

# CANARD BLEU

## Strengthening Supply Chain Resilience through Distributed Data and Orchestrated AI

### Introduction

Global supply chains are the lifeblood of the modern economy, connecting manufacturers, producers, logistics providers, retailers, and consumers across continents to deliver goods worldwide. But these complex ecosystems, with many interdependencies, are also fragile. Shocks like COVID-19 exposed the vulnerability of supply chains to disruptions from both demand and supply shifts.

A vital but often overlooked component of resilient and innovative supply chains are the small and medium enterprises (SMEs) that make up the bulk of businesses. Representing about 90% of companies worldwide, SMEs account for over half of global employment and GDP. However, SMEs have more limited access to the capital, data, and tools needed to weather crises and maximize competitiveness.

Addressing the innovation constraints facing SMEs is critical not just for their success, but for entire supply chains. This demands new approaches for responsibly sharing data and orchestrating artificial intelligence in an equitable manner. Unlocking the power of collective insights from across supply chain actors is key to overcoming data barriers and driving efficiencies. But this must be done in a way that respects privacy, security, and ethical considerations.

### The Canard Bleu Consortium

Canard Bleu represents this next evolution in supply chain digitization and trustworthy AI adoption. Launched in 2021, Canard Bleu is a first-of-its-kind consortium spanning financial services, logistics, technology and academic partners. Supported in part by the Canadian Supercluster Scale AI, its mission is to advance the adoption of protocols and processes for compliant data sharing and federated learning. This empowers SMEs with access to enriched analytics while protecting commercial interests and mitigating risks.



Canard Bleu's technical protocols enforce data protection and algorithmic accountability. Its distributed architecture reduces centralized surveillance risks. Ongoing governance and oversight identifies emerging concerns and holds members collectively responsible. By cementing these foundational elements, Canard Bleu aims to set new norms and shape policy conversations on data commercialization.

This white paper examines Canard Bleu's innovative approach and shares key lessons for organizations navigating their digital transformation. It provides insights on extracting value from data across organizational boundaries while ensuring responsible governance over how it is used.

## Strengthening Supply Chain Resilience

Global supply chains face unprecedented complexity and uncertainty. Small shocks can ripple across continents. One persistent challenge is that most organizations still keep data trapped in internal silos. While enterprises have invested heavily in collecting and managing data, extracting insights across business units and with external partners remains limited. This constrains the accuracy of risk models, forecasting, and other AI use cases.

For SMEs, the data barriers are even more acute. Without access to rich industry datasets, SMEs lack the inputs for honing predictions and optimizing operations. And with limited financial history or credit data, SMEs struggle to secure affordable capital that larger buyers can access. This imbalance often forces SMEs to accept stricter payment terms that squeeze working capital and cash flows.

The impacts of data asymmetry and constrained capital are pronounced in trade financing. The World Trade Organization estimates over 50% of SME trade finance requests are rejected. Late payments cost SMEs over \$3 trillion annually. The result is stunted investment, hiring, and growth for SMEs that are foundational to supply chain resilience.

To address these challenges, Canard Bleu creates a secure data and insight sharing architecture so participants can benefit from collective insights without losing control of proprietary data. This balances interests across buyers, sellers, and funders.

Rather than pooling raw data, algorithms run locally against federated data sets. Partners maintain data sovereignty while unlocking new value via aggregated analytics. Machine learning models can also be trained collectively using techniques like split learning.

The initial use case focuses on pre-shipment trade finance offerings to improve SME liquidity. With access to diverse and non-traditional data sets, innovative risk models can be developed. Trustworthy insight sharing between the ecosystem actors enhances visibility



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into payment risks and capacity constraints. SMEs gain faster access to capital, unlocking investment and growth.

This approach aligns incentives for data exchange without the high-risk of centralized stores.

The economic upside for SMEs, buyers, and lenders encourages collaboration. Over time, data quality and model accuracy improve as the consortium expands. This self-reinforcing cycle drives adoption.

### **Canard Bleu’s Enabling Technology**

Enabling secure yet impactful data sharing across independent organizations is technically challenging. Each consortium member rightfully wants to maintain control of its commercial data. But preventing any external access also defeats the purpose of collaboration.

Canard Bleu navigates this dilemma through its distributed architecture that connects data and algorithms in a layered manner. This allows joint insights to be produced from federated sources without compromising security or privacy.

The foundation of Canard Bleu’s architecture is its protocol for portable data queries. This lets algorithms from authorized entities analyze data sets remotely without transferring underlying data. All computation occurs in trusted localized environments instead of a centralized pool.

Metadata allows discovery of available data resources for modeling. Queries are defined based on required inputs and performance criteria. Verified algorithms then execute against relevant data sets and return aggregated non-identifiable outputs. This enables collaborative AI development without raw data leaving data repositories.

Federated learning techniques complement the distributed query protocol by training statistical models across datasets. Rather than consolidating data into one model, separate models are maintained locally and their learnings synthesized. This means models benefit from wider data access without sacrificing confidentiality.

Together, this stack allows Canard Bleu to innovate in the use of data and AI across commercial borders in a secure, responsible, and mutually beneficial manner. The economic incentives encourage open yet bounded data sharing that drives supply chain resilience. Transferable lessons from Canard Bleu’s decentralized architecture can inform data ecosystems and partnerships across sectors.

### **Delivering Impact**

By aligning innovation with sustainable and equitable value distribution, Canard Bleu incentivizes participation throughout the ecosystem. The aggregate impact can be seen in economic, operational, and social dimensions and can be scaled as the consortium grows.

## The Road Ahead

Beyond the collective benefits of a healthy and sustainable data ecosystem, Canard Bleu also delivers tangible value directly for each consortium member.



For technology innovators, Canard Bleu serves to demonstrate the value of core enabling technologies operating in live commercial settings to accelerate product and market development.



For enterprise partners, Canard Bleu unlocks new partnership models to achieve win-win outcomes with clients and ecosystem partners. First mover advantage in ethically harnessing collective data resources also strengthens their competitive positioning in the market.



For SME participants, Canard Bleu provides access to capital, data-driven insights, and technology that serves to level the playing field. It also gives SMEs a seat at the table in shaping responsible data value creation.

In an era of mounting uncertainties, responsible data sharing and AI innovation can deliver stability along with progress. Canard Bleu embodies this ethos through its novel approach for collaborative intelligence across decentralized partners. Its trusted architecture, inclusive governance, and secured data rights provide a model for what sustainable data ecosystems could look like. But Canard Bleu's most unique impact is how it empowers historically disadvantaged actors like SMEs. Leveling asymmetric information distributions and unlocking access to technology resources reshapes how risks, returns, and power are allocated. Beyond material benefits, this capacity building and representation creates more resilient supply chains for the future.

Looking ahead, Canard Bleu offers a glimpse into how organizations of all sizes can thrive amidst disruption. Its embrace of emerging technologies with sound ethics and human centered design provides a template for change. The future of shared prosperity depends on cooperation just as much as innovation. Canard Bleu lights the way.

### GRANTING AGENCIES



### CONSORTIUM LEADER



### CONSORTIUM PARTNERS



### COLLABORATORS

