



# Final report

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## Export Market Integrity and Capability Building Trial - Traceability through to consumer

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***Abstract***

This is a capability building project utilising Processor Brand Pty Ltd's supply chain. This project focuses on not only traceability, but the capability to seamlessly and efficiently convey supply chain information, through the retailer, down to the consumer by consistently conveying the GS1 identity on the carton, through to the primal, down to the consumer serving/cut.

This project differed through engagement of a key retail stakeholder, as well as freshness + content claims by the brand, Processor Brand. Key findings were that an elegant solution could be designed and implemented; but relied on human implementation in a retail setting to be successful.

From processing and production, through shipment and transit of goods, through to receipt and ultimately consumer retail serves - our aim was to integrate into, without disrupting the workflow with the end consumer.

Expected benefit to the industry was to outline the best approach in engagement of overseas retail partners in traceability and provenance implementations for Australia Red Meat Producers.

## Executive summary

### Background

The project was undertaken to test the traceability and provenance aspect, freshness, and shelf life claims of premium Australian products into export markets. Where this project differed from those in the category before, was a more consumer friendly, and retailer integrated User experience (inside of the supply chain).

The main target audience is the higher-end export consumer of Australian Angus and Wagyu cuts, in a premium retail setting.

From various stakeholder perspectives, the project results aimed to identify value for;

1. Producers: To gain insight on consumer engagement in export markets
2. Retailers: To incorporate a serialised provenance claim without disrupting daily operations
3. Consumers: To build confidence and loyalty in building brand relationships and supporting repeat purchase

### Objectives

Traceability, provenance, and blockchain technologies have been discussed and praised as a value capture solution for export products. Hypotheses on which exact incentives drove engagement and were quantified as valuable, ranged from food safety, freshness, brand recognition and content. However, these were mostly implemented on the supply side, or brand side.

### Methodology

Methodology includes data systems integration at various stages of the supply chain - inclusive of production, logistics consignments, environmental information, retail stock receipt and consumer scanning.

### Results/key findings

The supply chain data is strong, and we were able to integrate, collect, and utilise data. Where there is reliance on human actioning and behaviour, there is a weak point in overall project success.

### Benefits to industry

1. Defining a holistic integration across the supply chain inclusive of retail/consumer
2. Defining internal value via reporting dashboard for the brand owner
3. Highlight potential pitfalls in retail export integrations aimed at consumers

### Future research and recommendations

1. Brand owners: Must have key dedicated people in IT and sales systems, as well as the ability to share majority data with solution providers easily.
2. Retailers: Must not only have systems in place to integrate with, but compliance from staff to implement.
3. Physical audits: Must have the ability to physically and covertly audit successful retail implementation.

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## 1. Background

Because of the brand positioning around the notion of 'excellence', many of the Processor's Brand integrity efforts go well beyond industry standards. They see that blockchain presents a potential solution to verification of the company's efforts to prove their excellence in integrity and have been working on capturing its potential for some time. Besides traceability, the team felt that blockchain would offer the following potential benefits:

- Enhanced data security
- Access to certification of authenticity
- Evidence that the beef products are genuine
- Evidence of food safety integrity at every point in the supply chain from processing through all stages of shipment and logistics
- Real time and transparent information along the supply chain
- Inventory management
- A marketing channel direct to the consumer that enables them to tell the story of the brand and its promise, highlighting the tangible benefits.

The main question being asked is:

Could an elegant technical solution could be designed and implemented in collaboration with a retail partner that would integrate into the retailer workflow, which furnishes upstream traceability information - with outcomes of greater stock transparency, shelf-life projections, as well as primal to retail cut level traceability that could be tailored to each unique export market?

The target audience is brand owners, industry stakeholders, and digital service providers to/within the red meat industry. The brand owner, Processor brand A, was concerned about potential substitution as well as wanting to strengthen their B2C marketing relationship to the consumer in partnership with the Singaporean retailer. They were interested in other potential B2C insights and the ability to have targeted marketing messaging.

"Processor Brand engage with their export customers regularly and indicate that many do have quite a detailed understanding of Australia's integrity systems including NLIS tags and food safety regulations; and that all of them value this in Australian meat generally. While most customers are satisfied with the Australian industry standards, the Processor Brand team feel that there are gaps that the industry and the organisation need to keep working on (see final report for further detail), and they are committed to continuously improving these and contributing to the industry discussion." (McKinna, 2022 - 0459)

Results would be used to assess potential benefits inclusive of:

- Traceability
- Enhanced data security
- Access to certification of authenticity
- Evidence that the beef products are genuine
- Evidence of food safety integrity at every point in the supply chain from processing through all stages of shipment and logistics

- Real time and transparent information along the supply chain
- Inventory management
- A marketing channel direct to the consumer that enables them to tell the story of the brand and its promise, highlighting the tangible benefits.

(McKinna, 2022 - MLA Report 0459)

## 2. Objectives

High level Project Objectives and Outcomes listed below;

OBJECTIVE	OUTCOME
Could we integrate into the retailer’s existing operational workflows?	Successfully achieved
Would integration with the retailer drive, inside of the supply chain, engagement?	Successful - it drove engagement by the producer; however, the data needed to be visualised in a meaningful way in order to be useful (dashboard to consolidate reporting).
Would consistency at the retail level drive brand recognition and increased sales?	Unsuccessful
Could we track and quantify export market consumer engagement?	Technically this objective was successful and achieved
Could we speak directly to the consumer (post purchase) and educate them on how best to cook, prepare the product?	This is inconclusive as we were unable to consistently drive a consistent consumer engagement campaign due to COVID Lockdowns, shifts to online purchasing, and retailer compliance.

### 3. Methodology

#### 3.1 Project Methodology

- Integrate into the brand’s ERP system for supply chain data
- Integrate with IOT devices
- Integrate into retailer inventory and receivable system
- Integrate into retailers’ labelling and retail display workflow
- Manage consumer experience upon scan
- Provide consumer scan and engagement data to the brand owner

##### 3.1.1 Integrate into the brand’s ERP system for supply chain data

Initially, we work to understand what data was captured, by what system, the availability of said data, and state or condition of the data. This was implemented across The Meat management software, EscaVox, SAP Business One, and Digi Scale Solutions.

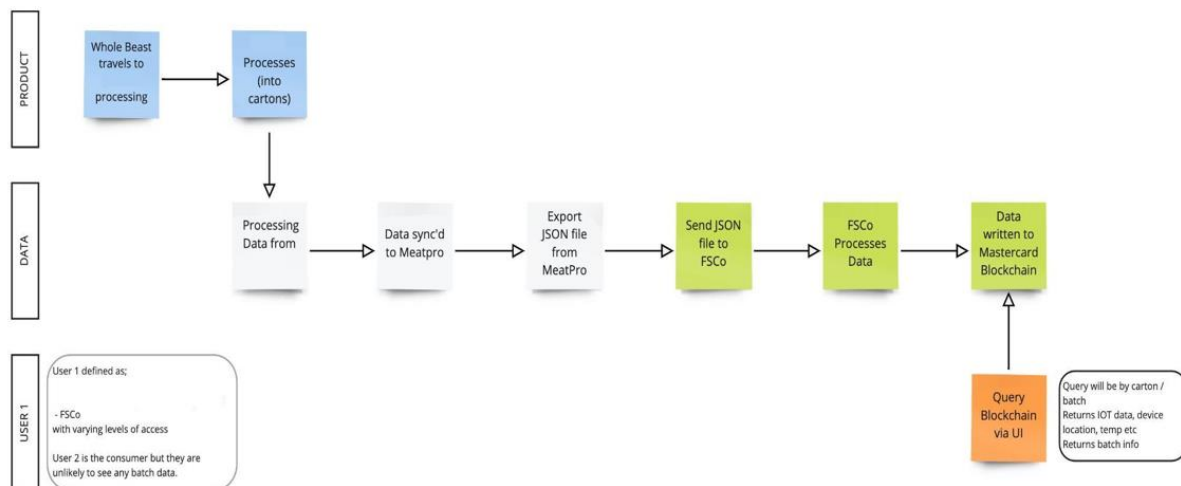


Diagram 3.1.1.a - Product to Data to User Flow, initial first step in understanding how data moves through the supply chain.

The Meat management software was used by The Processor Brand to capture all supply chain production information in a boxed state packed for sale. FSCO’s PMS (Production Management System) housed the carton (unit) data and attached event-based data to each unit’s metadata. Event-based data such as IOT tracking device data (vessel, location points, temperature) and SAP Business One data from the retailer (scanned barcode when received, and on which date). Event based data was used as content when the consumer scanned the QR code on the retailer’s packaging.

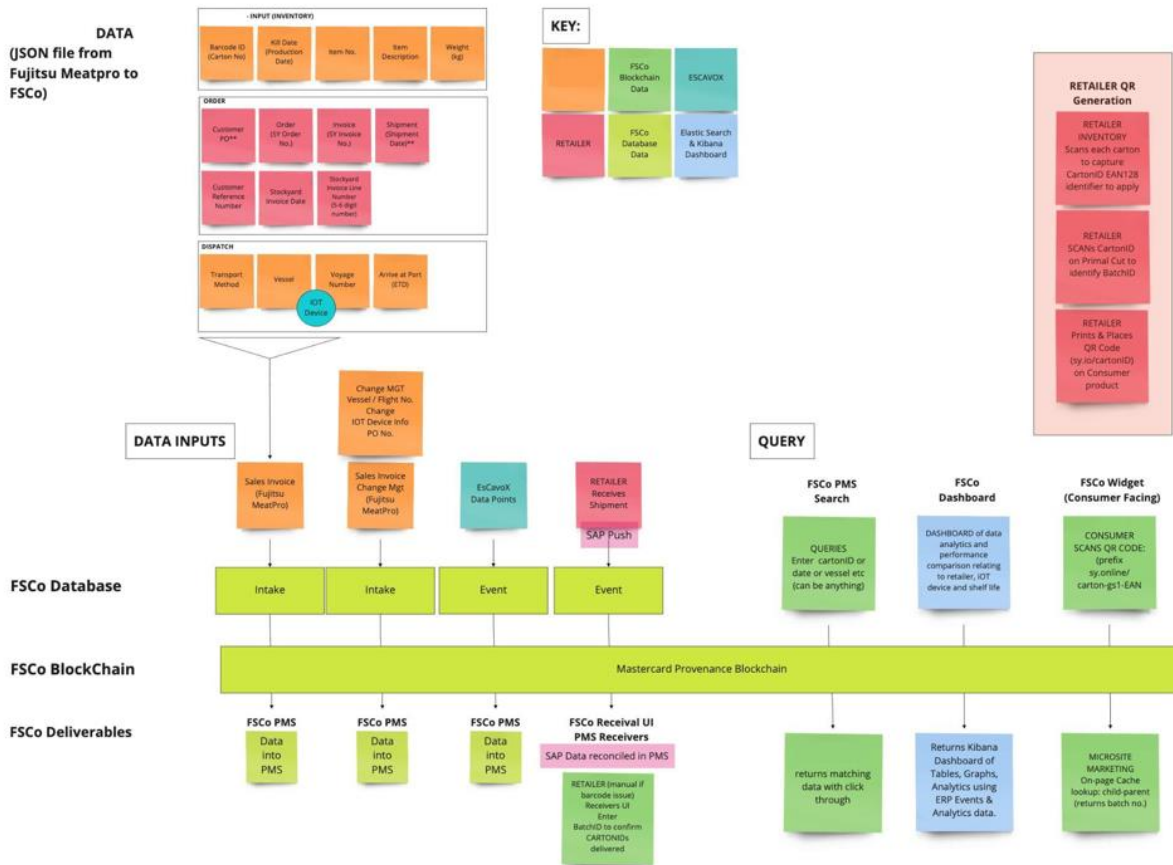
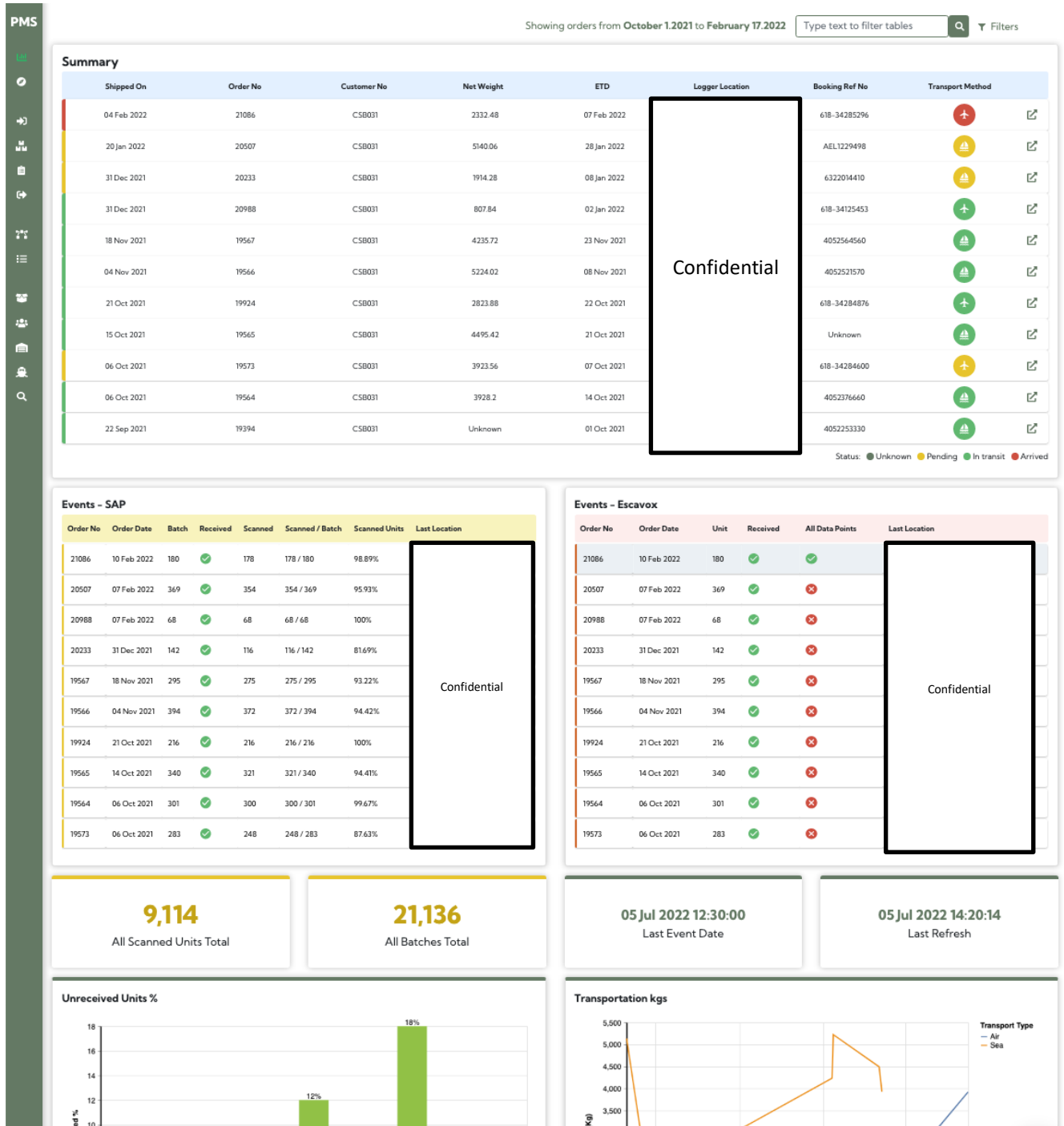


Diagram 3.1.1.b - Detailed Data Flow with all parties represented and how this would furnish on FSCO's PMS.

The integration with The Meat management software was successful, but inefficient. There were ongoing issues with the Fujitsu Meat management software quality and consistency in data delivery.

Using the latest technology in search, Elastic, a dashboard view was developed as a high level summary of shipments to the Singapore retailer. This gives the brand owner insight into shipments to Singapore, prior to receipt of goods and once received at the retailer. If you were looking at high volumes of shipments this would be a good device for monitoring and overseeing whereabouts and environmental factors per shipment.





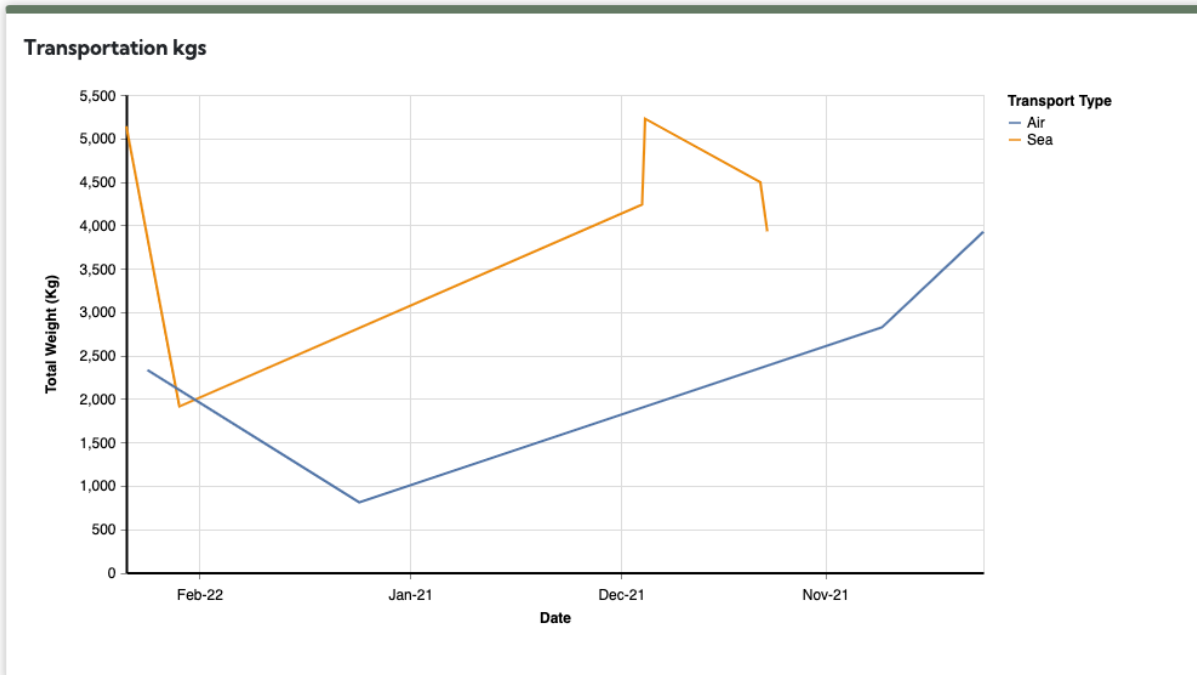
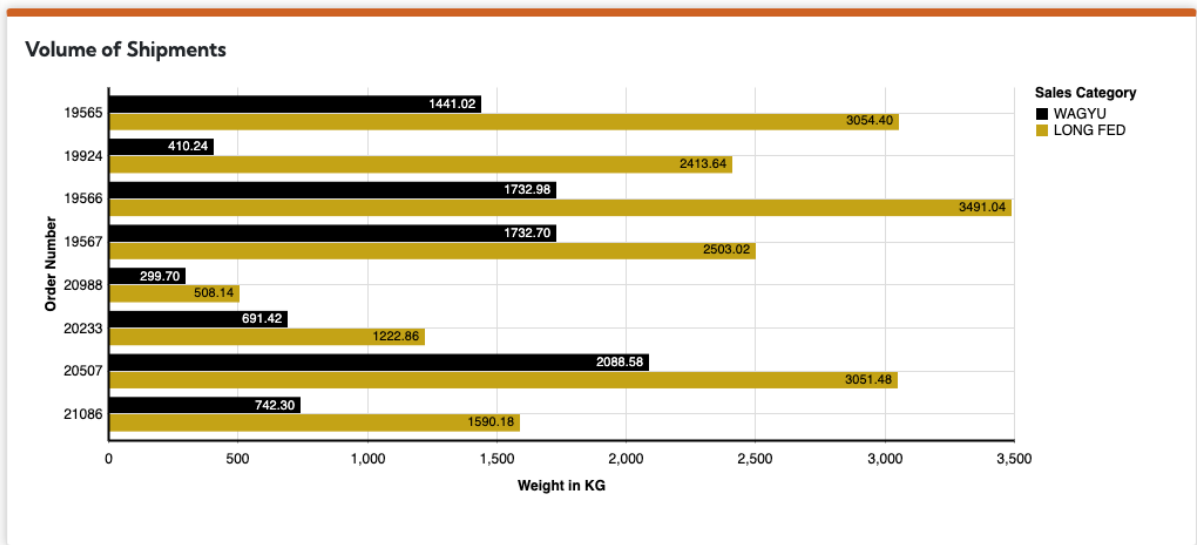
Processor Brand PMS Dashboard - scrollbar dashboard shows all the graphs available with Production Data

**Summary**

Shipped On	Order No	Customer No	Net Weight	ETD	Logger Location	Booking Ref No	Transport Method
04 Feb 2022	21086	CSB031	2332.48	07 Feb 2022	Confidential	618-34285296	+
20 Jan 2022	20507	CSB031	5140.06	28 Jan 2022		AEL1229498	+
31 Dec 2021	20233	CSB031	1914.28	08 Jan 2022		6322014410	+
31 Dec 2021	20988	CSB031	807.84	02 Jan 2022		618-34125453	+
18 Nov 2021	19567	CSB031	4235.72	23 Nov 2021		4052564560	+
04 Nov 2021	19566	CSB031	5224.02	08 Nov 2021		4052521570	+
21 Oct 2021	19924	CSB031	2823.88	22 Oct 2021		618-34284876	+
15 Oct 2021	19565	CSB031	4495.42	21 Oct 2021		Unknown	+
06 Oct 2021	19573	CSB031	3923.56	07 Oct 2021		618-34284600	+
06 Oct 2021	19564	CSB031	3928.2	14 Oct 2021		4052376660	+
22 Sep 2021	19394	CSB031	Unknown	01 Oct 2021		4052253330	+

Status: ● Unknown ● Pending ● In transit ● Arrived

Processor Brand PMS Dashboard - Summary Section



Processor Brand PMS Graphs - Customisable based on Production Data availability

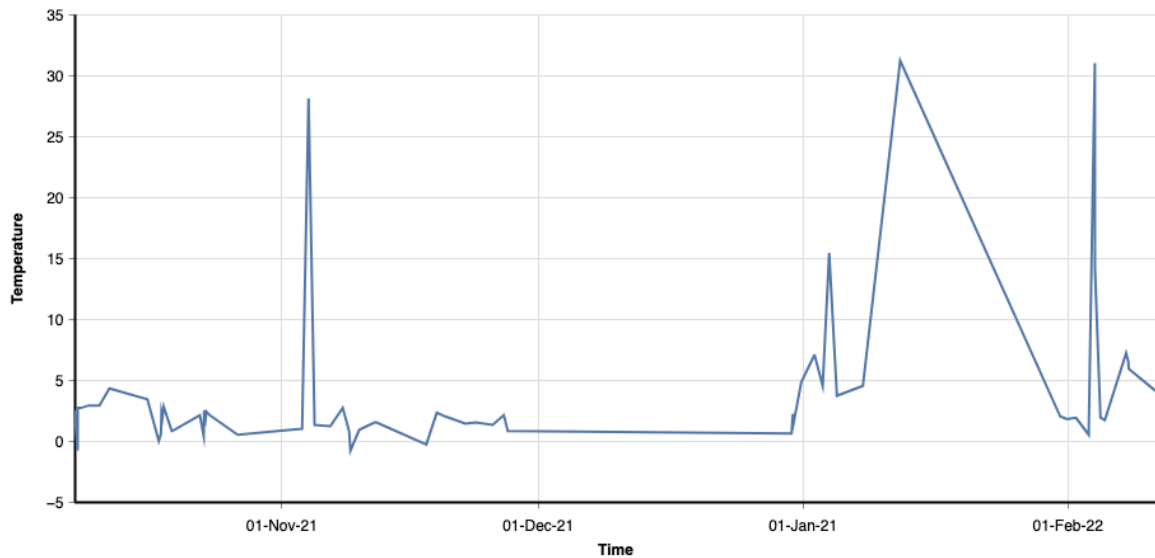
### 3.1.2 Integrate with IOT devices

Data feeds originating from Escavox IOT devices provide real-time transit location, temperature and vessel information. Escavox pushed the data payload to the FSCO PMS platform, which was received via a web-hook from Escavox's existing API. This data was used to successfully furnish an inside of supply chain dashboard as well as consumer engagement end-point.

**Events - Escavox**

Order No	Order Date	Unit	Received	All Data Points	Last Location
21086	10 Feb 2022	180	✓	✓	Confidential
20507	07 Feb 2022	369	✓	✗	
20988	07 Feb 2022	68	✓	✗	
20233	31 Dec 2021	142	✓	✗	
19567	18 Nov 2021	295	✓	✗	
19566	04 Nov 2021	394	✓	✗	
19924	21 Oct 2021	216	✓	✗	
19565	14 Oct 2021	340	✓	✗	
19564	06 Oct 2021	301	✓	✗	
19573	06 Oct 2021	283	✓	✗	

#### Temperature

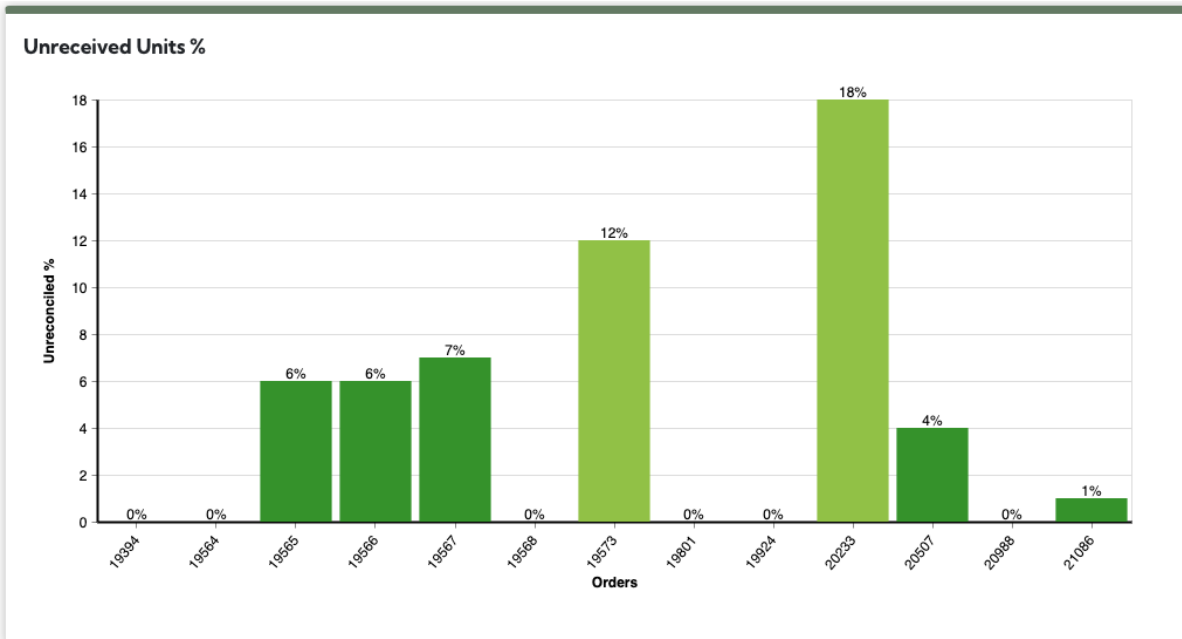


### 3.1.3 Integrate into retailer inventory and receivable system

We successfully and efficiently captured information from SAP Business One, via an API. This allowed the brand owner to validate whether the product sent was received by the Oversea retailer. This data was used to successfully furnish an inside of the supply chain dashboard as well as consumer engagement end-point, letting the consumer know how fresh the product was as it confirmed the date of arrival at the Singapore retailer warehouse.

**Events - SAP**

Order No	Order Date	Batch	Received	Scanned	Scanned / Batch	Scanned Units	Last Location
21086	10 Feb 2022	180	✓	178	178 / 180	98.89%	Confidential
20507	07 Feb 2022	369	✓	354	354 / 369	95.93%	
20988	07 Feb 2022	68	✓	68	68 / 68	100%	
20233	31 Dec 2021	142	✓	116	116 / 142	81.69%	
19567	18 Nov 2021	295	✓	275	275 / 295	93.22%	
19566	04 Nov 2021	394	✓	372	372 / 394	94.42%	
19924	21 Oct 2021	216	✓	216	216 / 216	100%	
19565	14 Oct 2021	340	✓	321	321 / 340	94.41%	
19564	06 Oct 2021	301	✓	300	300 / 301	99.67%	
19573	06 Oct 2021	283	✓	248	248 / 283	87.63%	



### 3.1.4 Integrate into retailers' labelling and retail display workflow

We collaboratively developed a carton - to primal - to retail cut workflow. Primal cut labels mirrored the carton which they were in. These were then mirrored onto the retail label using the Digi Scales System where a template allowed space for the unique QR code linking to the carton, with all backward consignment information.

The label integration took some time, but there was a successful integration. The retailer made a decision to place the label onto the primal cut, not onto the retail cut on purchase, which made the consumer scanning impossible to achieve. Processor Brand were made aware of this mistake in 2022, two years into the project.



Retailer labelling on primal cuts

### 3.1.5 Manage consumer experience upon scan

FSCO was successfully able to link product information from carton to retail scan. This was natively built into the platform, and was consistently viewable at the carton level. The backend traceability data was formatted in a consumer palatable way, alongside content relating to the product specification, marketing, and other brand collateral.

Follow the individual journey of products and know exactly where your beef has come from - where it goes is now up to you.

- Departed Australia
  - February 5, 2022
  - 📍 Brisbane, Australia
  - ✈️ Sent by air
- Arrived Singapore
  - February 8, 2022
  - 📍 Singapore
  - Purchased

powered by Provenance Solution

Underpinned by provenance solution blockchain technology

## Our Story



An authentic, deeply rooted, expanse of never ending farm land offers an Australian story of the true character.

It is early morning and as the steam rises from the mill our animals are preparing for a unique blend of steam flaked grains, succulent hay, molasses and other natural ingredients.

DNA Wagyu Genetics	Grain fed for min. 400 Days
Age of animal 24-36 months	Fed at

Inspiration for your kitchen  
How to cook your steak



Method

Before grilling, remove the steaks from the refrigerator and let sit for approximately 20 minutes

### 3.1.6 Provide consumer scan and engagement data to the brand owner

The platform and ability to deliver information to the consumer was successfully implemented. However, at the retail level, auditing revealed that the unique QR code marking was only applied at the primal cut level in the refrigerated display cabinet at their retail site. As a result, consumer scans were effectively impossible unless consumers were purchasing the entire primal cut. This would be an unusual purchasing scenario as retail consumers purchase at the cut level due to the extremely high purchase price.

Additionally, the end label, which contained the QR code was unattractive, unbranded, and aroused suspicion as to the purpose of the QR code; this was validated in the market. One potential retail consumer even asked “did the label say SCAM ME”.

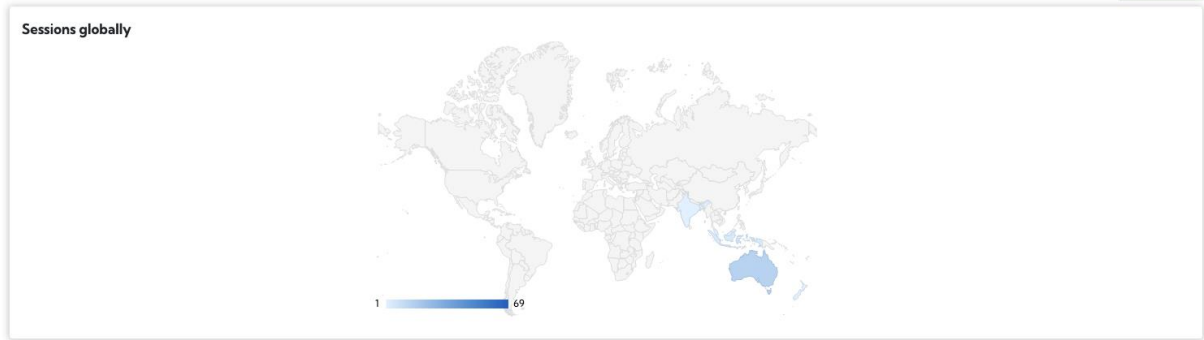


Analytics

Showing analytics from June 1.2021 to July 7.2022

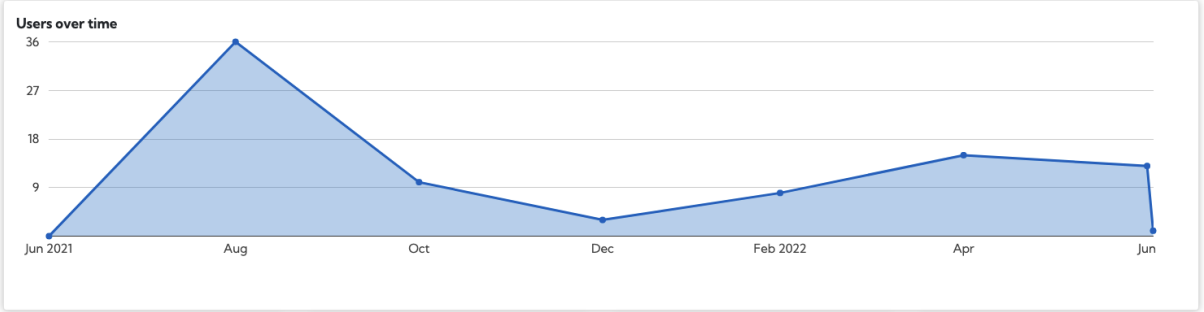
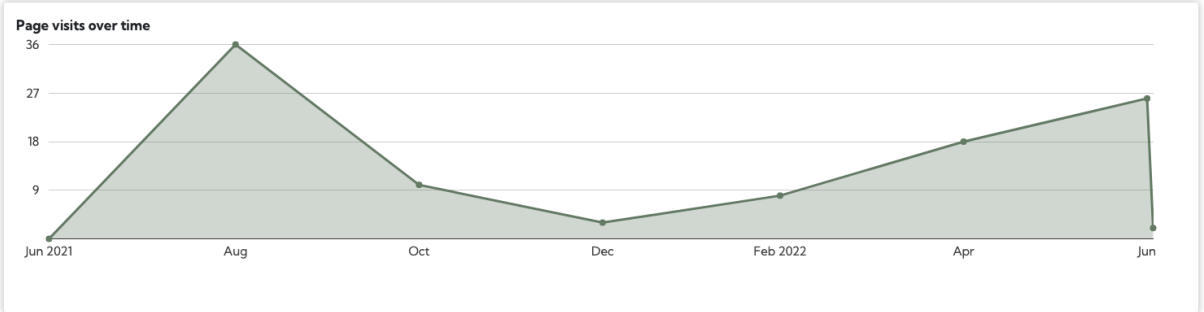
Filters

Export PDF



Users per country

Country	Users	% Users
Singapore	62	77.5%
Australia	12	15%
Indonesia	3	3.75%
New Zealand	1	1.25%
Malaysia	1	1.25%
India	1	1.25%





## 4. Results

FSCO had architected an elegant solution from a technical perspective. A holistic approach was taken, and consistent data feeds were reflected into a user (producer-facing) dashboard that reconciled stock sent, with receivals at the Singapore retailer, and environmental data in between.

The shortcoming here was the human-behavioural element.

We were unable to gather rich data and potential for further insights as a result of limited to no retail domain compliance.

Consumers would not scan whole cuts in refrigerated display cases, resulting in a lack of consumer-appropriate touch points.

Ideally, the solution would have been implemented as designed, and given a period of time with which to gather consumer behaviour - over a period of 3+ months over several markets.

It is also worth noting that there were significant Singaporean COVID related lockdowns. This resulted in limited foot traffic and in-store engagement. Also, retail behaviour did significantly shift to online purchasing, and as stated before - there were no QR codes applied to consumer retail cuts.

What was technically architected was impossible to implement, given project goals around consumer engagement enabled through retailer integrated workflows.

## 5. Conclusion

This research project took place during the COVID-19 pandemic through the worst of lockdowns and travel restrictions. In-person meetings were impossible, affecting onsite implementation at the retailer. Due to lockdowns, retail consumer foot-traffic and the ability to engage in-store was significantly affected.

The technical implementation and workflows all worked; however, changing consumer behaviour, changing commercial environment, as well as ability to persist through the pandemic all impacted the real-world effectiveness of the project.

The consumer engagement piece was a challenge throughout the project. Consumers inherently trust the retailer and expect the realter to do their due diligence. The added scannable QR code offering more in-depth traceability and safety information to consumers where not perceived as an added benefit, resulting in low scans.

The system will not be implemented as the return are relatively low, a strong marketing plan will be needs to further develop this system to provide significant return on investment.

### 5.1 Key findings

- There needs to be a level of organisational readiness, as well as a dedicated and well-informed IT resource, guiding and liaising with the technology provider
- Consumer insights like repeat purchasing data, are difficult to obtain and would likely breach consumer privacy law, unless individuals explicitly consented and volunteered this information.
- Brands can validate consumer engagement and views, but cannot accurately infer purchasing behaviour.

- You cannot have high-quality purchasing data without POS sales data being fed back through to the brand owner.
- Retail implementation is key in order to gain B2C insights.
- Consolidated reporting across all data streams in a single dashboard was valuable to the brand owner.
- Engagement of a consumer-behavioural focused data scientist would be beneficial.
- A general marketing page or site when consumer scan the QR code will not result in any benefits, in addition to deterring future scans. The scans must come with an incentive or targeted marketing to the consumer to drive engagement.

## 5.2 Benefits to industry

We can effectively validate physical goods tied to provenance claims (sustainability, biosecurity, food safety and quality standards and integrity) through to the consumer by use of production data.

Technology and integrity systems can further drive the 'premiumisation' of a brand offering - and are best utilised at the higher end of the market.

We have seen from implementation in other food sectors that clear gamification or incentive to scan (sweepstakes, competition, etc.) drives significant brand engagement.

## 6. Future research and recommendations

Projects like these require significant time and effort. Commitment is required from all stakeholders, which may include the retailer as well as the brand owner depending on implementation. In regards to retail partners, understand that this will be a high involvement relationship, with regular assessments as to retail application and implementation.

It is hard to define which department "owns" the project from a brand owner perspective. Is it marketing, export sales, operations. etc? Assigning a project owner/ dedicated resource within a brand is key to implementation success.

A similar architecture could be utilised to go beyond purely premium-specification or origin, and utilise sustainability linked data (such as carbon footprint, humane certifications, HGP-free, grass fed etc). There are multiple potential outcomes from a single technical implementation.

We have seen a significant rise in Australian domestic-market QR code scanning across other product types. These have numbered thousands of scans a week in other premium horticultural products, which has raised brand profiles within their industry where customers are incentivised and the customer experience is gamified. According to Santos-Sousa (2021) "Companies must align users' content expectations with businesses' strategies. This way, companies can provide the most suitable content". It would be worth researching QR-code uptake on red meat products in a domestic setting, with ongoing and sustained POS promotions, appropriate to the Australian context.

## 7. References

**McKinna, D.**, 2022. V.MFS.0459 – Supply chain integrity desirability analysis. Meat and Livestock Australia, pp.2-11.

**Santos Sousa, E.**, 2021. Dissertation: The impact of the QR code content and customer experience on QR code usage intention and customer satisfaction An analysis in the context of food packaging. Masters, MSc. Universidade Católica Portuguesa.