Traceability

Primal to Steak/Steak to Primal (Stage 2)

Contents

1.0 Executive Summary

Cellr extended our foundation codebase from previous traceability work to ensure a robust solution was delivered for AMPC. The work delivered by the Cellr team was above and beyond the initial scope. We have included finishing touches that deliver a user experience second to none for a prototype of this nature.

We managed to achieve each item from the project milestone scope. The user interface for the various stages of creating a primal cuts, to adding sub cuts and finally the customer engagement tool is streamlined and considerations for commercialisation have been factored in. Additional user experience touches (weight slider, auto progress upon a successful NFC scan and predetermined weight min/max inputs all go above and beyond the initial project expectations).

Industry will be able to deliver unique traceability data up and down the supply chain at each step of the defined processes. This prototype was agreed to be a mobile application. The Cellr team has now planned ways to deliver each of the process steps in an automated fashion using desktop software integrated with off the shelf technology, QR Codes and manufacturing units (Conveyer scales and 4d scanner). These automated steps will be custom integrations during Stage 3 and will be customisable according to producers' internal systems, but the inputs in this prototype will all be reusable to ensure scalability.

Here's the list of key Software development completed in order to set up the platform to handle Automatic Information and Data Capture (AIDC).

The Foundation software application is ready to interact with the relevant cloud and consumer apps (web, or native (Xamarin)) for AIDC.

*xamarin - i0S and Android Apps

- ASP. net Boilerplate - Console management -- COMPLETE
- Angular Portal - Host - view primals etc -- COMPLETE
- Xamarin app - set up, look and feel, controls -- COMPLETE
- Xamarin app - Supply chain portal -- COMPLETE
- Add primals, scan primals, split up primals -- COMPLETE
- Xamarin app - front end public user, scan a tag, and get basic certified activity -- COMPLETE
- Azure hosting - Wildcard SSL – COMPLETE
- Force gps turned on, only work when connected to the internet, using a nfc enabled device only. -- COMPLETE
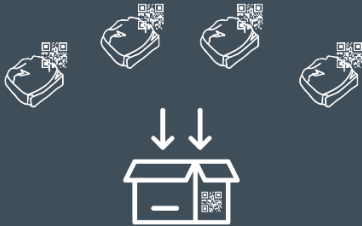
To bring this traceability solution to life in a global supply chain, we propose the key stages outlined on the following page.

1.

Meat producers create a unique profile in the Cellr platform. This is the start of the Provenance journey and allows the packers to reference the meats origin.

2.

Plants are responsible for producing carcasses. Each cut will be weighed and tagged *(with appropriate data; type of cut, marble score if available and provider details)* and packed into cartons with a box tag allocated. The box tags will reference which vacuum packed cuts are inside (parent tags).

3.

Now we have boxed primals ready for the supply chain. Each box has a reference tag (QR Code) that defines which cuts are inside.

4.

Boxes are then shipped to there export / national destination. Each scan made during the journey is tracked in the Cellr Track & Trace platform. This data continues to build the provenance story.
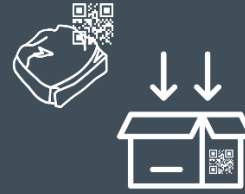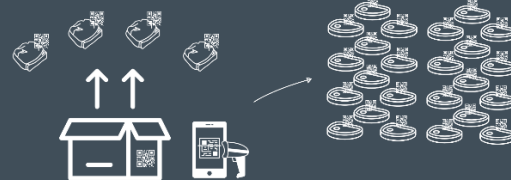
5.

Boxes are scanned upon arrival by the importer. Off the shelf scanners can be supplied with the platform if required. Boxes are scanned again on the way out to the Cut House.

6.

Primals are removed from the box for sub-cutting. This step requires the Primal tag being scanned in the Cellr system (handheld unit) to define the sub-cuts being produced. Each sub-cut is weighed and tagged ready for sale and references it's parent tag to prove provenance.

7.

Customers can now scan the individual serve with there smartphone to reveal it's provenance. Secondly, importers (or brands) can use this on pack QR Code to curate marketing content for the customer. This closes out the product journey with customer engagement.

2.0 Project Objectives

To develop and demonstrate to AMPC staff (and probably one Australian supply chain) the providers approach to offering a cost-effective and robust primal to steak, and steak to primal, traceability system, within a demonstration facility (i. e. not within an active supply chain).

3.0 Methodology

Cellr took an agile approach to this milestone. Our design led approach allows us to identify any risks, issues or flaws prior to writing any lines of code. Below are a few of the initial experimental designs.
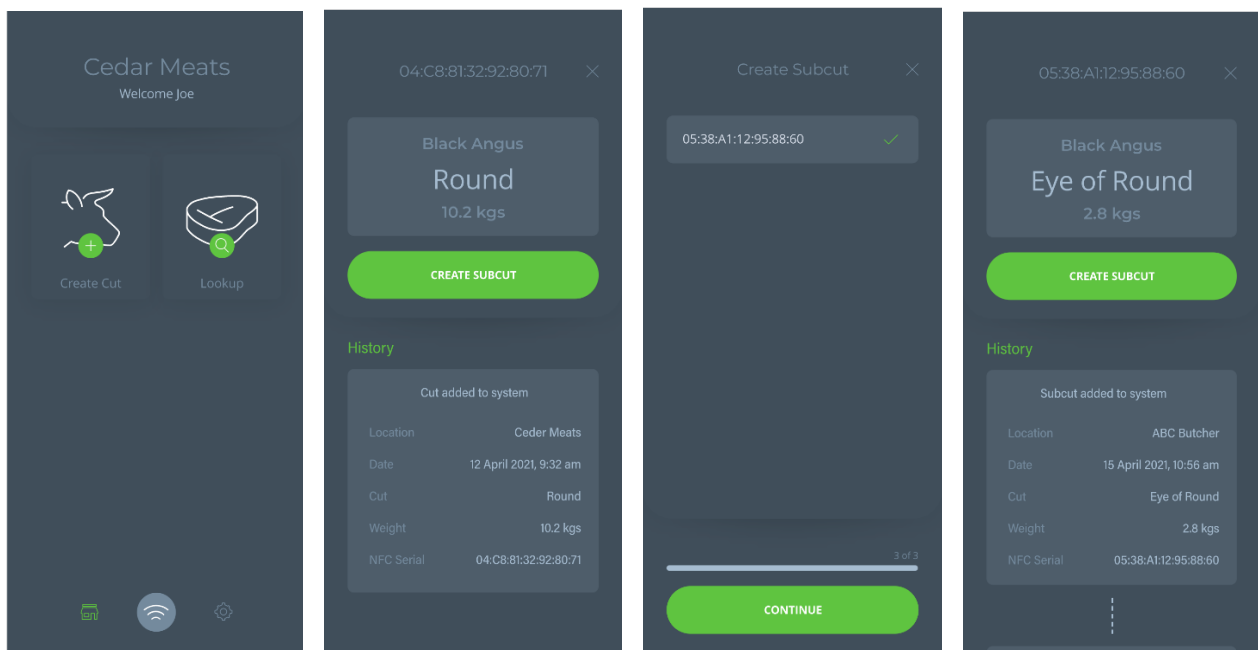
After the designs were shown to AMPC for high-level approval we set about programming the relevant elements. This was done by a Lead Software Engineer using the proposed coding profiles and techniques. Each week the Cellr team met on Tuesday and Thursday mornings during the milestone sprint. Whilst it is a company wide toolbox style meeting, we portioned time for the AMPC Traceability project as required to ensure no roadblocks stood in the way.

Any day-to-day coding conversations were had using the company Slack Channel..

4.0 Project Outcomes

The key outcomes for this phase of the project all lie in the successful delivery of the mobile applications and prototype traceability solution. Cellr achieved successful results in all aspects of the required milestones.

The system presented has the capability to do the following;

- ◆ Creation of a Producer
- ◆ Creation of a packing facility

- ◆ Login for authentication
- ◆ Creation of Primal Cuts with unique NFC/QR Codes for identification (Weight, cut and provenance (Producer))
- ◆ Active scan of Primal cuts with traceability history presented
- ◆ Predetermined weight min/max inputs
- ◆ Creation of Sub-cuts by packing facility
    - o Weight tolerances adjustable via the Cellr backend
    - o Error reporting
    - o Adjustable weight scale by slider for ease of use
    - o Automated process for the addition of multiple cuts at once
    - o Delivery of new "unique" NFC tags / QR Codes for each new sub-cut, with reference to the parent tag from the Primal for provenance traceability
- ◆ Active scan of Sub-cuts by a consumer without the need for an app to certify provenance
- ◆ Track & Trace display of all scan locations
- ◆ Customisable database for managing types of cuts / sub-cuts available within the platform

All these outcomes are transferable to the proposed solution and will form the foundation of the Phase 3 solution.

5.0 Conclusions / Recommendations

The required hardware to be introduced to the relevant manufacturing steps would be as follows;

- ◆ In-line weigh belt (perhaps like this - https://scaletronicglobal.com/product/in-line-weighing/)
- ◆ In-line QR Code printer (perhaps like this - https://www.limitronic.com/en/inkjet-technology/coding-and-in-line-marking-for-product-and-batch-traceability)
- ◆ Handheld scanner (perhaps like this - https://www.cfiglobal.com.au/products/mobile-scanning-devices/bht-1800/), Or mobile phone.

The additional software layer required will be designed to suit the final hardware selection, but as a high-level, these are the requirements;

- ◆ Full desktop application for housing and managing all tenants on the system
    - o Host (Cellr)
    - o Individual tenancies (Meat producers, packing facilities, importers, distributors (anyone in the supply chain)
    - o Producer management
    - o Provenance details (including parent tags for Primal cuts, Sub cuts, supply chain activity and producer profiles)
    - o Product Management
    - o Product Creation (primal, sub-cut and cuts including pre determined list of types)

- o   Track & Trace mapping and scan data analytics (supply chain and end consumer)
- o   Consumer marketing solutions (manageable by producers)
- o   Full integration with;
  - ▪   In-line weigh belt
  - ▪   In-line QR Printer and application arm/s
  - ▪   Cellr applications (iOS, Android and mobile units)

The project scope for Cellr's Phase 3 delivery is high-level as some key decisions need to be made around hardware and an internal system scope / review with the chosen producer and global supply chain links. We believe this initial scoping phase will **cost $25,000** +GST and include Cellr, AMPC, MLA? and the chosen supply chain participants and consultants. This scope of works will deliver the end-to-end solution required to bring this traceability solution to life for all of industry.

Our estimated project cost for phase 3 is $375,000 - $490,000 +GST. This project will build a commercial solution ready for rapid deployment at scale across all of industry (and other meat verticals). Software Integration points are key, so Cellr will design those in an open framework so that our platform is agnostic to third party systems within the industry participants.