

L28-Genesis

L28's Genesis blockchain primal to steak project

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Project Description

The L28 Steak to Primal blockchain project sought to overcome the transparency issues faced by Australian beef brands who don't control the end production of their beef in international markets. The major lack of transparency occurs with the breakdown of primal to steak. With little to no visibility of the end volumes of product sold using the National brand "Australian" or under the Australian establishment number and or the actual named brand, exporters are rightfully concerned duplication and substitution of beef could occur.

To achieve an accurate mapping of steak to primal in an international 3rd party facility the system needs to be simple and maintain production efficiencies for the international plant to adopt it. The project sought to separate the steak to primal mapping into two streams of photo matching and video monitoring.

Photo stations positioned post the weigh station at the Australian abattoir captured a photo of the cartons label face and the internal contents. These images were used to create a digital twin of the genuine article. The same station was replicated at the China factory. Passing the China photo station signified the opening of the carton for retail processing and captured the same replicated photos. Referencing the digital twin ensures the true and correct product had arrived at the international plant.

All image capture events were triggered by the scanning of the cartons unique QR codes. The scan was also committing the user's action to the Ethereum blockchain. The scan event was also used to map the CCTV video footage of the production event against the products UID storing the breakdown of the primal to retail pack for auditing if needed.

On top of the photo matching and video mapping weight controls were also implemented to prevent a duplication event of more retail weight being produced than what had been imported. The weight drawn down enabled the inheriting of the cartons supply chain story to be appended to the retail packed steak.

Project Content

The Genesis L28 primal to steak project sought to track the production of retail packed steaks inside a Chinese processing factory back to the primal it was cut from. The retail packed steak would then inherit the supply chain journey of the primal that was tracked from the Australian abattoir.

The Journey of the primal from Australia is tracked via multiple independent parties committing actions to the unique identifying data (UID) in the form of a QR code attached to the primal carton.

In the project each primal had actions committed by independent permissioned users of the genesis blockchain application by scanning UID's. The permission to commit actions was determined via the user having an account and password allowing them to log onto the blockchain field app. Actions by permissioned users were hashed and committed directly to the Ethereum main net from the field app.

Each action captured- Date, Time, UID, de-Identified username, Action committed, GPS coordinates.

Example of action

```
{"time":"2021-11-02T06:25:47.490172Z","cartonID":"655a64ba-1303-4ba0-92e5-fb16b9e83a0b","cartonCode":"CAR01284","productID":"b86ac273-726a-4cff-8f8f-8dd61bfa89b6","productCode":"P07698","entityName":"天津轩诚报关有限公司","location":"31.XXXXXXXXX, 121.XXXXXXXXX"}
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Project Outcome

The project was successful in developing the end-to-end system. The project was not successful in completing the BETA trial at the Chinese factory using the primals tracked from Australia.

The trial was impeded because the original Chinese factory with the integrated CCTV cameras installed was decommissioned. The factory was shut down because of Chinese Covid restrictions placed on processing of international meat. There were several successful mock trials completed at the plant.

Benefit for Industry

The system did provide a robust and cost-effective system for tracking steak to primal inside an international factory.

The major technical inhibitor faced by the project was a result of Chinese internet service providers not providing dedicated IP addresses. Without a constant and dedicated endpoint for the CCTV network video recorder storage the Genesis web app could not run-in real time. This prevented the Genesis Web app from being able to splice the video in real time and store the conversion of steak to primal against the carton and retail pack UID. A dedicated IP service was able to be purchased from the ISP providers, but costs varied from 20,000 to 40,000 AUD per annum. These costs would be an inhibitor if the cost was going to be passed on to the Chinese factory.

The CCTV solution did provide a low cost easily adopted digital capture point, but the video quality was limited. All Chinese factories approached were willing to share CCTV footage with brand. The common use of CCTV for reviewing manufacturing processes means this is a viable and accepted data sharing format.

The other technical difficulties faced was different provinces failed to get GPS coordinates from the field app devices. It was rigorously tested across multiple China locations with no definitive reason identified why certain areas would easily give GPS coordinates and others would not. This was overcome by reducing the GPS accuracy.

