Ecosystem innovation: multi-party systems in agri-food

Origin Chain Networks
Agri-Trust – A Future of food we trust

Agriculture 4.0, regenerative/carbon tech and connected marketplace services
Problem
Gaps in the origin story of food

Provenance + farming practice  Freshness + time to market  End of life waste mgt
Co-creation of digital food provenance

Provenance + farming practice
- gCO2e/kg
  - Dairy: 4.5g
  - Beef: 20g

Freshness + time to market
- 10% transport
- 10% storage
- 80% accumulates over lifetime on farm

End of life waste mgt
- Retail: up to 12%
- Consumer: 6%
- Waste: 18%
- up to 23%
- 31%
- 56%

10% +18-56% loss due to waste

Freshness + time to market
- Dairy: 4.5g (5 kcal), 14 kcal
- Beef: 20g (14 kcal)

End of life waste mgt
- Retail: up to 12%
- Consumer: 6%
- Waste: 18%
- up to 23%
- 31%
- 56%

Provenance + farming practice

Gaps in the origin story of food
Agri-Trust + Fieldnotes mobile-farming

Used by farmers and fieldworkers, Agri-Trust evaluates self-reported farm habitat assessment, assures sustainability in food provenance and enables food value chain transparency for all.
Universal Farm Compliance App - on/off chain data flow analysis

Data-related operations of stakeholders: Farmers, landowners, agri-food compliance authorities (Dept. of Agriculture, Teagasc, Bord Bia and others eg Organic Trust), co-ops and food processors and technology service provider (OriginChain).

<table>
<thead>
<tr>
<th>Off-chain data flow</th>
<th>On-chain data flow</th>
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<tbody>
<tr>
<td><strong>B: non-DLT systems:</strong></td>
<td><strong>C: Admin system:</strong> Service provider - @OriginChain</td>
</tr>
<tr>
<td>Farmers and landowners:</td>
<td><strong>D: User systems: workflow engine</strong> Report, audit and compliance certification.</td>
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<tr>
<td>- Other farm mgt systems</td>
<td></td>
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<tr>
<td>Compliance authorities: DAFM, Teagasc, Bord Bia - eg SBLAS scheme Set, monitor and audit licencing and regulatory compliance.</td>
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<tr>
<td><strong>Existing CRM / enterprise systems:</strong></td>
<td><strong>Node B</strong> EU Public Network</td>
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<tr>
<td>- DAFM</td>
<td><strong>Node C</strong></td>
</tr>
<tr>
<td>- Co-ops + food processing plants</td>
<td><strong>Node D</strong></td>
</tr>
<tr>
<td><strong>A: other- DLT system</strong></td>
<td><strong>Z: Public Network - EBSI v1.0 node</strong> Hyperledger / Ethereum BESU.</td>
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<tr>
<td>Onboarding, KRY and identify mgmt. [Hyperledger mno]</td>
<td>National partners running nodes: OCN, government dept (DEFM, DEPR) academic research centre.</td>
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</table>

F. Delaney - Winner (Individual) CEN Innovation and Standards Award 2020. @OriginChain - Winner National Innovation Award 2020.

Award-winning open source solution to digital trade and interoperability challenges in the single digital marketplace. Outstanding contribution to food-tech and agri-assurance.

EU Standards and Innovation Award 2020 + National Innovation Award 2020.
Blockchain technology offers “increased value for partners cooperating in a decentral network, by providing data and process integrity, automation potential and enabling the transparent transfer of values and rights.”

Decentralized Business Model Canvas

- Problem: Top 3 problems
  - Multi-party
  - In need of transformation

- Solution: Top 3 features
- Unique Value Prop.: Single, clear and compelling message that states why you are different and worth buying
- Unfair Advantage: Can’t be easily copied or bought

- Customer Segments: Target Customers
  - Consortia building - governance
  - Important validation

- Cost Structure: List your fixed and variable costs.
  - Customer acquisition costs
  - Distribution costs
  - Hosting
  - People
  - Etc.

- Revenue Streams: List your sources of revenue.
  - Revenue Model
  - Life Time Value
  - Revenues
  - Gross Margin

Note: are customers also users? Are they co-creators of value in the system? eg prosumers?
## Five agri-food contexts where DLTs are already deployed
(Source: ISO DTR6039)

<table>
<thead>
<tr>
<th>Context</th>
<th>Description</th>
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<tbody>
<tr>
<td><strong>Corporate social responsibility schemes</strong></td>
<td>Corporate brand values are enhanced by limiting impact and/or protecting endangered habitats - boglands, native woodlands, fresh watercourses e.g. JBS’s (global beef producer) Green Platform initiative in the Amazon.</td>
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<td><strong>Traceability optimisation</strong></td>
<td>Farm to fork transparency, swift product recall and enhanced consumer trust e.g. IBM Food Trust, Trace Alliance and GS1 /EVRYTHNG pilot scheme</td>
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<tr>
<td><strong>Food integrity assurance + fraud countermeasures</strong></td>
<td>IGP, protected marine species and other high-value product category protection e.g. Consorzio Arancia Rossa, FishCoin, BeefLedger, TMail</td>
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<td><strong>Decentralised Finance (DeFi)</strong></td>
<td>Peer to peer market place, transparent securitisation and crowd-funding. E.g. tokenising produce and on-farm assets in Argentina with Abakus Co., World Bank’s sponsored Agri-Ledger Co. to deliver fair and timely payments to farmers in Haiti and Congo.</td>
</tr>
<tr>
<td><strong>Industry/Agriculture 4.0/Bioeconomy</strong></td>
<td>Integrated approach to applying emerging technologies including Cloud (IoT, edge, fog and transparent computing) AI and DLT to accelerate, efficiency, sustainability and profitability. E.g. Breedr, Ripe.io, Origin Chain Networks</td>
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</tbody>
</table>
“New decentralised digital technologies offer individuals and companies an opportunity to manage data flows and usage, based on individual choices and self-determination.

Such technologies make ‘dynamic data portability in real time’ possible, along with various compensation models.”

Source: EU strategy for Data, 2020
Multi-party systems interoperability in agri-food

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