NOVA — Market architecture for a trusted data-enabled economy

NOVA (Networked, Open, Verifiable Architecture) enables secure, open, trusted, data sharing — embedding governance, standards and incentives, that address real-world challenges. NOVA is a living framework, continuously refined by real-world outcomes.

1 **ISOLATED** *Locked away in proprietary systems*

2 **CONNECTED** *Bilateral contracts*

3 **INTEROPERABLE** *Common open standards*

4 **ASSURED** *Legal interoperability, verifiable & linkable between a sector/community* (NOVA compliant)

5 **TRUSTED OPEN MARKET** *Interoperable across the economy — default state for UK data infrastructure* (NOVA compliant)

Example NOVA-enabled markets

Open Banking Standard (UK) *Regulated, verifiable*

Open Energy (UK) *Voluntary, verifiable*

Healthcare Federated Sharing *Policy-led, attribute-based*

Smart City Platforms & Ecosystems *Purpose-led governance*

Siloed → Connected

Networked *Modular Federated Interoperable*

Open *Access via Open APIs Open Standards Transparent governance*

Verifiable *Assurable Rights-based Permissioned*

Architecture *Open market architecture with robust, adaptive governance*

NOVA supports leading data principles and frameworks.

INSPIRE *Ensures geospatial data is consistent*

CARE *Protects people's rights & privacy*

FAIR *Helps data work across different systems*

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NOVA — Networked, Open, Verifiable Architecture

Addressing the Market architecture for a trusted data-enabled economy

Introduction

NOVA helps illustrate how to talk about developing a trusted, data-enabled economy from a market architecture perspective.

A 'NOVA-compliant' solution embodies a coordinated structure of interoperable rules, governance, and infrastructure that connects actors across sectors while ensuring data flows are lawful, rights-based, and fit-for-purpose.

It is not a platform or standard, but a framework to ensure platforms, organisations, and institutions can collaborate safely, transparently, and competitively. It reflects the way markets are working and evolving today such as Open Banking, the direction of the recent UK Data Act and pioneering initiatives such as Perseus, Open Energy and Open Property.

Delivering NOVA-enabled markets requires coordination between commercial, non-commercial, research, and government actors, whether the resultant outcomes are regulated or not. Note that 'data lakes' and other centralised databases are also members of and participants in an open market.

If you have comments, or are interested in discussing or using NOVA, please contact **research@ib1.org**. If you would like to join our network of fellow-travellers (it's free), please sign up at https://ib1.org/constellation

IB1, https://ib1.org/nova

Overview

NOVA reflects the processes behind trusted data sharing on the web, enabling **networked participation**, built on **open standards**, and backed by **verifiable processes**. It blends centralised, collaborative governance with decentralised data sharing to build connected ecosystems of trust.

Networked

Data infrastructure must support **modular**, **federated** and **interoperable** participation across organisations, sectors, and jurisdictions.

- **Modular**: embody what is needed in a repeatable, cohesive and scalable manner
- **Federated**: support the coexistence of multiple platforms, protocols, and providers
- **Interoperable**: systems (not just technical, but also legal and operational) must be able to interact with low cost and friction, with harmonised approaches

Open

Data infrastructure must be grounded in **open standards, API-enabled access,** and **transparent governance.**

- **Open standards:** standards which are openly accessible and usable by anyone
- **Open APIs**: a web-addressable interface that enables machine-enabled data exchange
- **Transparent governance:** clear, accurate, and timely disclosure of policies, decisions, performance and impact

Verifiable

Data infrastructure and data access, usage, and governance must be assurable, rights-based and permissioned.

- **Assurable**: that the process of joining as a member, and of enabling data transfer and use can be audited, tracked and held to account
- **Rights-based**: data sharing is based on legal and related rights, codified in a contract, and enabled between assured members
- **Permissioned**: where relevant, or required by law, that permission or consent is given from the business or consumer, or that pre-authorised permission is determined by contract

Architecture

Data infrastructure must optimise for market access while enabling adaptive governance, whether market participants are data providers or data users, to ensure an open market.

- **Market access**: enable any Verifiable actor to enter the market
- **Adaptive governance**: define, iterate at market-relevant pace, enable, and facilitate scalable enforcement of, the rules
- **Open market:** ensure private sector, public-benefit, and national interests are addressed

How can NOVA be used and complement other principles?

NOVA focussed on market governance, with an architecture that supports the design and delivery of sector-specific and cross-sector data sharing initiatives. It helps frame:

- Which market **actors** should be involved
- What **rules** and **roles** are required for trusted participation
- What **legal** and **technical** infrastructure is required to operate at scale
- How interactions can be managed with **policy**, **regulation** and **codes** to enable lawful data flows
- What interoperability conditions are required for **scale**, **reuse** and **redress**

Principle	Strength	Role in a Scheme	When to Prioritise
NOVA (IB1)	Market architecture for trust	Coordinated governance, legal-policy-tech alignment, verifiability	When enabling trusted, cross-sector data sharing at national or economy scale
FAIR	Technical interoperability	Metadata schemas, AI-readiness, semantic alignment	When maximising data reuse and cross-platform compatibility
CARE	Ethical and rights-based governance	Community-led consent, sovereignty, benefit-sharing	When data involves Indigenous or marginalised communities

Example or related frameworks and directives

GEMINI (via CDBB UK-led)	Values-based information management	Framework for federated, purpose-led digital infrastructure	When designing data systems across built environments. Infrastructure modernisation.
INSPIRE (EU led)	Geospatial interoperability	Standards for environmental and location data exchange	When handling spatial, planning, land, or utility data