

PROGRESS REPORT (June 2019)

WP2: Implementation of innovations in food traceability

BACKGROUND

The overall objective of WP2 is to address the concern that, in traditional traceability solutions, there is little that connects the physical reality of the food or drink products, and the digital record in the system. Whether this is through process failures or malicious intention, the result is the same – there is a perceived lack of trust in the underlying supply chain.

WP2 is investigating the use of innovative techniques and technologies to test the veracity of traceability solutions. These various approaches include the use of a blockchain network as well as a system to detect inconsistencies through supply chain mapping and analysis.

OBJECTIVES

- **Development of digitised DNA technology system for traceability:** The aim is the development of a cutting edge, digital DNA system for traceability. With traditional traceability tools proving to be cumbersome and no longer fit for purpose in many instances, this project seeks to demonstrate the effectiveness of the use of new technology, including blockchain, along with cost effective DNA techniques, in the advancement of the state of the art.
- **Development of risk-based traceability management tools:** WP2 aims to assess the requirements for, and develop, an early warning system for wine and pork supply chains. Task seeks to identify key points of risk and provide tools to warn when risks develop and mechanisms to maintain the integrity of the mapped chains.
- **Development of Pro-active Traceability Alerting tools:** WP2 is a direct extension of the work done during the development of the blockchain traceability solution in 2.1 It will provide an alerts and notification system that surfaces events that don't comply with the established ruleset of the mapped supply chain.
- **Value chain mapping and analysis for wine chains:**
 - (i) **Evaluation of data quality for wine chains:** Tasks approach the issue of the disconnection between physical product and digital data using a method based on detecting inconsistencies in recorded claims by undertaking value chain mapping and analysis.
 - (ii) **Specification of an alert system to guide further checks and analysis for wine chains:** WP2 focusses on the identification of risks leading to opportunities for fraud in wine supply chains. It will provide for a specification against which alerting systems can set their metrics including identification and categorisation of risk factors, as well as recommendations for mitigation steps to reduce them.

PROGRESS ACHIEVED SO FAR

- **Development of digitised DNA technology system for traceability:** Essentially complete. All pigs tracked from parent DNA through to delivery into China. Small delay on final DNA sample analysis due to incompatibility between lab techniques. Pork samples recently shipped back to UK lab for final assessment.
- **Development of risk-based traceability management tools:** Literature review completed and published. Work in progress for expert analysis of results and outcomes although there are challenges around availability of academic experts. Risk Trace software solution is still under development however it is already functional and displaying a rich feature set of supply chain management tools.
- **Development of Pro-active Traceability Alerting tools:** Prototype alert system already active in the arc-net platform. Work is beginning to assess an effective testing strategy based on already recorded data as well as the best methods to visualise and notify on the occurrence of alerts.
- **Value chain mapping and analysis for wine chains:**
 - (i) **Evaluation of data quality for wine chains:** Information sharing portal/WiKi developed and published to assist with data coordination. Data sources in both EU and China identified and data collection has already begun via multiple means including comprehensive interviews with a variety of subject experts.
 - (ii) **Specification of an alert system to guide further checks and analysis for wine chains:** Collaboration with various other WP partners is already underway and data relationship between other tasks and how that interacts with this one is currently being discussed. Work to establish the specification is currently commencing and we should start seeing early results throughout this next quarter.

SUCCESS STORY COMING SOON

With the demonstration of a complete traceability example of pork moving from Cranswick farms to China, complete with DNA analysis, we are looking at key areas to expand the solution to make it ready for commercial markets.

The work in Development of risk-based traceability management tools, as well as the expansion of the arc-net platform in Pro-active Traceability Alerting tools, bring alerting and warning systems to the existing traceability solution. This brings opportunities to predict supply chain issues before they occur and identify them in real time as they do. By adopting these complete solutions into the pork (and meat in general) production industry, we can offer secure, trustable, and transparent traceability leading to increased safety and confidence in the EU-China supply chain.