer.com/invincible

Strategyzer (2019) https://www.strategyzer.com/canvas/business-model-canvas

8 Appendix

8.1 System Data Map Framework

8.1.1 System data map components

Items

The first step of the process was to identify what types of products, inputs, movements and locations in the supply chain that similar data could be associated with for traceability and verification purposes. This included existing items that are already traced through the system (such as individual livestock and property locations) as well as other items that impact red meat integrity but may not be included in the current traceability system. Stage 2 consultation was used to determine which items were of most relevance and value to stakeholders for inclusion in the future system and therefore which should be prioritised.

Unique identifiers

The unique identifier (ID) that could be associated with each item or user in the supply chain for traceability. For effective traceability, this ID must not be duplicated by any other item or user in the red meat supply chain and is critical to the ability to identify and link data within the system. Currently, the red meat traceability system has mandatory unique IDs for livestock (NLIS ID), livestock movements (NVD serial number) and livestock locations in Australia (PIC ID - properties, saleyards, feedlots, processing facilities etc). The future system will need establish the standards for how unique IDs can be generated and identified for other supply chain items and users/owners of items within the system.

Secondary data linkages

Secondary data linkages can be identified and/or used for certain data collection events such as the location, ownership and/or associated groups of an item. For example, a Mob ID can assist to link certain livestock IDs together at any one time against a PIC ID and/or Paddock ID to trace grouped items and allow for efficient data capture.

Data collection

Collection type

In all traceability systems around the world, there is a minimum level of mandatory data that must be collected. In addition, optional data can be collected to support further insights for users.

All mandatory data that is currently collected digitally or manually for NLIS, NVD or PIC purposes was included within the system data map. In addition to this some additional mandatory data was identified within the supply chain as part of Federal & State Government legislation for meat processing plant registration, food safety guidelines and export documentation that also have the potential to be digitised to support traceability and verification within the red meat industry.

As part of the desktop review and collaborated insights from stage 1 consultation, a range of optional data that was identified as valuable for integrity purposes, was also included in the future system map.

Event type

To highlight the simplicity and/or complexity of collecting certain supply chain data, the system map distinguishes static vs dynamic data. Static data is defined as data points that typically do not change

(i.e. collected once and remain the same for an item's lifetime). Dynamic data incorporates any data point that could and most likely will change over an item's lifetime.

Event type

To quantify the volume of data that could be captured by the system, each data point has been classified as a single or multiple. Single data points can only occur once for an item, whereas multiple data points could have many associated events recorded for an item (e.g. a multiple event could be multiple movements in an animals lifetime, but a single data point would be it's birth property location).

Frequency of change

To quantify how frequently a data point can be collected (multiple data points) or updated (single data points), a rating system has been used in the system map for each data point (See Table 12). This can be used in conjunction with the integrity value rating to determine what data might be prioritised for collection in the future system and which data points would benefit most from automated data capture to minimise user intervention. This will also impact considerations for the future storage requirements of the system, depending on what types of data points and events are captured.

Table 12. Frequency of change rating for data points

Description	Rating
changes weekly or more	always
changes monthly or more	often
changes twice a year or more	sometimes
change once a year or less	rarely
recorded once only (does not change)[8]	never

8.1.2 System data integrity value rating & prioritisation

Integrity Value Rating

To quantify the value of each data point to support integrity outcomes for traceability and verification, a rating system has been used from 0-5 (see Table). The overall rating for each data point, and therefore each supply chain item, is based on desktop research and synthesis of qualitative consultation insights to rate each data point based on its potential value contribution to the key outcomes the system should deliver on. The key outcomes are detailed below:

Table 16. Integrity Value System Rating

Description	Rating
Critical	**5**
Extremely valuable	**4**
Valuable	**3**
Could be valuable	**2**
Unsure	**1**
Not valuable at all	**0**

Traceability System Key Outcomes (defined by the SAFEMEAT Initiatives Review 2015 and top value propositions based on initial project consultation & ISC strategic plan)

[8] data points marked as 'never' would only ever change if an error was made recording the data

1. Biosecurity
2. Food Safety
3. Animal Welfare
4. Market Access

Consumer Trends (that the traceability system can assist to verify in future - recognised by industry as future voluntary value propositions for the system)

5. Provenance
6. Sustainability

Decision Support (by capturing, linking and sharing certain data, how can the system create new benefits to industry)

7. Regional Insights (industry and government bodies providing de-identified analysed data)
8. Productivity Decision Support (individual businesses analysing linked data)

Insights from stakeholder consultation (stage 2) were used to adjust the ratings against the system mapping and provide qualitative data to support the findings. This included productivity decision support being removed, because stakeholders felt strongly that it was not relevant to the integrity system.

Data prioritisation

System data requirements were prioritised using the following structured process:

1. Supporting insights from consultation with different industry segments were mapped against the relevant items within the supply chain system map.
    - General consultation insights about system requirements were also included as separate themes.
2. Items, data points and value propositions that were of minimal or no interest for future inclusion by stakeholders were removed from the system map.
3. Data points that were missing from the initial system map but were considered as important to stakeholders were added to the system map
4. The overall integrity value rating for each data point was adjusted in relation to its potential contribution to each value proposition for industry
5. Each data point (and therefore item) was evaluated using the MoSCoW prioritisation (described in section 3.5.1 on page 19 of this report) for the future system.
    - The current data collection purpose was identified for each purpose (i.e. already part of NLIS or NVD system, or an alternative industry / government data record requirement or kept independently for other reasons).
    - Supporting considerations were noted for each data point for further research requirements or industry consultation required

8.1.3 Must-have data capture considerations for future integrity system

For all other data points, prioritisation, and insights on data requirements, please see the supporting excel document “Future Integrity System Data Mapping”.

Item	Data Point / Record Name**	Final Integrity Value Rating	Biosecurity	Food Safety	Animal Welfare	Market Access	Provenance	Sustainability	Regional Insights	Current Data Collection Purpose	Future System Considerations
Product (Livestock)	Birth Property Location	3.6	4.0	4.0	2.0	2.0	5.0	4.0	4.0	NLIS	Birth Property can only currently be identified by PIC ID in NLIS breeder tag ID, consider storing as standalone individual data point.
	Species	4.9	5.0	5.0	5.0	5.0	5.0	5.0	4.0	NLIS / MSA / LDL	Consider more than beef, sheep & goat (ie. pigs/horses etc - FMD susceptible species)
	RFID # (or digital ID/EID)	3.6	4.0	4.0	4.0	4.0	3.0	3.0	3.0	NLIS	Critical to speed to validate information, some type of digital ID will be faster to trace through system: This depends on recommendations from Project 2 and 3. From a regulatory standpoint, work with government to make individual digital ID for all livestock species.
	Deceased Date	2.4	4.0	2.0	2.0	2.0	2.0	2.0	3.0	NLIS	Biosecurity outbreak: narrow down 'affected' livestock, but considering date ranges more accurately. Month & Year would be appropriate.
	Deceased Location	2.1	3.0	3.0	3.0	0.0	3.0	1.0	2.0	NLIS	Future consideration to record more detail: in paddock, in transit (truck / live export), processor etc
	Property Location	4.9	5.0	5.0	5.0	5.0	5.0	5.0	4.0	NLIS / NVD	
	Tag Type / Device Type	2.7	5.0	3.0	2.0	2.0	3.0	1.0	3.0	NLIS / NVD	This may be renamed to 'device type' or 'ID type' to allow for future technology adoption (pending recommendations from projects 2 & 3)
	Associated IDs	3.7	5.0	4.0	3.0	5.0	4.0	3.0	2.0	NLIS	
	Device status	3.0	5.0	2.0	3.0	3.0	2.0	2.0	4.0	NLIS	Consider implications of future tech used and relevant status options
	Lifetime Traceability status	3.7	5.0	5.0	2.0	5.0	5.0	2.0	2.0	NLIS	
	EU Status	2.0	2.0	2.0	2.0	5.0	0.0	0.0	3.0	NLIS	Consider how this could be data driven in future, ie. if capture HGP application/use against NVD, PIC or Individual Animal, alert user to validate EU status.
	Birth Date	3.1	4.0	4.0	2.0	2.0	4.0	2.0	4.0	Independent	Biosecurity outbreak: narrow down 'affected' livestock by considering date ranges more accurately. Month & Year would be appropriate.

Location (Property)	Property Address / Geospatial identifiers	3.1	5.0	2.0	1.0	2.0	5.0	2.0	5.0	NLIS (PIC Database)	
	Property Owner Name	2.6	5.0	5.0	5.0	1.0	1.0	1.0	0.0	NLIS (PIC Database)	
	Property Owner Contact Details	2.1	5.0	5.0	5.0	0.0	0.0	0.0	0.0	NLIS (PIC Database)	
	Details of persons responsible for stock	2.9	5.0	5.0	5.0	1.0	2.0	2.0	0.0	NLIS (PIC Database)	can be more than 1 in some cases, consider impacts on who can capture/share/verify what
	Types of enterprises being conducted	3.6	5.0	5.0	4.0	2.0	2.0	4.0	3.0	NLIS (PIC Database)	
	Associated PIC IDs	2.7	5.0	4.0	2.0	1.0	3.0	3.0	1.0	NLIS (PIC Database)	Need to make it easier for an owner to login / monitor / report etc on multiple PICs that they own/manage livestock on
	Property pest & disease status	4.3	5.0	5.0	5.0	5.0	4.0	3.0	3.0	NLIS (PIC Database)	
	Property Chemical Residue Status	3.4	2.0	5.0	3.0	4.0	4.0	3.0	3.0	NLIS (PIC Database)	Strong request from processors to have accessible data on chemical residues & use
	Status of property identifer	2.6	5.0	5.0	1.0	1.0	2.0	1.0	3.0	NLIS (PIC Database)	
Movement / Transport (Livestock)	Owner of livestock	2.4	5.0	5.0	5.0	0.0	1.0	1.0	0.0	NVD	
	Date of dispatch	3.3	5.0	5.0	5.0	4.0	1.0	1.0	2.0	NVD	
	Livestock being moved	3.7	5.0	5.0	5.0	4.0	5.0	1.0	1.0	NVD	
	Origin Location	3.6	5.0	5.0	5.0	2.0	5.0	1.0	2.0	NVD	
	Destination Location	3.6	5.0	5.0	5.0	2.0	5.0	1.0	2.0	NVD	
	Time of dispatch	2.4	3.0	4.0	5.0	3.0	1.0	1.0	0.0	NVD	
	Name of Transporter	1.0	2.0	1.0	2.0	0.0	0.0	2.0	0.0	NVD	
	Buyer (Company)	2.4	5.0	5.0	5.0	0.0	1.0	1.0	0.0	NVD	
	Declaration: HGP use (lifetime)	2.4	0.0	5.0	2.0	5.0	0.0	2.0	3.0	NVD	Ranked Must due to market access impact. Currently, NVD is a tickbox declaration only - consider how to make this data driven for users that capture records within future ISC system on HGP application of individual livestock
	Declaration: ownership since birth (lifetime)	2.9	5.0	2.0	2.0	2.0	4.0	2.0	3.0	NVD	Ranked Must due to biosecurity impact. Currently, NVD is a tickbox declaration only - consider how to make this data driven for ALL users in future based on capture of birth date, birth property location and ownership ID
Product (Carcase)	Body Number / Carcase Number	3.9	5.0	5.0	4.0	5.0	4.0	2.0	2.0	NLIS	
	Slaughter date	4.0	5.0	4.0	4.0	5.0	4.0	2.0	4.0	NLIS	
	Establishment Number	4.3	5.0	5.0	5.0	5.0	4.0	4.0	2.0	NLIS	
	NLIS Device number or RFID	4.3	5.0	5.0	4.0	5.0	4.0	4.0	3.0	NLIS	

	PIC of consignment	4.6	5.0	5.0	5.0	5.0	4.0	4.0	4.0	NLIS	
	NVD number	4.3	5.0	5.0	5.0	5.0	4.0	4.0	2.0	NLIS	
Location (Processing Facility)	Registered Business Name (entity)	3.4	5.0	5.0	5.0	5.0	2.0	2.0	0.0	NLIS / Fed. Gov	
	Physical location of premises	4.4	5.0	5.0	5.0	5.0	5.0	2.0	4.0	NLIS / Fed. Gov	
	Types of enterprises being conducted	3.7	5.0	5.0	5.0	5.0	1.0	2.0	3.0	NLIS / Fed. Gov	

8.2 Appendix – System user prioritisation framework

8.2.1 System user types explained

System users

The system user map has been created alongside the system data map to identify:

- The main users of the system,
- What supply chain items are relevant to them, and
- How they interact with the system.

The term user includes any stakeholder that could potentially use the Future Integrity System.

In order to prioritise which users can add the most value to, or benefit the most from, the future integrity system, the users have been grouped based on their similar functions within the red meat supply chain. This includes internal stakeholders that directly interact with supply chain items and external stakeholders who provide inputs or services and/or regulate supply chain activities. Each user has been compared based on a number of different metrics detailed below to highlight the different roles and responsibilities of users within the system.

System user type

Primary users are defined as owners of red meat products or locations, or as regulators within the red meat supply chain. Secondary users are defined as stakeholders that can contribute to the traceability or verification of products within the red meat supply chain.

Product owner

To highlight which users have a direct commercial interest in red meat product flows, any users that are potentially product owners have been identified.

Associated physical product location

Each user that typically has an associated physical location where red meat products move to, within and from has been identified.

Regulator / auditor

Each user that regulates and/or audits activities or items within the supply chain has been identified. This can be at a whole of industry regulatory level or for voluntary accreditation systems.

Input supplier

Each user that provides inputs or services to the red meat supply chain has been identified.

System use cases

Similar to the GS1 Standards, as part of the project specific types of use cases have been identified to classify how different users will interact with the future integrity system. These are:

1. **Capture -** any user that is responsible for or could assist in the capture of data for the integrity system,
2. **Receive** - any user that needs to or could receive data (raw, de-identified or aggregated) to support mandatory or optional traceability outcomes.
3. **Verify** - any user that currently or in future could verify the accuracy and integrity of data.

4. **Share** - any user that could share data with other system users for mandatory or optional traceability outcomes.
5. **Analyse -** any user that could analyse data to support industry or commercial outcomes.

For each user, a simple score of 1 or 0 was applied to determine if they had a use case for any of the above functions within the system (1) or not (0). The purpose of this is to support ISC in prioritising user engagement and user features for those users that have the potential to contribute to the overall system the most.

8.2.2 System user prioritisation

Item traceability relevance to system users

Each item that has been identified as part of the system map has been evaluated in terms of the frequency a user would interact with it (system use cases detailed above) and how relevant that data point is to them as a user (See Table 17). The purpose of this rating is to assist ISC in future research with relevant users on how they can interact with the system and use certain data.

Table 17. Item traceability relevance to user rating

Rating	Description
3	High use case & relevance of data
2	Some use case & relevance of data
1	Low use cases & relevance of data
0	No use case or relevance of data

System Use Case Rating

To quantify the level of priority for each user in the future integrity system, an overall rating has been calculated which combines the volume of user functions required and the relevance of traceability data for that user.

Rating calculation:

= (Total use cases/maximum user functions) x (Total data relevance/maximum relevance of data)
where Maximum user functions = 5 (Capture, Receive, Verify, Share or Analyse)
and Maximum relevance of data = 27 (9 items, with a maximum rating of 3 for high relevance of data)

As the project progressed, insights from stakeholder engagement were used to adjust the item traceability relevance ratings and provide qualitative data to support the findings of user prioritisation.

User prioritisation

System users were prioritised based on:

1. Insights were analysed from consultation about what stakeholders and how they should interact with the future system were obtained and used to adjust the system use cases and item relevance rating for each user.
2. Any users that were deemed unimportant for the success of the future system in the next 10 years were removed from the system user map.
3. A summary table of how to prioritise system users was generated and then evaluated using the MoSCoW prioritisation method (detailed in section 3.5.1 on page 19 of this report).

8.3 ISC sprint strawman

Greenleaf strawman analysis legend:
New questions from ISC
Same/similar question as proposed by Greenleaf
Ideas/themes identified during the project
See footnote for project comment/insight from Greenleaf #

ISC Foundational Sprint Narrative 010520		
Helicopter statement: We believe our integrity systems must evolve[9] beyond risk mitigation and compliance and proactively expand in scope to provide a comprehensive data and decision-making platform for the whole of industry; adapting to, anticipating and growing with changing market and industry needs[10]. This will assist in a fundamental cultural shift for industry[11] to data-based decision making[12]. Success means we have provided an undeniable value proposition to all stakeholders, the system is facilitating decision making information flow within and beyond interlinking supply chains, it is outcomes focused[13], links to key productivity indicators, and is designed to encourage further industry led innovations[14]. It will result from a series of incremental and transformational changes using the backbone[15] from the existing system and integrating this with promising emerging technologies.		
We know	**Assumptions**	**Questions**
To date our integrity system have focused on providing an **insurance policy** for the red meat industry to mitigate risk around things like food safety, supporting market access and marketing claims. Continuous improvement is vital and we know we can improve the system by **filling existing gaps** to further reduce risk, and **provide a clear value proposition** to producers, who view the system as a compliance matter with **no real consequences** for not doing the right thing.	**Industry wants and will embrace a data driven culture** led by ISC[16]. Expanding the system to productivity, sustainability, providence[17] (e.g.) will create enough of a value proposition to change industry attitude towards integrity systems (away from compliance)[18]. **AND ISC is the logical place for this to sit**. Broadening of collection of more complex data sets will not compromise ISC's core	What do you see as the major benefits from the integrity systems for your business today? OR How is the data we collect via integrity programs today, useful for your business? How would you describe your business's motivation for investment in data-based decision making (High, Medium, Low)? Examples – how are you using data day to day? If you could trace more information about your

[9] Evolve, not radical innovation
[10] Proactive same as our thinking
[11] Culture/behaviour to be data driven for decision making
[12] We could ask what data do you need to make decisions
[13] Start with the outcomes we want to see and then design the system
[14] Links to network model
[15] 3 horizons
[16] Test this assumption, we need a way to ask this…greater good, unbiased
[17] We need to begin to describe what these might look like
[18] Other solution providers can connect to this and innovate off it

We know that **trust** is important to customers and consumers and that they are increasingly seeking evidence and assurance around that trust. However, we have not clearly defined trust across markets and segments. We don't know how much consumers are willing to pay for greater information/trust around red meat products. However, it is clear we must keep evolving to stay ahead of the game as consumer and customer needs change. Our current standards are very narrow, limiting the amount/type of new technology that could be integrated into our system.	responsibilities – biosecurity, market access, food safety.	products forwards and backwards in the supply chain, what information would be critical to supporting your business/organisation decisions? What technologies and solutions have you already tried and what did you like/dislike? What gaps did these need to fill? What evidence (data/objective measures) could you use to verify brand claims on[19]: • Biosecurity • Food safety • Eating quality • Animal health & welfare • Market access Provenance • Sustainability What role do you think ISC has in this transformation to a data culture? Describe where you see this heading.
Therefore, we believe		
For the Australian red meat industry to meet the changing needs of markets, customers and consumers, we must **invest in continuous improvement and evolution** of our integrity system. The current gaps in our systems pose a risk to achieving this and could cause long-term damage to the reputation and trust of our industry. We believe our Future Integrity System needs to be	**Reinventing the integrity system is not necessary, we simply need to revolutionise how data is collected, ensure it can be accessed and communicated clearly and enable industry to use it to support decision making[23].**	What do you believe to be the major risks to evolving the integrity system as described? What do you believe to be the major rewards for evolving this future integrity system? What's your feeling – do we have the foundations in place already to build on the system and expand beyond compliance? What key foundational factors are missing/already in place?

[19] Turn into a scenario

[23] Agree – having data to use at the right time, for specific events, value add the data, map the potential actions associated with the data for an event

outcomes-based and linked to market drivers instead of focusing on specific technologies[20]. There is opportunity to create a robust baseline that must constantly evolve to meet the changing market, customer and consumer requirements[21] by leveraging the innovation ecosystem to close the gaps in data collection and actively participate in its continuous improvement. **We believe the key difference to the current system is transformation of how data is collected and shared[22].** We believe there are cultural barriers in our industry to data sharing and technology uptake to overcome for this to be a success. We believe we can make significant inroads by making sure the system is easy to use and is accessible by all in the supply chain to leverage for additional value capture.		How do you foresee the most efficient future system working to minimise risk and generate value to your business? What must be included in the integrity system in 10 years?
To achieve this we would need to		
Work with industry and technology providers to identify and fill gaps in data collection. We would extend our challenges on objective animal identification and product verification to technology providers, and work with them and industry to identify solutions to be piloted within red meat supply chains to develop case studies for wider uptake/adoption.	We can adjust the standards to be outcomes based, less prescriptive and to encourage innovation and this will still provide the assurances we need. Industry decision makers will see the benefit and support these changes.	Can you describe any ideas that you have that may help to develop the future integrity system? Or what we should avoid? If you could redesign Australia's integrity system for the future, what would you like to see included to help you do your job/grow your business? What flexibility do you need?

[20] This is a big change to talk about market drivers, we need to include more focus on the market end in terms of questions in consultation

[21] Should we interview Coles, Woollies, Internet retail?

[22] Plus how value is added to data, what is the value of the data e.g. aggregated data, things that solution providers can do with the data

We would also need to work with industry to **continually revise the system standards to encourage these new technologies and providers to engage**. To ensure our baseline is as robust as possible, we would need to enforce minimum standards for compliance. We would also need to develop/demonstrate **TRUST with Governments** to ensure as changes or improvements are made to these standards, **we aren't restricted by regulatory approvals**.[24] To be effective, we would need to assist key influencers in championing these upgrades and articulating a clear value proposition for all stakeholders – from producers, through to state and federal governments.[25]		What might be the main blockers to progressing the development of integrity systems in your organisation?
This has not been done before because		
The Australian red meat industry has not developed a sophisticated data culture and does not see a clear value proposition in the current integrity system. Technologies have only recently developed to a stage/form where the capability to collect complex whole of life/supply chain data is achievable, as is the ability to turn that data into actionable information on which to make decisions. To date consumers and our export markets have been satisfied with the current	We need a stronger value proposition than just 'insurance to maintain market access' for this to work and these value propositions do exist for all supply chain participants[27].	What data do you collect now? Who for? Is it shared and why/how? What's working well and what isn't? What problem are you yet to solve?[28] What would make the system indispensable for you on a day to day basis? What problem can we help you solve? What practices are you already doing which we could better collect data on to help with integrity/marketing/providenc e/sustainability/raising claims? What does it cost you now to participate in the existing

[24] Important to probe government on their expectations
[25] This is difference between leading and seeking a mandate to implement based on data collection
[27] Key outcome of the GL project should be a strong value proposition
[28] Overlap with out sprints with Bec Austin

integrity system, but market needs and requirements change and our systems need to evolve to cater for those needs.[26] **To date we have focused on maintenance of an old system, rather than being agile and efficient** (operational excellence including cost saving, optimising process etc). We have focused on the baseline rather than the possibilities of a future integrity system, which has limited the quantity and type of technologies that the system can utilise.		integrity system? (what value do we need to provide above and beyond in the new system)
Our first step would be		
Engaging with industry to acknowledge that this new system is possible. Defining what successful outcomes would look like vs outcomes that could lead to additional value capture. Establishing the minimum standards for compliance in this new landscape (i.e. move from being prescriptive about the method of collection to focus on the outcome delivered and robustness of the data). Run technology pilots in red meat supply chains and develop case studies for wider adoption.	ISC has a responsibility and the remit to drive industry change by seeking out new innovations in technology and process and ensuring the most suitable of these are upskilled to take solutions to industry.[29]	Do you feel this new system is possible and who do you think should be driving it?[30]
Our subsequent steps or road map would look like		
Enabling supply chains to build their own product verification	We can add enough value and provide a differentiated	Do you think there are other solutions already out there?

[26] Competitors are likely to have increasingly sophisticated systems e.g. Hema in Shanghai referring to salmon integrity / provenance in Norway

[29] Must be independent / non-commercial enabler for industry

[30] Need to clarify the opportunity and value proposition. I think ISC just has to lead as an independent body, rather than checking with industry to validate identity

systems leveraging the industry's integrity data (for value capture)[31].	enough system for this to be attractive vs existing part solutions already on the market.	What do you think is missing from other solutions on the market (if anything)? Should ISC be moving into this space?[32] What advantage (or not) do you see with the integrity systems being expanded beyond risk mitigation?
Long term success would look like		
A trusted integrity system with a baseline that constantly evolves to meet changing requirements, is easy to use and accessible by all in the supply chain[33]. ISC led engagement with technology companies focused on the opportunity spaces. Industry and regulators are supportive of the need to evolve, and ISC won't be held up with bureaucracy and long approval processes.		

[31] It will be important to do both – create the platform/backbone of core enablers for the future and the opportunity to innovate on top – open APIs

[32] As above, don't ask this - lead

[33] Start to think of IS as a product, with a product strategy, product design. Focus on designing first not technology solutions. There will be many problems if you start to take a technology lens to early. We are not there yet – at least another 6 months to run

8.4 Risk assessment dimensions and items

Risk assessment dimensions and items. All items were rated on a 1-5 scale. All data was then averaged for each dimension and assessed as a low, medium or high risk. Final results were reported as a percentage.

Strategic Alignment
VISION
ISC vision aligns with industry expectations
PILLARS
ISC pillars aligns with stakeholder expectations
PRIORITIES
ISC priorities align with stakeholder expectations
INITIATIVES
ISC initiatives align with stakeholder expectations
Roadmap Alignment
HORIZON 1
ISC Horizon 1 aligns with stakeholder timeframe expectations for implementation
HORIZON 2
ISC Horizon 2 aligns with stakeholder timeframe expectations for implementation
HORIXON 3
ISC Horizon 3 aligns with stakeholder timeframe expectations for implementation
Stakeholder Desirability
STAKEHOLDER SEGMENT
Stakeholder critical segments have the jobs, pains & gains relevant for ISC value proposition.
VALUE PROPOSITION
ISC value proposition resonates with the critical stakeholder segments.
CHANNELS
ISC are able to reach & acquire critical stakeholder segments.
STAKEHOLDER RELATIONSHIPS
ISC have developed the right relationships to retain stakeholders and repeatedly create value.
Feasibility - Confidence to implement
KEY RESOURCES
ISC have the right technologies & resources to create the value propositions for their stakeholders.
KEY ACTIVITIES
ISC have the right capabilities to handle the most critical activities for creating their value propositions.
KEY PARTNERS
ISC have the right key partners who are willing to collaborate to create & deliver our value propositions.
Adaptability
GLOBAL INDUSTRY FORCES
ISCs product & services are well positioned to succeed against established competitors & new emerging players
GLOBAL MARKET FORCES
ISCs strategy takes known & emerging market shifts into account

KEY TRENDS

ISCs strategy is well positioned to benefit from key technology, regulatory, cultural & societal trends

MACRO-ECONOMIC FORCES

ISCs strategy is adapted to known & emerging macroeconomic trends.

Cultural capability

ENABLERS

Presence of industry-wide cultural enablers to implement ISC strategy across the red meat industry.

BLOCKERS

Presence of industry-wide cultural blockers that may hinder the successful implementation of ISCs strategy across the red meat industry.

BEHAVIOURS

The specific people behaviours necessary to implement the strategy are present within ISC.

CAPABILITY

ISCs strategy will build industry capability for a world class integrity system.

8.5 Visualisation of future integrity system

It is important for ISC to have a way to communicate what the purpose and value of the future integrity system is for a broad range of interested stakeholders. The visualisation concepts have been created to enable ISC to think about how they may create an interactive online tool that any industry stakeholder can engage with (from producer, to consumer, to solutions provider or government regulator and so on).

The core elements that have been created as part of the visualisation in Figure 15 are as follows:

- ✓ High level system metrics
    - ISC should consider what key metrics they want to achieve as part of the future integrity system based on the key value propositions and endorsement from industry and the governance board.
    - These metrics should be data-driven and highlighted by industry as a national benchmarking measure.
    - Some example metrics have been used as a provocation for ISC to consider such as the number of livestock active in the system, the number of registered PIC IDs, the percentage of livestock with lifetime traceability and the national threat response time.
- ✓ Biosecurity threat response capability should be clear and transparent
    - Stakeholder engagement highlighted the lack of transparency in industry's ability to respond to a biosecurity threat effectively.
    - As an example in **Figure 16** stakeholders can understand when the last test run was completed for a biosecurity scenario and how fast the system enabled industry and government to hypothetically act and what that actually means in practice.
    - In addition to this, stakeholders should have an easy way to access alerts about any recent threats or outbreaks within their region or nationally (see **Figure 17**Error! Reference source not found.)
- ✓ It should be clear as to what system users are engaged within the traceability system and what their roles are
    - Even users that don't have a system login, should be able to engage with the interactive tool to work out how they could participate or find out more information about voluntary participation.
- ✓ It should be clear what events are captured within the system (see **Figure 18**)
    - For each event, more information should be available to understand why it is important, what is always captured and what voluntary – some examples ideas are presented in **Figure 19** and **Figure 20.**
- ✓ Finally, because the system is about sharing and linking data, showing the data flow and benefits has been visualised in **Figure 21.**

Once each of the foundational projects are completed, the concepts generated in this visualisation of the future system could be further expanded on and developed as part of a future ISC project to enhance industry adoption and market/consumer acceptance of the integrity system.

Figure 15. Visualisation 1 - real-time integrity system dashboard for public communication

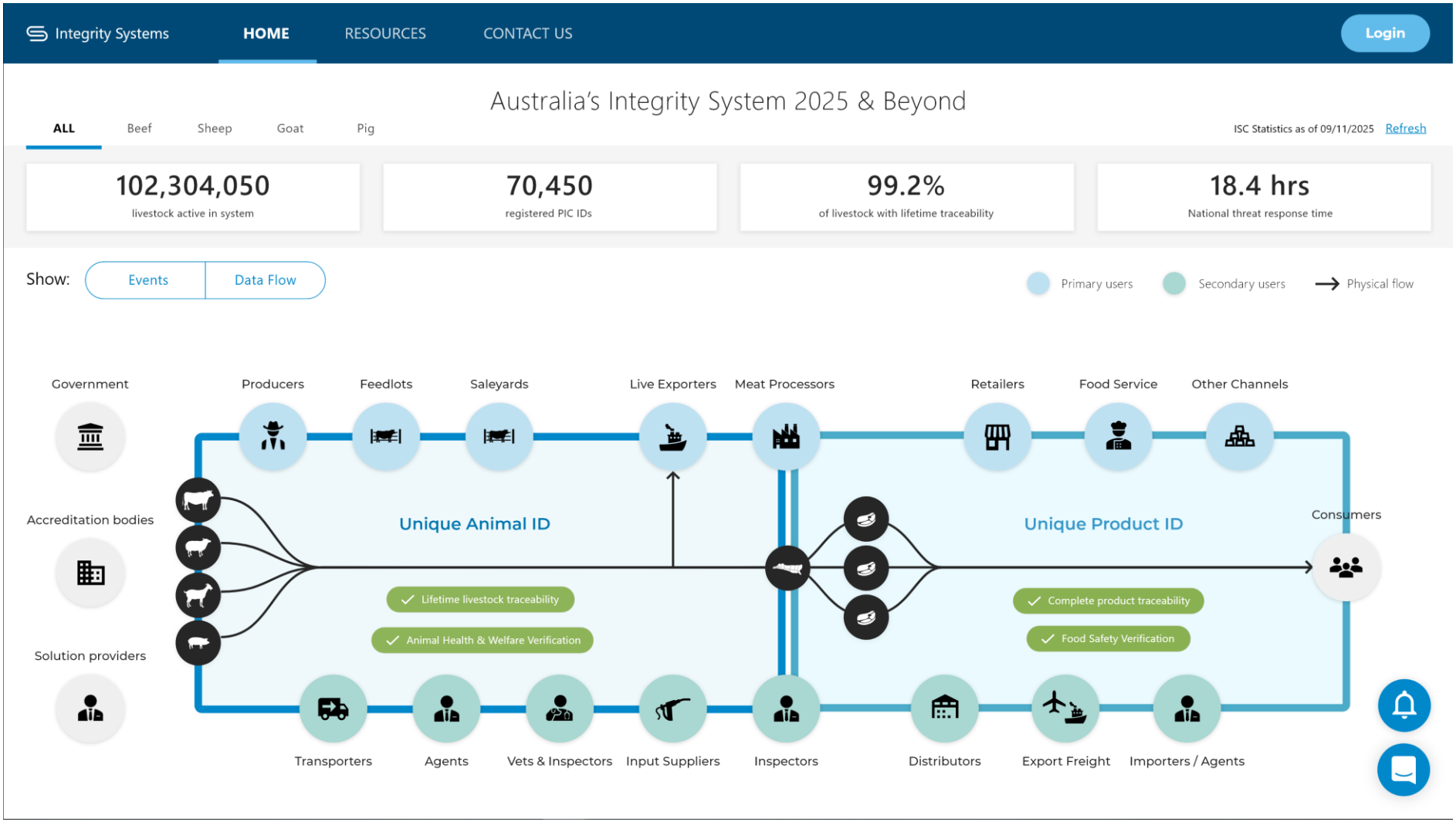


Figure 16. Visualisation 2 - clear understanding of the national threat response time for latest biosecurity scenario tests

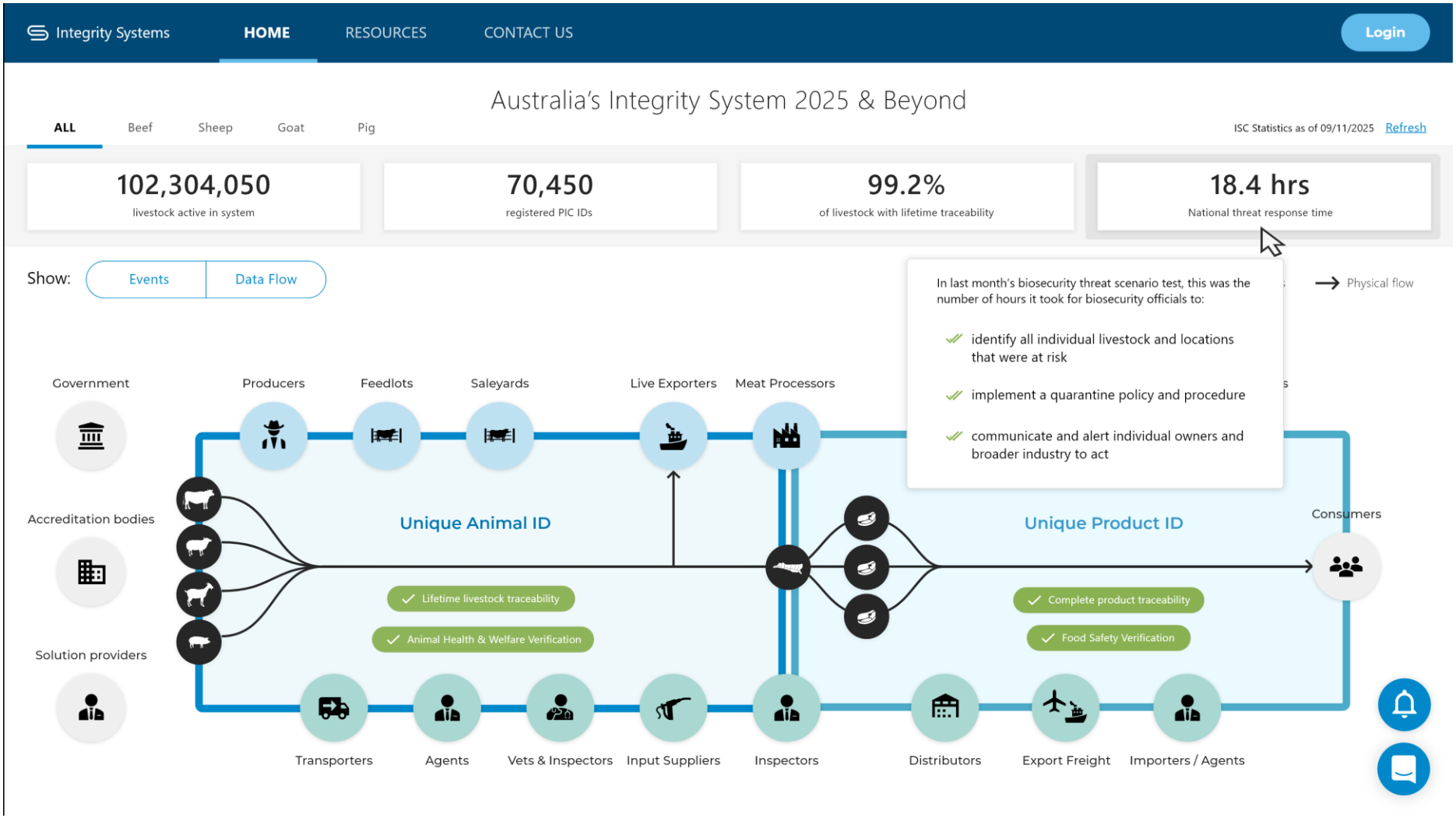


Figure 17. Visualisation 3 - Alerts for recent biosecurity threats and outbreaks

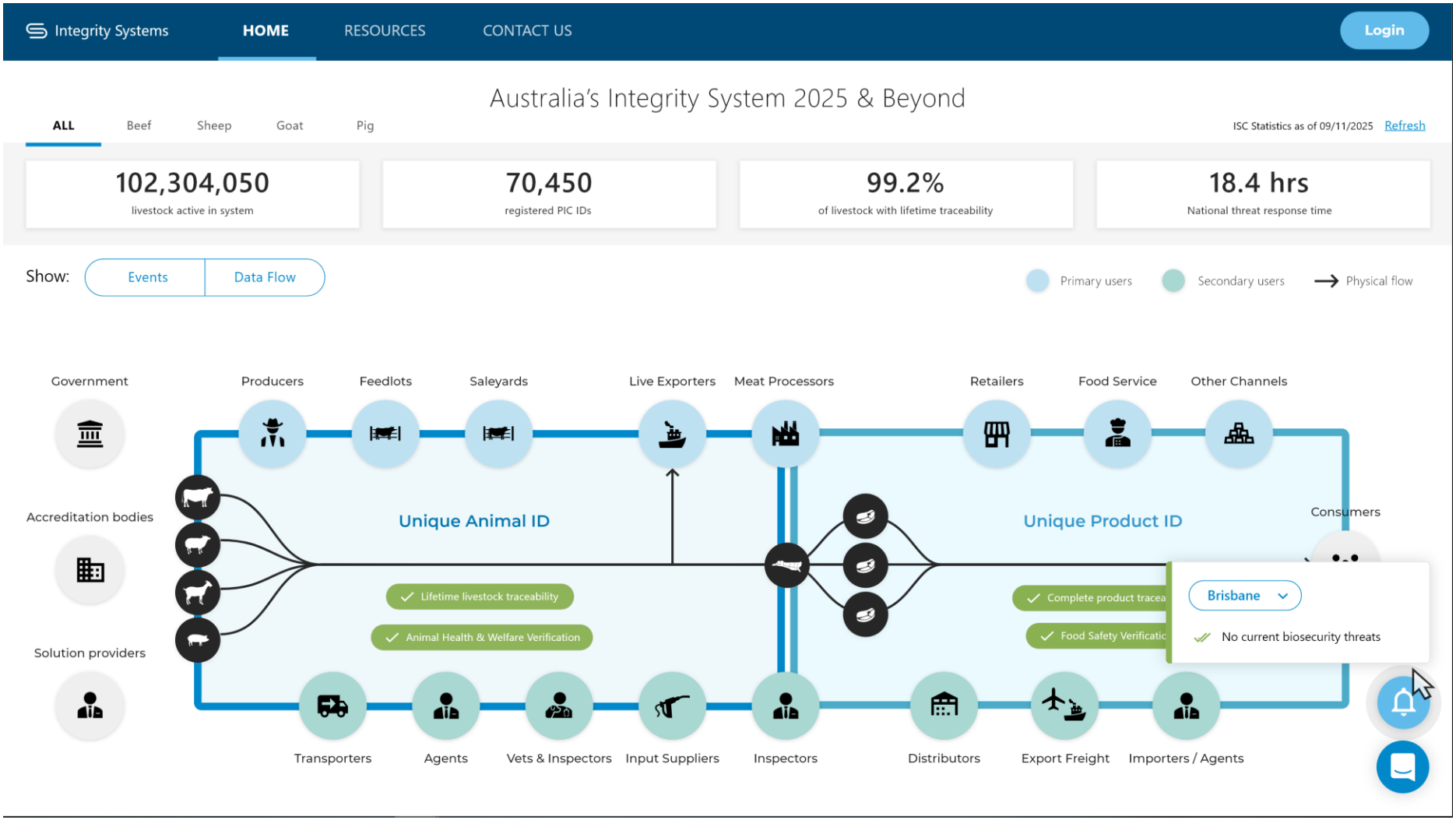


Figure 18. Visualisation 4 - understanding what events are captured (including mandatory vs optional data)

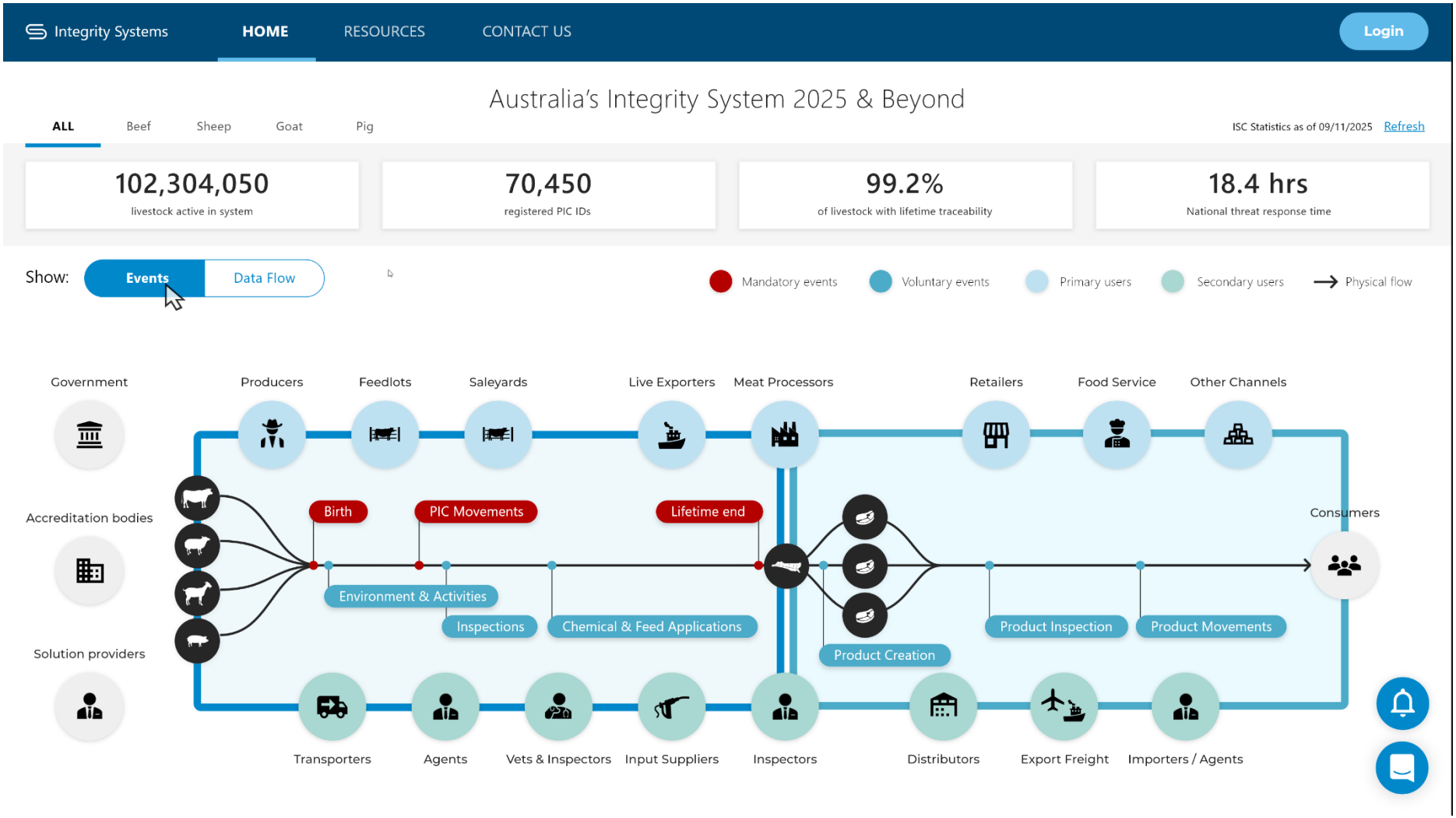


Figure 19. Visualisation 5 - example mandatory event explanation - PIC movements

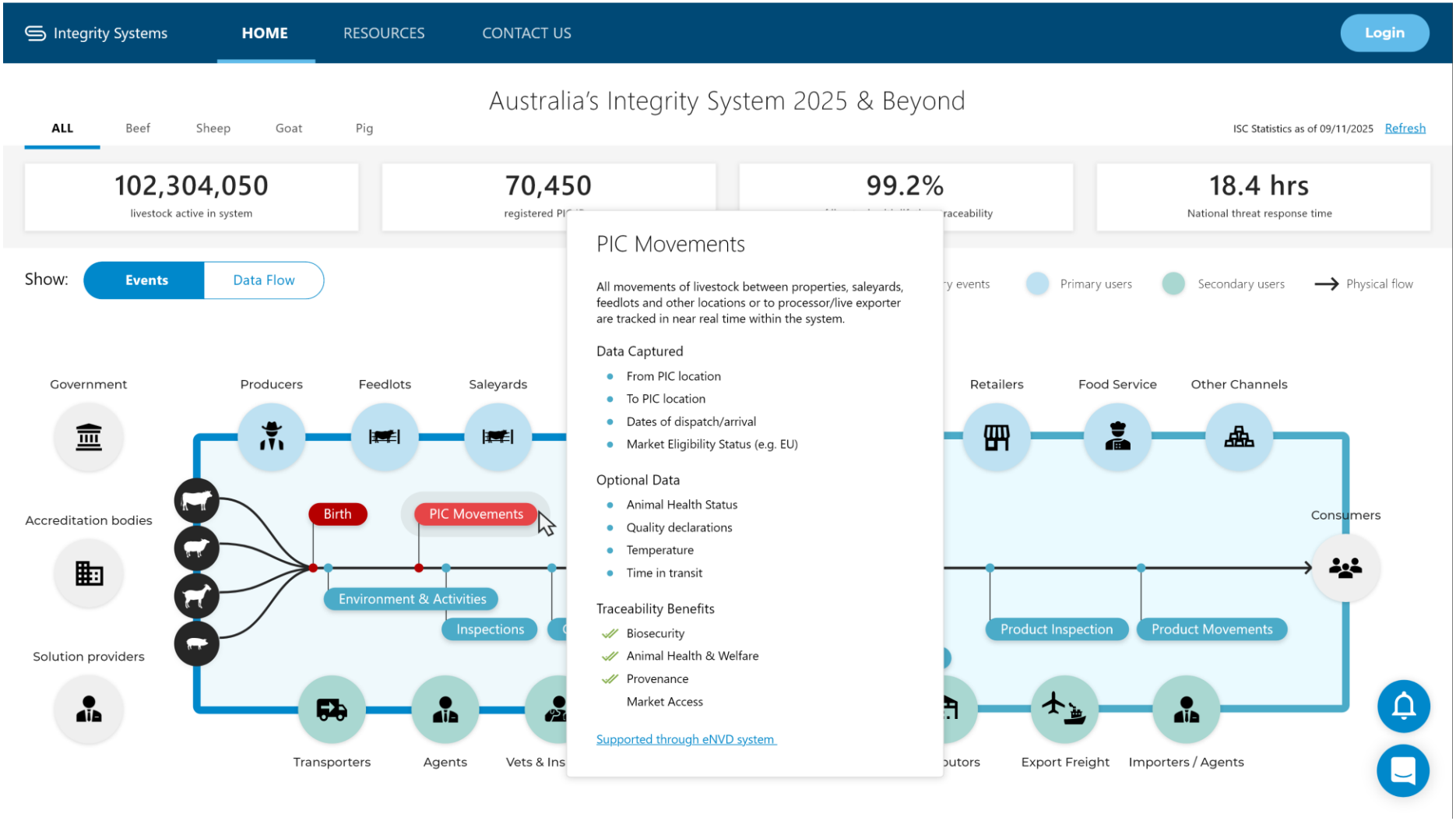


Figure 20. Visualisation 6 - example optional event explanation – chemical & feed applications

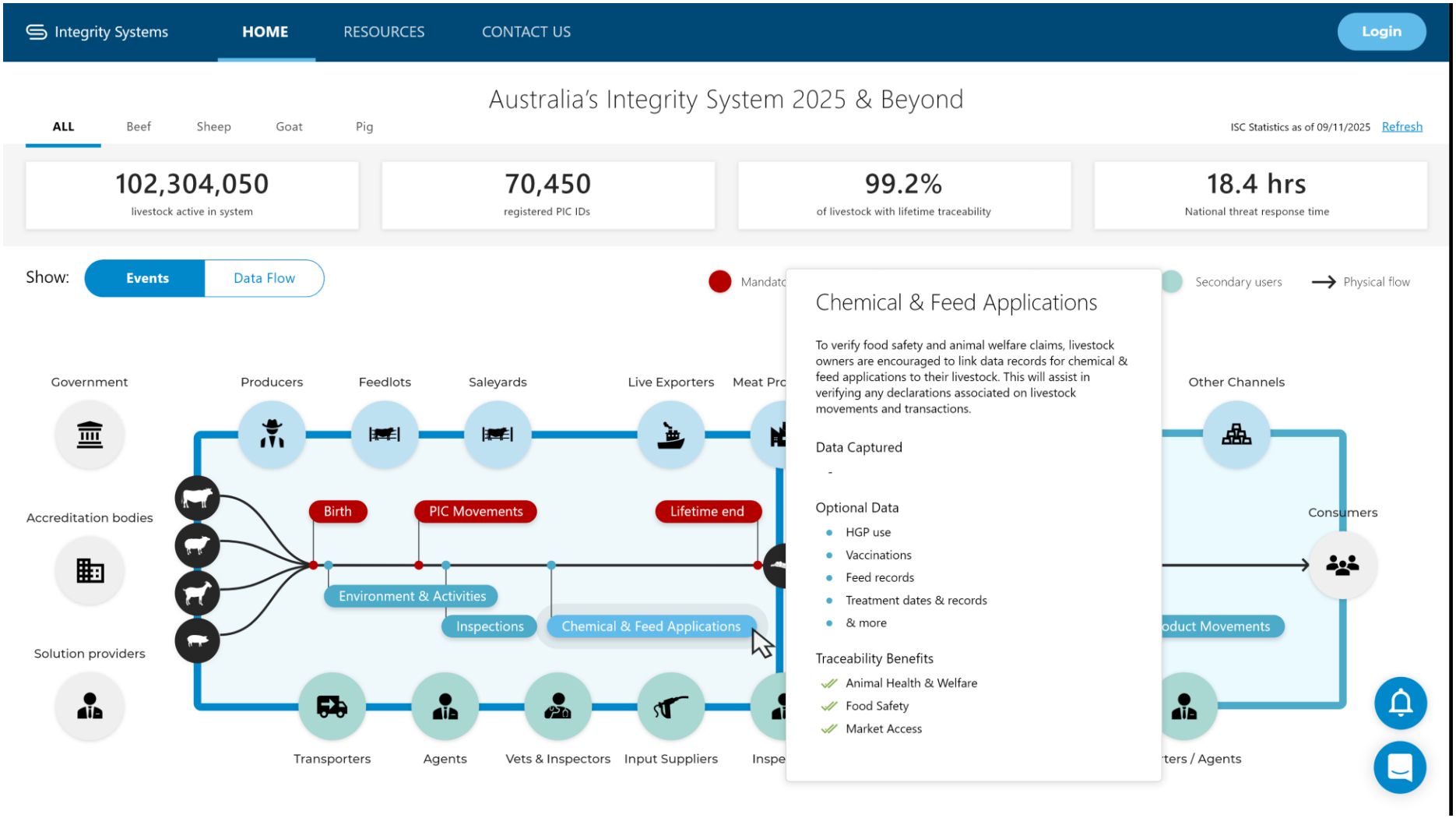


Figure 21. Visualisation 7 - example data flow & verification capabilities