

CASE STUDY

FOOD PROVENANCE WITH BLOCKCHAIN



Distributed Ledger Technology enables the user to upload data to a large database that is accessible to many actors [1]. The data becomes immutable once uploaded to the ledger. In addition, the technology enables the tokenisation of physical items, information to be shared about the physical item and for it to be transferred between individuals. To make actors accountable, each piece of information uploaded is autographed with a digital signature, which is equivalent to a physical signature and carries the same authority in law [2]. The information is then stored in a distributed manner, which maintains security across the network.

Over the past century, the food produce industry has followed the modern trend of increasing globalisation. It has become increasingly difficult for consumers to be able to authenticate the origin of raw produce. It was reported in 2017 that 8 out of 10 consumers look for the origin of their produce before making a purchase [3]. Subsequently, consumers' concern regarding the authenticity of their produce will only grow as scandals continue. Scandals demonstrate at best that some producers are ignorant of the provenance of their product and, at worst, actively attempting to subvert the trust of the consumer.

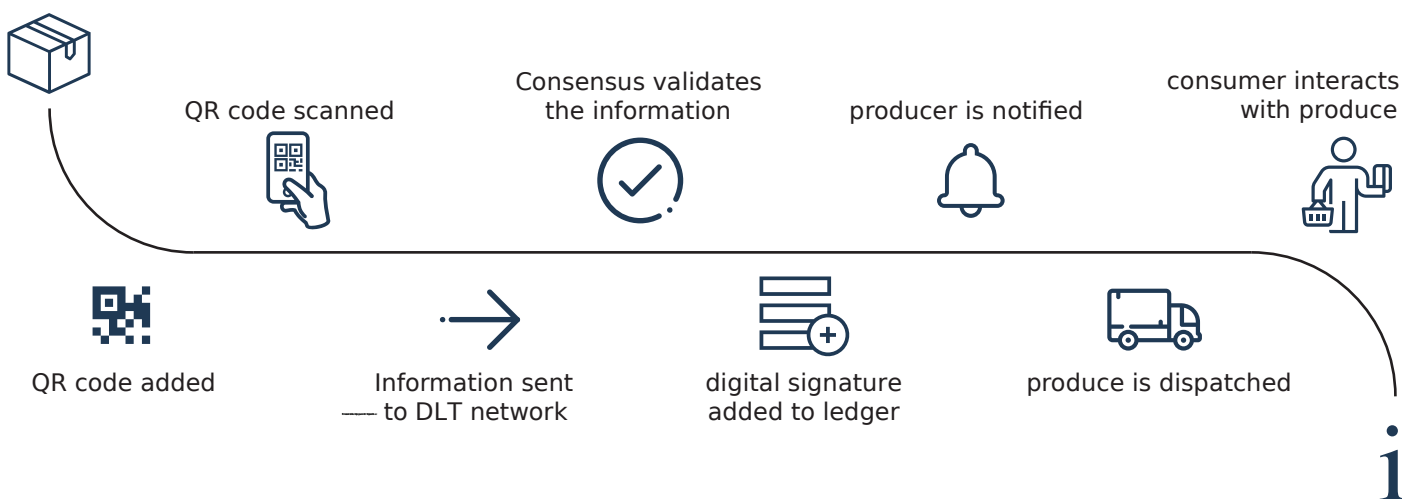
This leaves consumers relying on blind faith in packaging and marketing of the produce. Additionally, it doesn't allow the producer to be

differentiated against their competitors' credibility and accountability.

DLT is a solution for food provenance challenges because it enables actors to work together in a trustless environment. There has become a disparity between the production of the produce and the information that is on the packaging; for example, Pret a Manger claimed natural sandwiches but were caught including e-numbers in their bread [4]. Consequently, producers in the food provenance supply chain process require a solution that increases transparency between producers and consumers. By using DLT, producers are able to authenticate their produce and consumers are able to access immutable data to validate the claims on packaging or labels. Thus, there is more transparency throughout the supply chain and producers are able to boost their credibility.

Red Skies is offering a Provenance solution that allows producers to store data immutably and, subsequently, authenticate their produce. A producer (i.e. a farmer) will harvest their goods and then upload the information about those goods onto the ledger with their digital signature; the data could include geographic location, time of harvest and the producer's information. The ledger would then store immutable data linked to the producer's digital signature, which a consumer can access by scanning a barcode.

Harvest is packaged



A general example of the Red Skies Provenance solution for the food provenance market, which would be tailored to a client's individual requirements.

consumer receives all information about the life-cycle of the product

The solution is beneficial for the producer and the consumer. As stated above, the consumers are increasingly conscious of the origin of the produce that they purchase for a myriad of reasons, such as environmental concerns, ethical reasons and sustainable goals [5]. The consumer is provided with immutable data regarding the produce that they are purchasing using Red Skies Provenance solution; consequently, consumers are able to make an informed decision when purchasing produce because they can know if the produce aligns with their concerns.

The data provides trust between the producer and consumers, which can be strengthened over time with an increasing volume of data regarding each product when more information is added to the ledger by the producer. It is generally accepted that members of a supply chain with sustainable practices decrease the risk of losing business and, consequently, create brand loyalty and faith in their product [6].

The Red Skies Provenance Solution enables all producers to gain credibility, accountability and transparency with their consumers. Subsequently, any produce that is faulty or does not adhere to food standards is traceable to the initial producer and action can be taken quickly and effectively. The Red Skies ledger provides the opportunity for the producer, or any member of the supply chain, to highlight the sustainable nature of their produce. This aligns with the increasing demand for environmentally friendly production of produce and consumers growing demand for natural, organic and sustainable produce.



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