

Icebreaker One advances data sharing governance for farming supply chains

The development of a robust data governance framework for supply chains has the potential to transform UK agriculture by promoting trust, facilitating financial accessibility, and advancing sustainability. Digital Catapult, which aims to improve supply chain resilience and enable deep tech companies to scale, supported Icebreaker One through the Made Smarter Innovation | Digital Supply Chain Hub programme.

Icebreaker One (IB1), a nonprofit focusing on data and sustainability, collaborated with experts from the Digital Supply Chain Hub programme to address the governance challenges of supply chain information exchange, focussing on building trust around sharing data between organisations in order to develop an advanced data governance system.

For this project, IB1 convened supply chain stakeholders who identified fertiliser usage as the priority use case. Fertilisers are a significant driver of global greenhouse gas emissions, and for many arable farms, [can contribute to 80% or more](#) of their total carbon footprint. Farmers could reduce the emissions associated with fertiliser use by as much as [80% by 2050](#) through measures such as optimising application techniques, adopting precision agriculture, and transitioning to organic or low-emission alternatives.

Concurrently, financial organisations are interested in understanding financed emissions (that is, greenhouse gas emissions associated with investment and lending activities) within agriculture, as well as financing the transition to sustainable farming practices. However, achieving these aims requires access to trustworthy data from across the supply chain. Current methods of sharing data from farms to financial organisations are inconsistent and often manual, creating additional costs and inefficiencies, as well as risks regarding data quality. Sharing consistent, reliable data across a collaborative supply chain would support green lending, improve efficiency, reduce costs, and contribute towards the UK's net zero targets.

Creating a trust framework MVP

Funding from the Digital Supply Chain Hub delivered by Digital Catapult enabled IB1 to:

- Establish an Advisory Group for governance framework co-design
- Develop machine-readable supply chain assurance signals to automate data validation
- Create a minimal viable product (MVP) to pilot the solution within the agricultural supply chain

The collaborative Advisory Group represented stakeholders from across the food supply chain, tech and financial sectors, including Digital Catapult, DEFRA, Lloyd's Banking Group and the Soil Association Exchange. Acting as the governance mechanism, the advisory group helped co-define the use case and proposed rules to enable data sharing in an open, automated, scalable, decentralised and interoperable way for the MVP.

IB1's solution for supply chains was based on the tried and tested foundations that delivered Open Banking and Open Energy, where data from multiple providers and companies is shared through interoperable secure connections. The identity, provenance and assurance technology developed for automated emissions reporting (IB1's [Perseus project](#)) was used unchanged as a container for the supply chain-specific assurance signals, meaning the data could be trusted as the source and quality of the data verified. The IB1 team also leveraged their existing relationships with financial organisations such as Lloyds, Rabobank, and the Development Bank of Wales to ensure the system met industry needs and was aligned with existing financial sustainability assessment protocols.

The implementation codified supply chain rules into a trust framework that specifies how supply chain data can be used. The resulting MVP defines how assurance signals can be used to provide a higher degree of trust and establish the data infrastructure for trusted data sharing through the creation of signed provenance records.

Validation through the Digital Supply Chain testbed

Testing within the Digital Supply Chain Hub testbed enabled the validation of the supply chain assurance signals and practical feasibility assessment of the data-sharing framework.

Using the testbed, IB1 was able to co-design a system to create rules around information and value sharing with ecosystem participants. This de-risking of information sharing resulted in an increase in the exchange of information and value between participants and the Digital Supply Chain Hub ecosystem partners. This

resulted in improved decision making, due to the enhanced trust, transparency and collaboration the system provides.

“This was a successful discovery project to validate the potential for future work, and dispelled the notion that centralised data sharing was the only solution.”

Gea Mikic, Icebreaker One Co-founder & Programme Director

Supporting the future of UK farming

Through the experimentation within the testbed, all partners recognised the value in using assurable supply chain data to de-risk investment and collaborated to inform the solution, and adopting a relevant use case fostered engagement and enabled quicker decision-making.

When deployed in a future extension of the project, IB1's technical solution would lead to the development of a framework that is able to monitor and enforce the rules for sharing information across supply chains – and between technology companies – and that can attribute value to that data sharing. This will facilitate:

- Improved financial decision-making to lower the costs of financing
- Enhanced carbon reporting capabilities for compliance with sustainability goals
- Reduced costs and risks associated with unreliable and fragmented data

Technology developed for other sectors can be used to govern supply chain data and maximise future interoperability.

Taking the solution to the next level

To fully implement a data governance framework, IB1's recommended next steps are to:

- Validate assurance signals through engagement with UK arable farmers and their supply chains
- Continue to convene the Advisory Group to ensure the effective co-design and implementation of a market-wide solution
- Deliver a demonstrator that shows assurable data flowing from farm to bank
- Co-design implementation of a technical demonstrator that establishes the data infrastructure, including assurance metadata records

About Icebreaker One

Icebreaker One is a neutral non-profit that works on data sharing and sustainability. They convene organisations and governments to design and deliver data governance solutions at market scale. Their mission is to make data work harder to deliver net zero.

<https://ib1.org/>

<https://www.linkedin.com/company/icebreaker-one/>