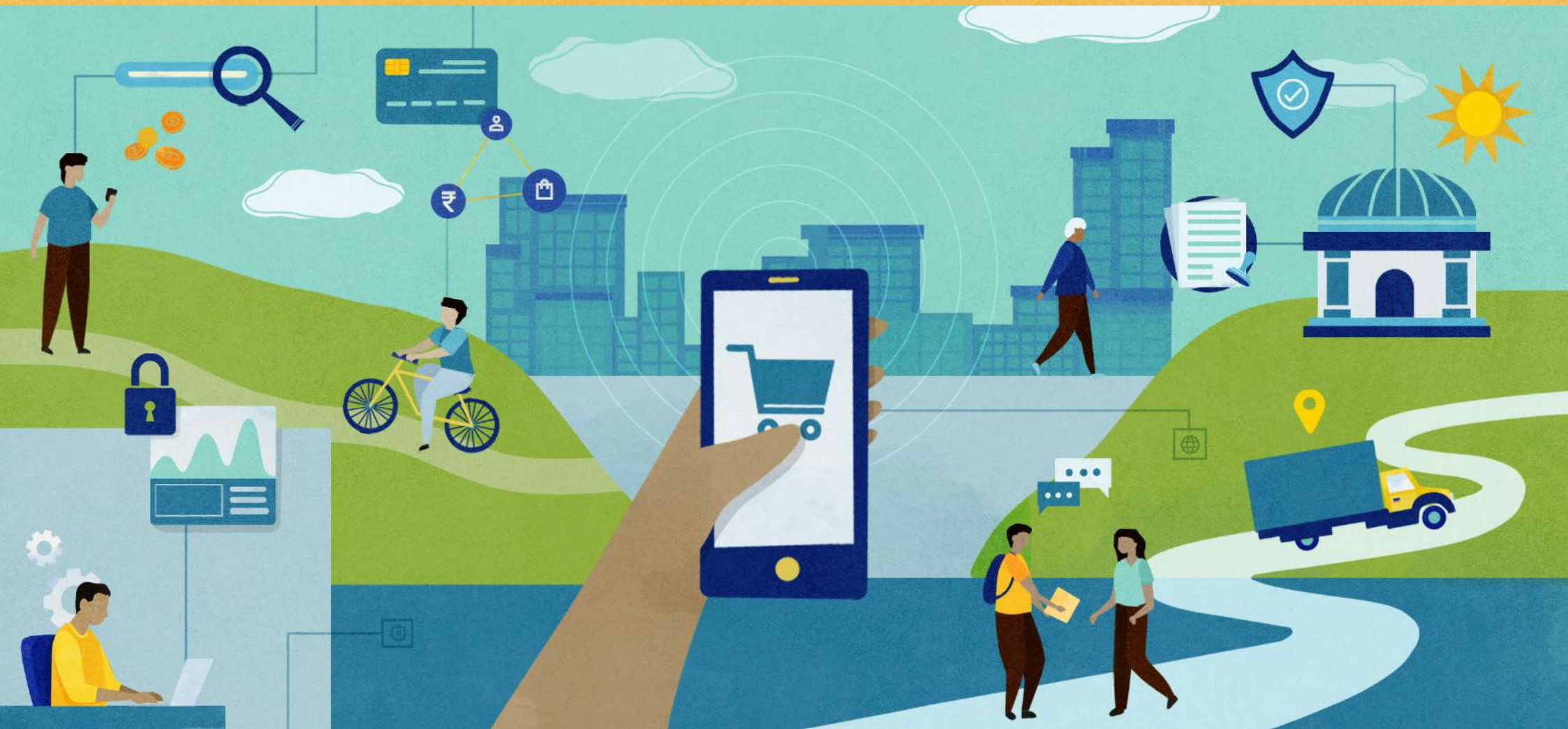
ONDC
Open Network for Digital Commerce

# Handbook on building Open Networks

*The journey of ONDC so far*



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# About the handbook

## What is the purpose of this handbook?

The handbook maps the evolution of the Open Network for Digital Commerce (ONDC) - from a nascent idea to its current status as a pathbreaking digital public infrastructure for digital commerce. It attempts to dissect technical, governance and sustainability considerations that underpin ONDC and the fundamental building blocks of the network ecosystem, while presenting a decision making framework for readers interested in establishing similar open networks. Also, it provides the rationale for making those choices among the many available options. It presents a matrix of choices made by ONDC and the attendant consequences and the fundamental building blocks of the network ecosystem. Lastly, the handbook offers practical suggestions and checklists, surfacing pathways for implementation.

## Who is this handbook for?

The handbook is designed to build a shared understanding about ONDC and open networks amongst diverse stakeholders. This includes individuals, businesses, startups and governments that are looking to leverage ONDC or build their own context-specific, purpose-built open networks. Ultimately, the handbook functions as a tool to leapfrog digital commerce journeys.

## How can you use the handbook?

The handbook is divided into five chapters, opening with an introduction to ONDC, combing through technology, governance and sustainability, and closing with a section on goals and impact.

Each chapter contains the following:

1. **Context** that compiles relevant literature on the chapter's theme.
2. **Spotlight** which demonstrate how certain institutional choices are embodied by ONDC in its current structure.
3. **Enablers** to surface operational considerations for building forthcoming open networks.
4. **Principles** to outline the design considerations for building forthcoming open networks.

To make the most of this handbook, keep an eye out for:

**Additional resources**, which are marked with the ⓘ symbol, and the **readiness checklist,** marked with the 👍 symbol, at the end of the handbook.

# Glossary & abbreviations

| | |
|---|---|
| **beckn Protocol** | A set of lightweight, open, and interoperable specifications that allow buyers and sellers to freely choose any digital application at their respective ends to undertake commerce transactions without a platform between them. (beckn) |
| **Digital Public Infrastructure (DPI)** | A set of shared digital systems which are secure and interoperable, built on open standards, and specifications to deliver and provide equitable access to public and / or private services at societal scale and are governed by enabling rules to drive development, inclusion, innovation, trust, and competition and respect human rights and fundamental freedoms. (India's G20 Presidency) |
| **Decentralisation** | There are two forms of decentralisation. First, the decentralisation of data by not hosting it in a central repository. Second, the devolution of services and control from a central authority to the participants in the network ecosystem. (Aapti analysis) |
| **Interoperability** | The ability of different systems, devices, or applications to exchange and use information effectively—crucial in DPI as it enables integration, cooperation, and the exchange of information across digital systems. (European Data Protection Supervisor) |
| **Minimum viable product (MVP)** | Minimum Viable Product or MVP is a development technique in which a new product is introduced in the market with basic features, but enough to get the attention of the consumers. The final product is released in the market only after getting sufficient feedback from the product's initial users. (The Economic Times) |

# Glossary & abbreviations

| | |
|---|---|
| **Modularity and extensibility** | An extensible system that meets a population's changing requirements by using modular reusable building blocks. These may be plugged in different systems to activate new features. (Aapti analysis) |
| **ONDC's Domains and categories** | In the the ONDC Network, domains distinguish the way products and services are bought and sold. Categories refer to products and services with similar market or usage characteristics. (ONDC integration Guide) |
| **Network Observability** | Network Observability is a framework to observe business and technical health of the network to uncover actionable insights. Its objective is to enhance interoperability, transparency and trust among network / ecosystem participants on the ONDC network by facilitating them to develop self-correction capabilities and evolve to scale in an unbundled environment. (ONDC White Paper on Network |
| **Open network (ON)** | Open networks are a non-platform digital commons where buyer and seller parties can transact and interact provided that they conduct business using interoperable digital means built on open protocols and open source specifications. (ONDC Strategy Paper) |
| **Open Network for Digital Commerce (ONDC)** | An initiative by the Government of India aimined at promoting open networks for all aspects of exchange of goods and services over digital or electronic networks. (Press Information Bureau, India) |

# Glossary & abbreviations

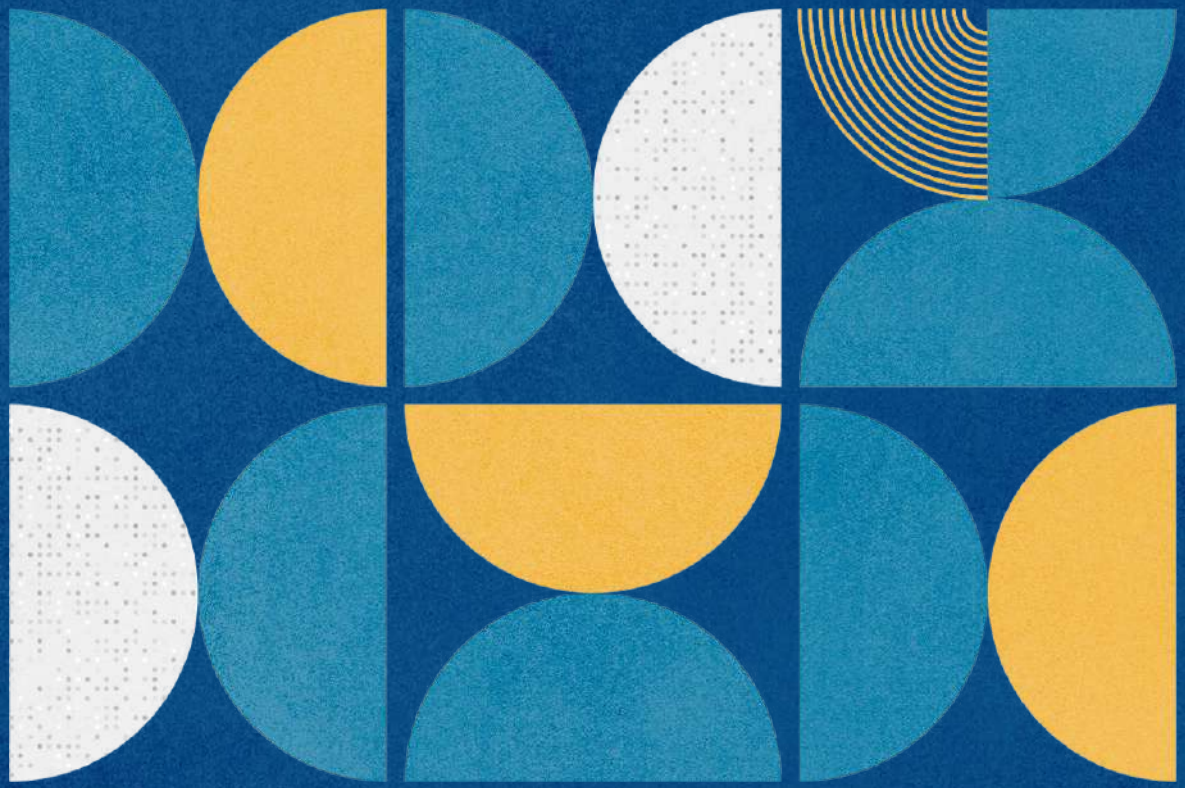
| | |
|---|---|
| **Open standards** | Technical standards and specifications that are publicly available, developed through a collaborative and transparent process, and free from proprietary restrictions. These standards ensure that different systems and technologies can work together seamlessly, promoting interoperability and avoiding proprietary vendor lock-in. (International Telecommunications Union) |
| **Platforms** | Digital marketplaces which provide integrated offerings like warehousing, logistics, payments and reputation-building via a single service provider. (ONDC Strategy Paper) |
| **Private entity(ies)** | A private entity can be a partnership, corporation, individual, nonprofit organization, company, or any other organized group that is not government-affiliated. (UpCounsel) |
| **Public entity(ies)** | A public entity is an organisation or body providing services to the public on behalf of the government or another public entity. (Queensland Human Rights Commission) |

# Glossary & abbreviations

| | |
|---|---|
| **B2B** | Business-to-business |
| **B2C** | Business-to-consumer |
| **CA** | Certification agency |
| **DPIIT** | Department for Promotion of Industry and Internal Trade |
| **EP** | Ecosystem participant(s) |
| **FIDE** | Foundation for Interoperability in Digital Economy |
| **HOPCOMS** | Horticultural Producers' Cooperative Marketing and Processing Society |
| **IGM** | Issue and grievance management |
| **KDEM** | Karnataka Digital Economy Mission |
| **KVIC** | Khadi and Village Industries Commission |
| **MSMEs** | Micro, Small and Medium Enterprises |
| **NABARD** | National Bank for Agriculture and Rural Development |
| **NP** | Network participant(s) |
| **ODRSP** | Online dispute resolution service provider(s) |
| **ON** | Open network(s) |
| **ONDC** | Open Network for Digital Commerce |
| **ONDC Network** | The ONDC network |
| **PNP** | Potential network participant(s) |
| **PSB** | Public sector banks |
| **QCI** | Quality Council of India |
| **R&D** | Research and development |
| **RSF** | Reconciliation and settlement framework |
| **RSP** | Reconciliation service provider(s) |
| **SIDBI** | Small Industries Development Bank of India |
| **SHG** | Self help groups |
| **TSP** | Technology service provider(s) |
| **UP** | Uttar Pradesh |

CHAPTER 1

# Unbundling digital commerce



# Key considerations

01 What is ONDC Network? How did it evolve?

02 What are the problems that ONDC is attempting to address?

03 Who are the stakeholders in the ONDC ecosystem?

04 Why should countries adopt open networks?

05 What are the suggested principles for open networks?

# 01 What is ONDC? How did it evolve?

**The transition from platform-centric to network-based models promises to democratize e-commerce.**

**ONDC Network, based on beckn protocol,** is an **open network** for **exchange of goods and services** via digital or electronic network. It allows buyers and sellers to transact seamlessly, irrespective of the platform or applications they use.

The architechture is significantly different from the existing e-commerce models as it is **platform-agnostic.** It adopts a **decentralised and participatory approach** to market innovation.

**November, 2020**
Constitution of steering committee by Ministry of Commerce & Industry

**December, 2021**
Incorporation of ONDC as Section-8 company

**April, 2022**
First live transaction

**September, 2022**
Launched Grocery & F&B (in Bengaluru Beta launch)

**March - July 2023**
Launched Mobility & B2B ( in Bengaluru)

**September - December2022**
Pilots of Financial Service & Cross-border transactions

**March, 2024**
ONDC Network expanded to 1000+ cities & 15 domains

*as on March 2024

**Source:** ONDC Strategy Document, ONDC, 2022; ONDC- Home, ONDC; ONDC- About, ONDC

# 02 What are problems that ONDC is attempting to address?

The ONDC Network preserves seller autonomy and provides flexibility by unbundling services, allowing diverse entities to move online.

| ISSUES IN E-COMMERCE | NATURE OF PROBLEM | OPEN NETWORK'S APPROACH |
|---|---|---|
| **Market Concentration** | End users have limited choices leading to platform lock-in. | ONDC renders all sellers discoverable with few limitations on the platforms sellers and buyers use. There is a single process for joining the open network, and a portable, network-wide review & rating. ONDC gives buyers a greater range of options in goods and in order fulfilment. |
| **Closed Platform Model** | Much of the current e-commerce landscape involves closed platforms that mediate between buyers and sellers, posing many constraints for operational autonomy. | ONDC functions as a facilitator and not as a platform. Merchants have freedom to decide their terms and conditions for service offering. The open network is meant to scale into a community-led ecosystem. |
| **Steep Transaction Costs** | There are customer acquisition costs, logistics requirements and the importance of online visibility that require resources that can be prohibitive for smaller players like MSMEs. | Unbundling allows buyer side and seller side service providers to specialise in specific aspects of a transaction without having to manage everything themselves. This enables a variety of intermediaries to emerge and compete promoting innovation and driving down cost. |

The ONDC Strategy Paper offers a deep dive into the vision, mission and implementation of the network.

**Source:** Democratising Digital Commerce, ONDC, 2023; Democratising Digital Commerce, McKinsey and Co, 2023; Onboarding Presentation, ONDC, 2023

# 03 Who are the stakeholders in the ONDC ecosystem?

The network is characterised by a vibrant multi-stakeholder landscape

| | |
|---|---|
| **Sellers** | Goods and service providers, may be B2C or B2B. |
| **Buyers** | Purchasers of goods and services, which could be consensus & businesses |
| **Support Community** | Stakeholders who provide financial or non financial resources for the network to function, such as investors, lenders, volunteers, expert advisors, technology products & services organisations, consumer platforms etc. |
| **Network Builders** | Applications and other solutions enabling stakeholders to function on the network. These range from buyer/seller facing applications, logistics services [Network Participants] and gateways to other unique technological solutions, like online dispute resolution [Ecosystem Participants]. |

For an exhaustive overview of players on ONDC's, visit the ONDC Participants and Roles you can play pages.

# 04 Why should countries adopt open networks?

**Digitalisation is an inevitable outcome and open networks offer a radical new pathway to achieve it.**

**Inclusivity**

Open networks operate with a decentralised structure in both its operation and governance and is made inclusive by design. An interconnected and interoperable network opens up new businesses and revenue streams by allowing participants to utilise existing structures and expertise without reinventing the wheel. With reduced costs and access to wider markets, this system solves for issues of capacities.

**Autonomy**

It enables each participant to leverage economies of scale offered by the larger ecosystem, while maintaining agency and opportunity at each node. It lowers barriers to entry for new businesses and checks monopolistic tendencies in the economy.

**Sustainability**

A decentralized system of governance fosters a sense of ownership within the ecosystem and promotes trust through collaborative solutioning. This can drive sustained participation with efficient decision-making that manifests in the evolution of innovative business models and partnerships.

**Resilience**

With a wide interoperable network of multiple participants, open networks operate without dependence on a particular regulator or service provider, enabling a more resilient space for participation from smaller actors. The diversity of participants and perspectives within the network contributes to overall strength of the business ecosystem.

**Source:** The DPI Approach: A Playbook, India G20 Presidency, 2023

# 05 What are the suggested principles for open networks?

Four principles shape the design, governance, and growth of open networks, with significant implications for their adoption and evolution.

| PRINCIPLE | EXPLANATION | SIGNIFICANCE FOR OPEN NETWORKS |
|---|---|---|
| **Inclusion and Participation** | Infrastructure and services that make adoption and usage easy for the average population. Participatory measures for development & sustenance of the network. | Ensuring equitable distribution of products & services at scale, particularly for underserved populations. This is a critical conduit to overcome digital divide that can otherwise derail open networks |
| **Innovation and Decentralisation** | Decentralisation precludes concentration of control and value with any one entity, thereby, upholding and nurturing a diverse, stakeholder-intensive ecosystem that emphasizes co-creation and innovation through collaboration in development, expertise-sharing, and governance. | Fostering values of cooperation and openness that promote partnerships amongst varied stakeholders. In turn, this enables fair market competition. |
| **Security and Minimalistic Design** | Strong focus on cybersecurity, data protection, user privacy and safeguards, from design to implementation. By design, ON have limited to no access to user data. | Having robust protections lowers the risks and damages emerging from data breaches and misuse, building trust and resilience of the ON ecosystem. |
| **Transparency and Grievance Redressal** | Processes and governance are open to community and public scrutiny. Implementing accessible modes for raising and resolving disputes. | Incorporating clear and functional mechanisms make ON's responsive to issues and nurture responsible practices by outlining stakeholders' obligations, rights and entitlements. |

CHAPTER 2

# Building appropriate technology

# Key considerations

01 Who transacts over the ONDC Network?

02 What are the technology layers that constitute the ONDC Network?

03 How do network participants (NP) become a part of the ONDC Network?

04 How is personal data handled on the ONDC Network?

05 What are the technology enablers for scaling open networks?

06 What are the technology architectures available to open networks?

07 Spotlight: ONDC operates as a technology standard-setting institution

08 Principles: Technology tools available to future open networks

# 01 Who transacts over ONDC Network?

**In addition to the end-users who browse or sell on the ONDC Network, there are two kinds of stakeholders to consider: network participants (NP) and ecosystem participants (NP & EP).**

**Network participants (NP):** These players directly participate in the buyer-seller transactions conducted in the ONDC ecosystem.

1. **Buyer network participant/ Buyer node/ Buyer app:** The digital medium that provides buyers with the tools and support necessary for a shopping experience on ONDC.
2. **Seller network participant/ Seller app:** The digital medium sellers use to present buyers with their goods and services, including logistic services overseeing the transfer of goods.
3. **Gateways:** Technology providers that render sellers discoverable and disseminate requests and information between buyer and seller apps.

**End-users:** The users who use NPs to transact over ONDC Network.

1. **Buyers:** The parties seeking goods and services via buyer apps.
2. **Sellers:** The parties offering goods or services via seller apps.

**Ecosystem participants (EP):** They *enable and provide services* for transactions and participation over ONDC Network.

1. **Technology service provider (TSP):** Third party entities that provide applications and services which make onboarding of NPs seamless.
2. **Reconciliation and settlement service provider (RSP):** RSPs assist with and enable movement of funds between NPs.
3. **Online dispute resolution service provider (ODRSP):** The entities that help mediate and resolve disputes between assenting parties.
4. **Certification agency (CA):** The entities enable ONDC NP's comply with network policy & adequate functionality.

The ONDC Certification Framework outlines and describes the ON's participants in considerable detail.

**Source:** ONDC Network Participant Agreement, ONDC, 2022; ONDC Certification Framework, ONDC, 2023; ONDC Network Policy chapter 6, ONDC, 2022; Roles you can play, ONDC

# 02 What are the technology layers that constitute the ONDC network?

ONDC's technology stack contains three layers: **protocol layer, network layer,** and **app layer**.

**App Layer**

- Buyer app
- Seller app

*While the app layer is built by NPs, it uses the network and protocol layers' technologies to facilitate inter-NP exchanges of information for the various stages of a transaction - from search and discovery to post fulfillment interactions. For example, buyer apps search for goods and services across ONDC using the infrastructure layer gateways.*

**Network Layer**

- Business layer: Category-wise and jurisdiction-wise definitions for the Protocol Layer
- Network governance & policy: Network Policies Definition; Network Governance Definitions; Network Operations Guidelines
- Infrastructure layer: Registry (Subscription); Gateway (Fair discovery)
- Network extension layer: Reconciliation & Settlement Framework (RSF); Issue & Grievance Management (IGM); Scoring & Badging; Compliance & Certification

**Protocol Layer**

- beckn layer (transaction layer): Discovery; Order; Fulfilment; Post-Fulfilment

**Legend:** beckn infrastructure; ONDC-designed infrastructure; Governance infrastructure; Implemented by ONDC

**Source:** Correspondence from ONDC; ONDC-Official, GitHub; User Manual- White Label Seller App, ONDC, 2023; ONDC Certification Framework, ONDC, 2023

# 02 What are the technology layers that constitute the ONDC network?

ONDC Network's layers are a product of collaborative development between ONDC and the community.

| | PROTOCOL LAYER | NETWORK LAYER | APP LAYER |
|---|---|---|---|
| **Definition** | This layer consists of the beckn Protocol and ONDC's APIs specifications that have been contextualised to domains. | This layer focuses on how ONDC participants communicate and interact with each other to fulfill end-to-end transactions. It surfaces necessary scaffolding for interoperable transactions. | This NP-built layer comprises the digital means through which end-users interact to execute transactions. |
| **Components** | **Base layer:** Defined by the beckn Protocol core specifications.<br>**Network extension layer/ domain-specific layer:** Base layer bolstered by APIs, modules and specifications that are tailored to specific domains, like retail. | **Business layer:** Comprises the domain-specific, network-related elements like tags, enums, flows and attribute mapping.<br>**Network governance and policy:** Refers to the governance, definitions and policies ONDC NPs adhere to.<br>**Infrastructure layer:** Houses ONDC Network's operational infrastructure for search and discovery including the registry and the gateways. | **Buyer apps:** The application buyers use to seek and purchase goods and services on ONDC Network.<br>**Seller apps:** The application sellers and providers use to conduct business over ONDC Network. They also transmit payments and host digital catalogues. |
| **Significance** | The protocol layer is responsible for facilitating the open network's basic functionalities.<br>The domain-specific layer helps with the different functionalities that ONDC Network's various domains entail. | The business layer ensures communication and responsiveness between ONDC NPs across domains.<br>The network governance and policy layer has the standards, obligations, compliance requirements and processes that define how participants operate on ONDC Network.<br>The infrastructure layer components help in enabling inter-participant visibility. | The app layer consists of the technology that ONDC Network's end-users interact with: the parties seeking goods and services and the providers and sellers who can meet the demand. |

**Source:** Correspondence from ONDC; ONDC-Official, GitHub; User Manual- White Label Seller App, ONDC, 2023; ONDC Certification Framework, ONDC, 2023

# 03 How do network participants (NP) become a part of ONDC?

The three stages for a potential NP (PNP) to go live on ONDC Network are explained below.

## 1. ONBOARDING

ONDC hosts business and technology **briefings**, and provides PNP with **introductory information** resources.

PNP **choose a role** on ONDC: buyer nodes, seller nodes, or TSPs.

PNP **share implementation plans** to ONDC, outlining steps to integrating with the open network.

## 2. TESTING

PNP build **ONDC-compliant APIs** as per the domain-relevant **API contracts**, and build **MVPs**.

PNP **test end-to-end transactions** in ONDC's sandbox to confirm operational readiness and compliance with Network Policy.

Certification by ONDC Tech and Ops team is obtained to move to production.

## 3. PRODUCTION

In the production environment, **live transactions** of goods and services occur.

Upon meeting a pre-defined threshold of operations metrics, PNP can conduct themselves as ONDC NP.

The entire journey from onboarding to production is enabled through self-service ONDC Participant Portal

**The ONDC Integration Guide and the Final Compliance Checklist outlines requirements for interested parties to join the network. https://portal.ondc.org/login**

**Source:** ONDC Integration Guide, ONDC, 2022; Implementation Briefing 14/11/2022, ONDC, 2022; Guidance Document for Demo, ONDC, 2023; Final Compliance Checklist, ONDC, 2023

# 04 How is personal data handled on the ONDC Network?

**ONDC Network is entirely "data blind," hosting no personal data from its participants' transactions. Its scope for accessing and using end-users' data is constrained by the network's design and policy.**

### Data Collection

1. ONDC Network does not operate or maintain a unified, central repository that houses personal data. Instead, data resides with respective NPs, decentralising the data's storage and processing.
2. ONDC does not have access to end-users' data. NPs are custodians of user data. ONDC may request access to specific data, pursuant to order from the competent authorities.

### Data Usage

1. ONDC may request access to specific personal data for the purpose of processing grievance issues, regulatory or court orders, or for investigations against NP for policy violations only.
2. Network Policies also requires NPs to abide by relevant data protection law, set adequate security measures, and to obtain the necessary consents for collecting, handling and sharing end-users' data.

### Open Data

1. NPs can receive personal data from other NP, as long as the relevant consent has been obtained.
2. ONDC Network leverages anonymized and aggregated technical data for monitoring the technical health of the network.
3. NPs share the anonymized aggregated data with ONDC at the end of each day. ONDC has no mechanism to access the data directly from NPs system.

**Source:** ONDC Network Policy, ONDC, 2022

05

# What are the technology enablers for scaling open networks?

Technology features across participants needs coherence to ensure discovery, unbundled collaboration and trade.

## Testing And Compliance

| CONSIDERATION | NATURE OF PROBLEM |
|---|---|
| **Why incorporate testing and compliance into ON?** | An ON needs mechanisms to ensure prospective participant's ability to **fulfill their commercial roles seamlessly, stably and securely,** and that they operate in **compliance with the network policies, tech specifications and operations guidelines** in place. Adjacent certification measures **foster trust between participants and grant credibility.** |
| **What does it entail?** | Having **standards and requirements** that the participants' need to comply with as they build and test the relevant technology. They are checked and verified for in **testing environments** by certification agencies. **Certification frameworks** make it possible to **decentralize testing and compliance**, delivering scale to a growing network. |
| **How has ONDC implemented this?** | ONDC requires PNPs to clear predefined tests to ensure they are able to seamlessly carry out business with other NPs while maintaining network integrity. These tests ensure the NP understands network policies, their software complies with the API specifications, and they have minimal operational capability to conduct business on the network. At present all checks are being carried out by ONDC. In order to achieve scale, empanelled third-party agencies will take over this function. |

The ONDC Integration Guide is a useful place to start when understanding how participants' journey towards e-commerce.

**Source:** Certification Framework, ONDC, 2023; ONDC Website

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# What are the technology enablers for scaling open networks?

Laying out the specifications for integration into ON is a key determinant for ecosystem building and viability.

## Knowledge Products

| CONSIDERATION | NATURE OF PROBLEM |
|---|---|
| **Why should ON provide production infrastructure?** | To **improve access to the network**, ON need to furnish PNP with the **information, specifications and hands-on aid necessary for them to meet technical, operational and policy compliance requirements.** This is crucial to easing and clarifying the process of **build viable tech assets**, as well as for an ON's **standard-setting regime.** |
| **What does it entail?** | ON need to prepare information packages that are **curated for both the different participant roles and the different domains** (for example, retail and logistics) it harbours, listing key information on building for the ON. Production infrastructure goes hand in hand with **guidance infrastructure**, which works to add to the former. |
| **How has ONDC implemented this?** | ONDC provides **API contracts, compliance and tech and operational checklists, and guidance and handbooks** that outline the functions and requirements participants' MVP must have achieved, as well as the process of and possible timelines for joining the network. They also provide **recordings of previous briefing sessions**, where orientations may be given and **doubts are cleared.** |

Much of the material ONDC has prepared for participants can be found in the Tech Resources section of their website.

**Source:** Certification Framework, ONDC, 2023; ONDC Website

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# What are the technology enablers for scaling open networks?

Adoption and resilience of ON is a function of making available diverse formats and mechanisms of integration.

## Extensible Connectivity

| CONSIDERATION | NATURE OF PROBLEM |
|---|---|
| **Why is extensible connectivity important to ON?** | An ON that can be accessed using a **variety of digital formats, from apps to websites,** increases the the opportunities and methods possible for setting up an ecommerce presence. Having more compatible options creates more routes to the ON, and **increases the potential and relative ease of adoption.** Multi-modality helps **improve the scope of technological aid from organizations to PNP, as well as partnerships of ON and firms.** |
| **What does it entail?** | The technological layer and requirements for interoperability and functionality on the ON need to be designed **such that it can be adopted via multiple digital formats.** Further, ON should support a variety of interfaces to connect to the network, such as voice-based interfaces, connections with POSs or assisted buying/selling interfaces etc. The ON should be **capable of integrating with other applications and services** as well. |
| **How has ONDC implemented this?** | ONDC's tech requirements, as well as the assets and informations made available for PNP, are compatible with digital formats beyond apps, like websites. Media coverage has also talked about **ONDC partnering with Meta** to help sellers **skill and build for ONDC on WhatsApp,** and with **Google Maps for metro ticketing** services, Bhashini for multi-lingual support & voice based interfaces. |

ONDC framework on network observability is an important enabler for scaling the network and can be studied as in this white paper.

# 06 What are the technology architectures available to open networks?

ON technological designs can be centralised to different degrees, with each approach having its pros and cons.

| DESIGN | BENEFITS | LIMITATIONS |
|---|---|---|
| **1. ON operates as a platform**<br>The open network is a platform for buyers and sellers to use. | • Solve for connectivity between buyers & sellers<br>• Reduce infrastructure, set-up and operation costs | • The enabler entity needs to have enormous technological and operational capacity<br>• Limited autonomy over pricing and profit-making<br>• No scope for stakeholder/ participant driven innovation in the ecosystem |
| **2. ON mandates the use of standardised apps for NP**<br>To trade on the ON, NP are required to use ON-made apps. | • Reduced error rates in end-to-end transactions.<br>• Lower auditing and monitoring burden | • Collaboration and innovation not possible among users<br>• System is not as responsive or adaptable as a fully centralised architecture |
| **3. ON mandates standards for interoperability and conduct on the network, such as fair search and discovery**<br>ON is not selective or prescriptive about how NP operate, and retain few oversight functions | • Interoperability fosters innovation, without limitations on app development<br>• Standards ensure consistency in consumer experience and accountability | • Balancing compliance monitoring on scale, innovation by NPs and burden on smaller NPs<br>• Technological improvements made by NPs may take time to percolate within the network. |
| **4. ON provides protocol for interoperability**<br>The ON has limited access to user data, and facilitates communicability between NP | • Avoiding data concentration<br>• Autonomy over terms of trade, as well as app development and product offering | • Require pre-existence of mature e-commerce ecosystem<br>• Requires extensive digitalisation and onboarding infrastructure, longer time horizon<br>• No means to ensure consistent user experience, service quality and NP behaviour |

ONDC

*Colors represent degrees of centralization from light to dark, where the darkest is most decentralised.*

# 07 Spotlight: ONDC operates as a technology standard-setting institution

**ONDC uses standards to promote consistent and reliable functionality while exerting limited control over participants' commercial operations.**

### What does it mean

Through requirements for **interoperability, data governance, and the reliable completion of transactions**, the open network creates critical baselines **of functionality.**

ONDC's standard-setting is oriented towards **end-to-end transactions.** The standards **do not regulate commercial decision-making,** like pricing.

### Why this choice

ONDC's areas of focus ensure that commerce and **inter-participant interactions** over the open network are viable and built on responsible data practices.

Focusing on participants' ability to consistently conduct business **helps ONDC ensure reliability and accrue stakeholder trust** without acting like a platform.

### How will it evolve

As it grows in size and the domains available on the network, ONDC will need to **decentralize aspects of its standard-setting processes.** Initially, ONDC might be alone in setting standards, and testing and certifying for compliance.

In time, with the addition of domains and the increasing user base, ONDC intends to further devolve network certification function. This will promote ecosystem-driven network expansion.

# 08 Principles: Technology tools available to future open networks

Open networks stand to gain from adopting principle-driven tools that make up its technological aspects.

## INCLUSION AND PARTICIPATION

Ensuring easier and successful widespread adoption and use of the relevant ON's technologies.

**Tools & techniques for operationalisation**

1. Guidance, support and public briefings on building tech with open standards, mandates for interoperability & modularity.
2. Releasing relevant specifications, code, compliance checklists and reference apps.

## OPEN INNOVATION AND DECENTRALIZATION

Co-creation, collaboration and stakeholder involvement in using and shaping an ON's technology.

**Tools & techniques for operationalisation**

1. Gradually devolving services and roles to ON ecosystem.
2. Openness to development and adaptation ON tech by community.
3. Sandboxes for functionality check and compliance.
4. Technology-agnostic specifications, leveraging existing DPI.

## SECURITY AND MINIMALISTIC DESIGN

Securing personal data, minimising data collection and accounting for breaches.

**Tools & techniques for operationalisation**

1. Entry requirements for industry-standard safeguards, consent measures, privacy policies, encryption keys.
2. Data minimisation (collection, processing, and sharing). Minimal visibility to transaction data by design.
3. Mandate security and compliance audits.

## TRANSPARENCY AND GRIEVANCE REDRESSAL

Promoting trust through disclosures and accountability.

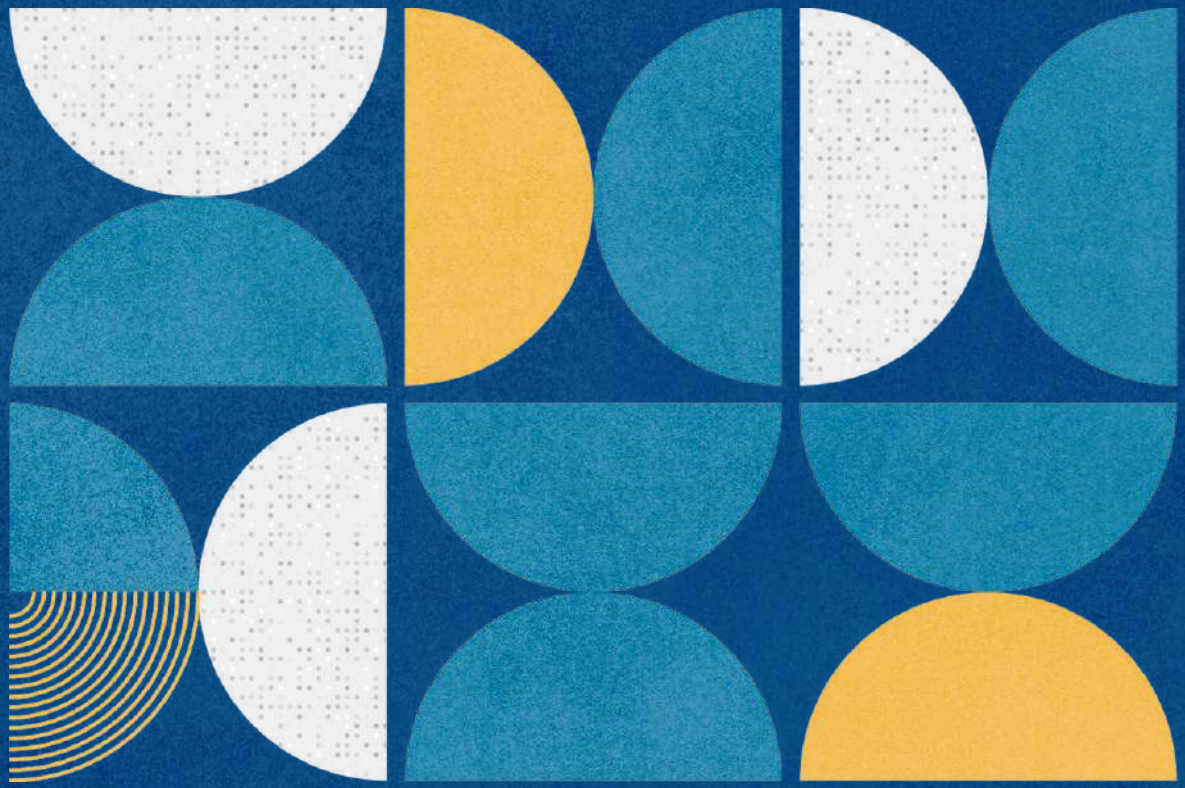
**Tools & techniques for operationalisation**

1. Disclosure obligations for data breaches for NP.
2. APIs and specification open to community scrutiny.
3. Publicly available documents and policy outlining processes (like the certification framework), roles, obligations and compliances regarding tech aspects for ON participants.

**Source:** ONDC Strategy Document, ONDC, 2022

CHAPTER 3

# Institutionalising responsible governance



# Key considerations

01 What are the pillars of ONDC's governance framework?

02 What is covered under ONDC's network policies?

03 How are policies formulated within ONDC?

04 How does ONDC enable participation in its governance structures?

05 What are the institutional design options available to open networks?

06 Spotlight: Adopting a private non-profit structure imparts much needed operational autonomy to ONDC

07 What are the operational design options available to open networks?

08 Spotlight: Participative ethics is a critical value that influence ONDC's current operational governance model

09 What are the governance enablers for scaling open networks?

10 Principles: Governance mechanisms available to future open networks

# 01 What are the pillars of ONDC's governance framework?

ONDC approaches governance as a horizontal function that is embedded across three pillars.

### Corporate institutional design

ONDC was incorporated as a **Section 8 non-profit entity, enabling participatory governance.**

This design choice promotes free market operation with multi-stakeholder contribution. The absence of pressure to become revenue neutral or positive provides room to focus on network advancement.

### Techno-legal architecture

ONDC adopts a techno-legal approach, **embedding legal principles in its technological infrastructure.**

The protocol prioritises principles such as interoperability, openness, and decentralization by design.

### Participative network policies

ONDC undertakes **minimal policy-making as a facilitative function.** This is made participative through mechanisms of *user council* and expert *advisories*.

It publishes compliances, business rules, data governance and grievance policies, among others.

The larger system of governance that applies to ONDC has multiple levels:

Statutes and laws → Network policies → Terms of the Transactions

ONDC, the entity, has made a design choice to only be involved in the making of internal "network policies".

# 02 What is included in ONDC's network policies?

ONDC undertakes policy-making to enable their role as a facilitator on a broad range of concerns.

| POLICY | ONBOARDING, COMPLIANCE & CERTIFICATION | NETWORK DATA GOVERNANCE | BUSINESS RULES | ISSUE & GRIEVANCE MANAGEMENT POLICY |
|---|---|---|---|---|
| **Focus** | Consolidates legal, technological, and operational eligibility conditions & compliance processes for prospective NPs. | Outlines NPs' obligations towards protection of private and personal information. | Compels NPs adherence to existing laws as well as the rules of engagement on the network. | Comprises ODR and escalation mechanisms for NPs to manage and resolve grievances filed against them by other stakeholders. |
| **Approach** | This policy is dynamic in nature, complemented by ONDC assistance. Function may be devolved to third parties over time. | This policy, along with the code of conduct, embeds the principles on privacy and confidentiality. | This policy fosters transparency, standardisation and prescribes systems that NPs must follow to encourage healthy competition, fairness and non-discrimination. | This policy functions as a touchstone for NPs, with minimal involvement from ONDC and promotes reasonable cooperation among NPs. |

For details on above mentioned policies and upcoming ones, visit the Network Policy page.

**Source:** ONDC Network Policy, ONDC, 2023

# 03 How are policies formulated within ONDC?

Policy formulation within ONDC is participative and informed by extensive consultations with the network.

## Amendment to existing policies

**1**

### Issue identification

Existing policy framework is scrutinised within the User Council, advisory bodies, and operational and tech-ops NPs to identify issues.

**2**

### Proposal of amended draft

ONDC accounts for the suggestions by relevant parties in the previous steps, and proposes necessary amendments.

**3**

### Review with User Council

The new draft is taken to User Council for review and comments that are addressed in the same cycle.

**4**

### Final notification to network

The final draft reflecting inputs from the User Council and larger body of NPs is notified to the public.

## Creation of new policies

**1(a)**

### First draft by ONDC

Based on inputs from NPs and expert advisors, ONDC prepares a first draft for the new policy.

**1(b)**

### Review & consultation with NPs

The new policy is circulated with all members of the network for review and consultation.

**1(c)**

### Clarifications addressed

Any queries or inputs arising from the member side are addressed and documented. These revisions are consolidated in a publicly available document.

**1(d)**

### Workshop with network participants

A workshop allows NPs to consider the draft policy, review salient provisions and amendments.

# 04 How does ONDC enable network participation in its governance?

ONDC embeds participation via mechanisms for consultation with expert advisors and NPs.

| POLICY | ADVISORIES | USER COUNCIL |
|---|---|---|
| **Focus** | ONDC engages expert bodies to provide advisories on emerging sectoral issues on an ad hoc basis. | ONDC appoints and convenes a rotating body of 15 NPs representing different member interests to contribute to policy creation, revision, and governance. |
| **Approach** | Provide standardised advice on optimising business processes for the unbundled e-commerce on ONDC.<br><br>Released as future-facing or reflective pieces, and could relate to issues like cross border payments flow, logistics, or systems around financial services on ONDC (such as insurance) among others. | They assist with identifying any new policies that should be framed, as well as with existing policy revision.<br><br>ONDC relies on the User Council to ensure NP participation on issues relating to network policies and seeks their agreement on changes. |
| **Process** | Issue identification on the need for new advisories comes from the network itself via engagements:<br>1. Regular briefing calls<br>2. Fortnightly individual catch-ups with NPs<br>3. Weekly production calls that are open to public<br><br>Advisories, once finalised with experts, are published on the ONDC website as guidance applicable to all. | The Council meets at least once every quarter to deliberate on important issues faced by the network. Additionally, it also takes up new policy proposals, implementation of new systems and updates to the protocol.<br><br>ONDC publishes new or updated policies only upon discussions with the User Council. |

**Source:** ONDC Website

# 05 What are the institutional designs available to open networks?

Depending on the supporting infrastructure and market considerations, an open network can rely on a range of institutional setups, each with unique benefits and limitations.

| DESIGN | BENEFITS | LIMITATIONS |
|---|---|---|
| **1. Statutory body**<br>Authoritative entity with legislative backing and mandates on operational roles and responsibilities | • Parliamentary process of formation.<br>• Accountable to citizens.<br>• Prioritize and protect societal interests. | • Increased administrative processes for decision-making.<br>• Demands high state capacity in terms of tech, operations and governance. |
| **2. Independent body with institutional oversight**<br>Independent entity with operational autonomy, while functioning within regulatory boundaries | • Limited governmental control.<br>• Minimal necessary oversight for checks on internal system of operations. | • Obfuscation around division of power and accountability.<br>• Liable to regulatory capture. |
| **3. Private for profit company**<br>Independent entity with operational autonomy and a foundational corporate structure that prioritises economic gains for itself | • Enabling regulatory choices to pursue minimum taxation and profit maximisation.<br>• Ability to operate with minimum external oversight on operations. | • Regulated by its obligations to investors and creditors that expect mutual benefit.<br>• Challenging to navigate capital needs and make revenue/ profits, with little scope to focus on growth simultaneously. |
| **4. Private non-profit company**<br>An independent entity with operational autonomy, foundational corporate structure, and a community centred non-profit motive | • Independent control and not liable to investors for economic benefit.<br>• Credibility for collaboration with varied actors and prioritise growth.<br>• Able to prioritise uniform industry practices and guide community operations. | • Limited government backing and reliant on network collaboration and support for infrastructure and sustainability.<br>• Compliance with ON policies can only be achieved through contractual obligations, creating dependencies for network collaboration and dispute resolution mechanisms. |

ONDC

*Colors represent degrees of centralization from light to dark, where the darkest is most decentralised.*

# 06 Spotlight: Adopting a private non-profit structure imparts much needed operational autonomy to ONDC

ONDC is designed with intentionality to enable foundational autonomy for its structure and core objectives.

### What does it mean

ONDC is registered as a **section 8 non-profit organisation** with support from diverse stakeholders (Quality Council of India, Protean technologies and public sector banks).

The entity operates with the objective "to promote and facilitate Digital Commerce in India" and enables the network to collaborate on services.

### Why this choice

This institutional choice enables ONDC to maintain **distance from profit making** liability towards investors. Instead it pursues **larger public benefit mandates** that are scoped as internal objectives.

A non-profit structure affords ONDC **credibility and encourages diverse network participants** to extent support to the open network.

### How will it evolve

With expansion **in different countries, ONDC may consider alternate institutional structures** to optimise for varied priorities on profit and state support.

A private non-profit structure lends itself to **devolving governance functions to the community**, and may eventually operate **as a self regulatory organisation**.

# 07 What are the operational design options available to open networks?

An open network can opt for varying degrees of centralised control on policy setting and compliance functions.

| DESIGN | BENEFITS | LIMITATIONS |
|---|---|---|
| **1. Absolute central authority**<br>*Central authority that sets and enforces all policies on its own.* | • Efficiency and ease of decision making<br>• Clear avenues for accountability and enforcement of policies | • Limited representation of stakeholder interests<br>• Prescriptive policy making with loss of industry insights to practical implications |
| **2. Centrally-appointed bodies**<br>*Bodies appointed based on different categories of roles that set policies for individual domain and enforce them.* | • Reasonable accountability and transparency on channels of authority<br>• Efficiency gains for department wide decision-making | • Burdensome cross departmental coordination and conflict management<br>• Limited representation and participation from users and industry |
| **3. Participative coodinating agency**<br>*Central authority that sets policy and ensures compliance, in consultation with NPs and civil society.* | • Representative policy making within defined contexts<br>• Higher buy-in from primary stakeholders | • Difficulties in coordination due to presence of multiple entities and interests<br>• Enforcement and remediation may be challenging due to decentralised nature |
| **4. No central governing body**<br>*Policy-setting and enforcement is done spontaneously by organisations of NPs via contracts.* | • Community led governance with low administrative costs<br>• Participatory decision making with innovative solutioning | • Limited clarity on authoritative prescriptions on processes and accountability<br>• Dependent on multi-stakeholder cooperation |

ONDC

*Colors represent degrees of centralization from light to dark, where the darkest is most decentralised.*

# 08 Spotlight: Participative ethics is a critical value that influence ONDC's current operational governance model

**ONDC has adopted a participatory approach to encourage inputs from network and ecosystem participants and enable a collaborative evolution of the network.**

### What does it mean

ONDC 'Network Policies' which define the rules of participation on the network are continuously and collaboratively evolved with representatives of network and ecosystem participants.

In early stages, ONDC has opted to perform a facilitative bootstrapping function of proposing a first version of the policies.

### Why this choice

In open network administration, ONDC's participative governance retains a healthy mix of supporting operations while relying on participants for contextualized standard setting.

This approach lends itself to the facilitative governance that fosters trust and ownership within the participants of this open network.

### How will it evolve

This approach is oriented towards eventual service devolution to the NPs, in order to receive policy proposals from the User Council itself.

With intentional early stage facilitation, operational functions like onboarding and certification, and governance functions may even be devolved to NPs as the Network advances in capabilities.

# 09 What are the governance enablers for scaling open networks?

Well defined metrics to track ON adoption and expansion can inform network policy and practice.

## Network Observability

| CONSIDERATION | NATURE OF PROBLEM |
|---|---|
| **Why promote Network Observability?** | An ON's stakeholders need accessible **tools and metrics for understanding an ON's growth trajectories, how participants are faring, and the effectiveness of delivering goods or services.** Here, a delicate balance on avoiding centralisation and kick-starting the network must be maintained. |
| **What does it entail?** | A framework on network observability **defines an approach for network and ecosystem participants to collectively observe the growth and health of the network, foster interoperability, enhance transparency, trust, and operational efficiency.** |
| **How has ONDC implemented this?** | ONDC's Network Observability framework is designed to empower participants to monitor their performance using **both aggregate and participant-specific metrics.** The framework maintains interoperability within ONDC's unbundled environment, and **allows contributions from third-party agencies for an outside-in perspective.** |

ONDC framework on network observability is an important enabler for scaling the network and can be studied as in this white paper.

**Source:** ONDC Website

# 09 What are the governance enablers for scaling open networks?

A gamut of supportive strategies and documentation is necessary to maintain integration within and across ON.

## Guidance Infrastructure

| CONSIDERATION | NATURE OF PROBLEM |
|---|---|
| **Why deploy guidance infrastructure?** | For participants to navigate and integrate into an ON, **visible and accessible communication systems for support, clarification, and guidance** are necessary. This is especially relevant in matters like **technology implementation, regulatory compliance, and discovery of opportunities.** |
| **What does it entail?** | Open networks can incorporate operational support systems for **advisories, knowledge sharing, capacity building initiatives, self-service channels, reference tools and standards or SoPs** on how to participate on the network. |
| **How has ONDC implemented this?** | ONDC issues guides for Network Participants on various aspects of doing business, such as guidance on regulatory compliance or other matters of interest. Part of this guidance is available as a part of integration documentation. Further, ONDC also releases **technology and marketing resources including developer guides** to enable discovery and innovation. |

ONDC guidance infrastructure is built on multiple levels, and the published material on that can be accessed on the ONDC website.

**Source:** ONDC Website

# 09 What are the governance enablers for scaling open networks?

Gradual and systematic ceding of core functions can go a long way in achieving democracy within ON operations.

## Service Devolution

| CONSIDERATION | NATURE OF PROBLEM |
|---|---|
| **Why incorporate service devolution?** | An ON should be able to systematically and effectively cede its functions to its stakeholders. This is crucial to create than environment that **fosters the growth of an organic and self-sustaining ecosystem, while encouraging innovative contributions.** |
| **What does it entail?** | While an ON's founding authority might initially administer services, it will have to devolve its roles as the ON scales. This could be enabled by the **releasing resources on certification, digital readiness assessment, discovery, and operations support, etc.** |
| **How has ONDC implemented this?** | ONDC design already prioritizes policy inputs from the NPs, via mechanisms such as user councils and advisories. Operational guidelines are co-created with NPs. Extensive resources covering topics from policy, technology and operational excellence including guides and best practices papers are available to NPS. |

ONDC approach to service devolution can be gleaned from the certification and user council approaches.

**Source:** ONDC Website

# 09 What are the governance enablers for scaling open networks?

Network Participants need autonomy to drive their journey and tools to manage it well

## Autonomy and self-service

| CONSIDERATION | NATURE OF PROBLEM |
|---|---|
| **Why incorporate autonomy & self-service?** | **Autonomy and self-service** reduces the dependence on central authorities, which in turn **reduces friction and bottlenecks** that can hamper scalability. |
| **What does it entail?** | Providing NPs freedom and mechanisms (technical tools and knowledge resources) to govern their own journey through their lifecycle on the Open Network, at all stages. |
| **How has ONDC implemented this?** | The Network Participant Portal provides the NP a **unified interface to self-manage** every aspect of their presence on the network, from onboarding, to growth and scaling. This includes dashboards for self-monitoring, checklists for compliance as well as operational excellence. Many different open sources utilities and tools for automated software testing are also made available to NPs for their own improvement and self-correction. |

ONDC's NP Portal can be found here.

**Source:** Aapti analysis, ONDC Website

# 10 Principles: Governance mechanisms available to future open networks

Open networks stand to gain from adopting various tools as a part of its operations.

### INCLUSION AND PARTICIPATION

Expanding reach while prioritising meaningful engagement

**Tools & techniques for operationalisation**

1. User councils on policy making
2. Expert advisories on policy innovation and standardization
3. Guidance protocols for onboarding services for certification assistance

### OPEN INNOVATION AND DECENTRALIZATION

Unlocking value and agency on each node for all stakeholders

**Tools & techniques for operationalisation**

1. Regulatory sandboxes for live testing on compliance
2. Policy workshop for members of the network
3. Publishing a registry of network members and ecosystem actors to enable discoverability and collaboration

### SECURITY AND MINIMALISTIC DESIGN

Securing personal data and minimising data collection

**Tools & techniques for operationalisation**

1. Data blind transaction governance policies
2. Mandates on consent and purpose limitation
3. Data minimisation around collection, processing, and sharing of information

### TRANSPARENCY AND GRIEVANCE REDRESSAL

Promoting trust through disclosures and accountability

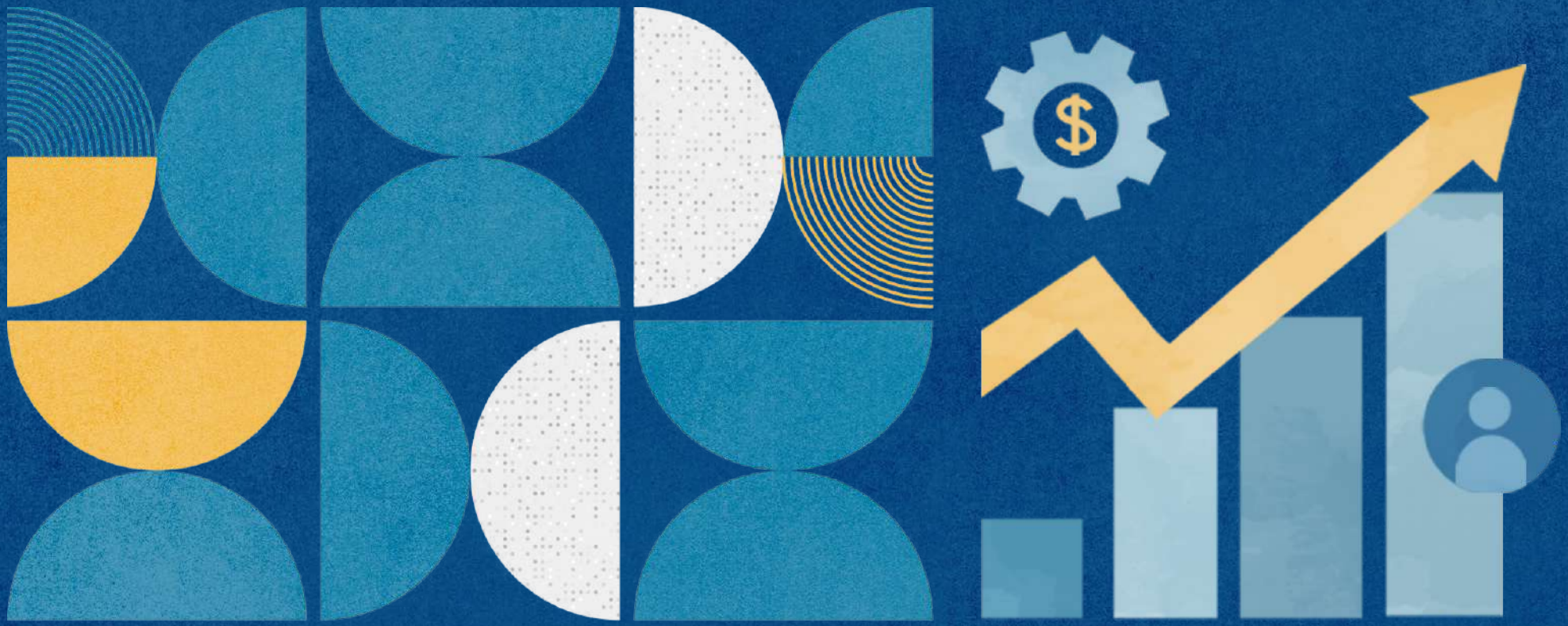
**Tools & techniques for operationalisation**

1. Open publication of policies, meeting summaries, audit reports, and impact assessments
2. Independent and multi-tier grievance redressal mechanisms
3. Disclosures on decision-making and penalties

**Source:** ONDC Strategy Document, ONDC, 2022

CHAPTER 4

# Thinking through sustainability



# Key considerations

01 Who are the core shareholders in ONDC?

02 What are the non-financial sources of support that ONDC receives?

03 How does the state contribute to ONDC's sustainability?

04 What are the financial levers for similar open networks?

05 What are the non-financial levers for similar open networks?

06 What are the community enablers for scaling open networks?

07 Principles: Sustainability levers available to future open networks

# 01 Who are the core shareholders in ONDC?

ONDC is a private non-profit company founded by Quality Council of India and Protean eGov Technologies.

| NATURE OF INVESTOR | DESCRIPTION OF ROLE | RELEVANT ONDC SHAREHOLDER | |
|---|---|---|---|
| **Public sector bank** | Banks in which governments are the majority shareholder. PSBs have contributed to ONDC since its incorporation. | • Bank of Baroda<br>• Bank of Maharashtra<br>• Bank of India<br>• Canara Bank | • Indian Bank<br>• Indian Overseas Bank<br>• Punjab National Bank<br>• State Bank Of India<br>• UCO Bank<br>• Union Bank of India |
| **Private sector bank** | Banks in which majority shareholders are private entities and persons. Such banks have also contributed significantly to the ONDC corpus. | • Axis Bank Ltd.<br>• HDFC Bank Ltd,<br>• ICICI Bank Ltd.<br>• IDBI Bank Ltd.<br>• IDFC FIRST Bank Ltd. | • IndusInd Bank Ltd.<br>• Kotak Mahindra Bank Ltd.<br>• RBL Bank Ltd.<br>• The Federal Bank Ltd. |
| **Institutional investors** | Entities that have invested money on behalf of its members or clients. Such investors constitute critical non-bank funding for ONDC. | • Quality Council of India<br>• Protean eGov Technologies Ltd.<br>• National Securities Depository Ltd.<br>• NSE Investments Ltd. | • BSE Investments Ltd.<br>• Central Depository Services (India) Ltd.<br>• CSC e-Governance Services India Ltd. |
| **Statutory bodies** | Entities established by an act of Parliament or a state legislature. Ascribed with manifest regulatory and social functions. | • Small Industries Development Bank of India<br>• National Bank for Agriculture and Rural Development | |

For an exhaustive overview of ONDC's financial landscape, visit the Investor Relations page.

## 02 What are the non-financial sources of support that ONDC receives?

Support for ONDC flows from organisations working at multiple levels to extend tech-building, grassroot/last mile integration, capacity building, and volunteering services.

| NATURE OF SUPPORT | DESCRIPTION OF ROLE | RELEVANT ONDC SHAREHOLDER |
|---|---|---|
| **Shared resources** | Refer to the elements of technology and other network resources that have been contributed by external parties for ON development. | beckn protocol is a technology stack contributed by FIDE |
| **Capacity building** | Refers to the specific skills, insights or abilities that are supplied directly towards a goal/entity or towards the ecosystem in which the entity functions. | ONDC Academy established by National Stock Exchange and NABARD, SIDBI training for MSMEs aimed at upskilling entrepreneurs. QCI has built an online assessment tool for digital readiness for MSMEs for network integration. |
| **Volunteering** | Refers to technical, pro-bono support provided by communities or collectives with subject matter expertise. | Community contributions to ONDC's technology stack via GitHub was a crucial lever during its incorporation. |
| **Grassroot integration** | Refers to the process of building and extending various linkages to the network, especially for smaller underserved stakeholders. | Appointment of state nodal officers by DPIIT to accelerate MSME onboarding unto ONDC. |

**Source:** State nodal officers to accelerate ONDC adoption, ONDC; ONDC, GitHub; ONDC Academy, ONDC

# 03 How does the state contribute to ONDC's sustainability?

**Collaborating with state entities affords multifarious gains to ONDC to ensure last-mile enablement.**

| ROLE | ACTIVITY |
|---|---|
| **Incubate** | Helped bring together experts from industry, and those with expertise in DPIs to help build ONDC on strong foundations.<br>Provided guidance to incorporate ONDC as a Private Non-Profit Company with a goal of working with **"Startup Speed and Government Scale"** |
| **Champion** | Government leadership has supported and championed ONDC encouraging both businesses and institutions to adopt and support ONDC.<br>Branding and vocal support by the Government on multiple fora helped build trust in the initiative, as well as encouraging both businesses and institutions to adopt<br>Government of India is also evolving its policy and regulatory landscape towards the open network approach, enabling ease of doing business and living. |
| **Leverage** | Government has sponsored multiple hackathons and workshops to spread awareness, encourage awareness and adoption especially for undigitised sectors.<br>Government ministries have launched schemes to build capacity for underserved sections driving employment, livelihoods and social impact through ONDC.<br>Every state in India has appointed a Nodal Officer for ONDC, who are driving customised programs for their regions |

For example: Ministry of Agriculture & Farmers Welfare Program to Digitize Farmer Cooperatives

**Source:** UP first state to integrate ODOP mart on ONDC, ETGovernment.com ;DigiReady, Quality Council of India

# 04 What are the financial levers for similar open networks?

**As critical determinants for growth and innovation, striking a balance between multiple financial levers is important to ensure long-term sustainability.**

| FINANCIAL LEVER | BENEFITS | LIMITATIONS |
|---|---|---|
| **Public budgets:** Funds allocated by a state entity for public expenditure. | • Backed by state policy<br>• Steady flow and stable value | • Influenced by changes in national priorities<br>• Dependent on political buy-in<br>• Subject to public scrutiny |
| **Public sector capital:** Investments flowing from entities which are financially operated by the state. | • Builds trust in and of network<br>• Ideal for early stage networks focused on grassroots integration and capacity | • Influenced by changes in national priorities<br>• Dependent on political buy-in |
| **Private capital:** Investment by privately owned and managed entities. | • Builds strategic partnerships with investors<br>• Ideal for R&D of open network | • Focused on short-term (shareholder) goals which may not align<br>• Likely principal-agent conflict |
| **Grants:** Funds that are commitment based or philanthropic in nature. | • Large sums with autonomy over fund utilisation<br>• Aligns with societal goals of networks | • Unstable source of funding, with limited assurance for renewal<br>• Limited public accountability |

**Source:** The DPI Approach: A Playbook, Aapti and UNDP, 2023

# 05 What are the non-financial levers for similar open networks?

**Mechanisms for non-monetary support are crucial levers to embody principles of inclusion, participation, and decentralisation within open networks.**

| NON-FINANCIAL LEVER | BENEFITS | LIMITATIONS |
|---|---|---|
| **Shared resources:** Technology or resources supplied by external parties for mutual benefit | • Promotes greater societal gains.<br>• Creates avenues for cross-learning and innovation. | • Nature of partnership and level of involvement might be challenging to codify.<br>• Challenges around confidentiality, attribution, and workplace culture might emerge. |
| **Capacity building:** Specific skills and learnings provided in pursuit of a common goal | • Benefits from knowledge and experience of practitioners.<br>• Reduces costs of outsourcing services. | • Might limit pathways to engage experts over time.<br>• Misalignment over long term goals. |
| **Volunteering:** Pro-bono support extended by communities with relevant expertise | • Promotes participation in larger societal goals and ecosystem building.<br>• Fosters communitarian values. | • Limited monetary incentive<br>• Absence of codified relationship could lead to conflicts. |
| **Grassroots integration:** Process of building and extending various linkages to the network | • Promotes ecosystem building and long term societal gains.<br>• Provides opportunities for innovation. | • Long term process which requires stable and consistent support. |

**Source:** The DPI Approach: A Playbook, Aapti and UNDP, 2023

# 06 What are the sustainability enablers for scaling open networks?

Pathways for communities to understand and eventually helm key processes are vital to survival of ON.

## Community Development

| CONSIDERATION | NATURE OF PROBLEM |
|---|---|
| **Why should an ON focus on community development?** | **Decentralizing services beyond an ON's founding authority** is critical for continued functionality as the user base grows and the number of domains present increases. A growing ON needs more people and groups to be able to actively contribute to and take charge of **technological development, network policies, strategic considerations of domains and categories, use cases, disciplinary measures and peer mechanisms for ON governance.** |
| **What does it entail?** | ON need **community spaces for discussion and ideation**, like hackathons and GitHub pages. Documentation, and resources reflecting **technological and governance architecture need to be accessible and amenable** to stakeholder input. Clear, visible exchanges between stakeholders' calls for action and any ON authorities and services' responses help **visibilize the relationship between communities and an ON's more direct caretakers.** |
| **How has ONDC implemented this?** | ONDC **hosts discussion spaces** like hackathons and community calls. Over time, ONDC has **released frameworks for integral processes like certification and badging and scoring.** that outlines how key processes that run the ON are to be handled by present and future network agents. Architecture assets like the Network Policy and the API contracts are **open to comments, questions and suggestions.** |

# 06 What are the sustainability enablers for scaling open networks?

Inviting and accommodating external contribution to ON not only drives adoption, but also sense of ownership.

## Community Contribution

| CONSIDERATION | NATURE OF PROBLEM |
|---|---|
| **Why consider community contribution when building ON?** | While the founding authorities might play a lead role in the initial development of the ON, the **stakeholder communities are meant to eventually take up the further construction, innovation and maintenance.** Decentralisation and the ON not becoming a platform hinges on community ownership of the ON's continued operation and changes. Community development goes hand in hand with enabling contributions to ON. |
| **What does it entail?** | In addition to devolution, the initial design and piloting of the ON needs **mechanisms and pathways of external and non-financial scrutiny of and contribution to the network's technological and governance architecture.** Install **openings for external stakeholders to consistently provide feedback, solutions and approaches.** |
| **How has ONDC implemented this?** | ONDC has a GitHub presence dedicated towards **making code and architecture externally available**, with discussion spaces for conversations on working with ONDC, reporting problems and providing input and code. There are also **periodic working group and strategy calls** for discussion and addressal of various issues. The Network Policy is also kept open to stakeholder input for **raising issues and suggesting alterations and amendments.** ONDC produces **frameworks that outline processes** for the community to operate key fixtures like **participant certification**, as well as their **ratings and badging.** Partnership with entities like Bhashini and Meta to enable alternative interfaces for greater inclusion. |

**Source:** ONDC-Official, GitHub

# 07 Principles: Sustainability levers available to future open networks

**Underpinning sustainability is a host of tools that promote responsible innovation and stakeholder engagement.**

### INCLUSION AND PARTICIPATION

Participative growth with last mile access

**Tools & techniques operationalisation**

1. Funding and support for capacity building for MSMEs and underserved communities
2. Grassroots integration for local communities by leveraging existing infrastructures
3. Progressive revenue model to ensure equitable access

### OPEN INNOVATION AND DECENTRALIZATION

Unlocking value and agency on each node for all stakeholders

**Tools & techniques operationalisation**

1. Hackathons and incubation programs to provide technical and financial support for building innovative solutions for ONDC
2. A diverse funding portfolio to prioritise resilience of the network

### SECURITY AND MINIMALISTIC DESIGN

Securing personal data and minimising data collection

**Tools & techniques operationalisation**

1. Adopting a privacy respecting financial model that avoids commodification of personal data
2. Investments in research, development and adoption of privacy-preserving technologies

### TRANSPARENCY AND GRIEVANCE REDRESSAL

Promoting trust through disclosures and accountability

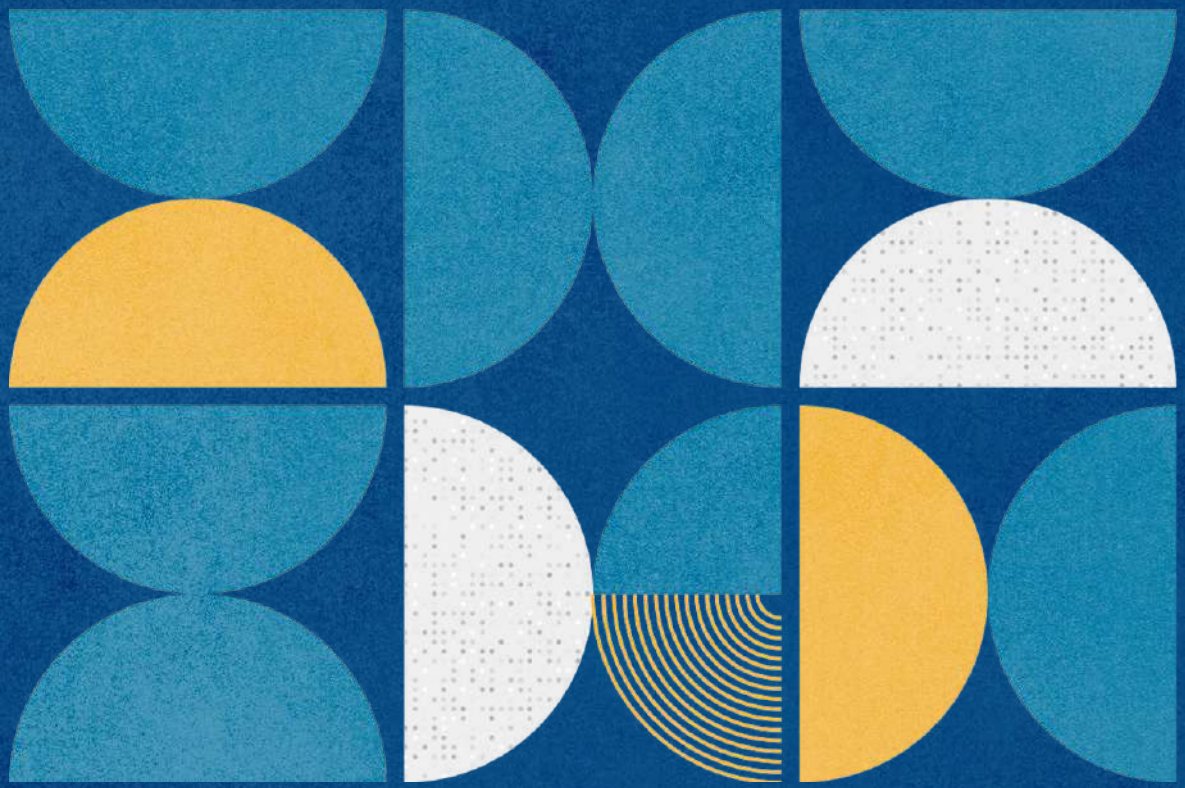
**Tools & techniques operationalisation**

1. Adequate and accessible disclosures about funding and financial statements
2. Disclosures regarding allocation of financial resources and non-financial support
3. Invest in a resilient grievance redressal mechanism

**Source:** ONDC Strategy Document, ONDC, 2022

CHAPTER 5

# Gauging pluralistic impact



# Key considerations

01 How can we think about potential impact of open networks like ONDC?

02 What needs to be done to make open networks possible?

Readiness assessment

01

# How can we think about potential impact of open networks like ONDC?

Impact can be conceived of across three levels, along economic and societal parameters.

| | INDIVIDUAL | FIRM | MARKET |
|---|---|---|---|
| **Economic** | • Access to a wider catalogue of new products and services<br>• Choice and agency in transaction decisions<br>• Rationality gains with insight on price considerations | • Expansion in consumer base and revenue channels<br>• Opportunity to strengthen value chains<br>• Creation of new marketplaces and associated services | • Impetus for livelihood and local industries<br>• Trade efficiency with improved market and currency strength<br>• Growth in cross-border trade and manufacture |
| **Societal** | • Consumer-centred e-commerce pathways<br>• Inclusion of marginalised communities | • Consultative evolution of business landscape<br>• Last-mile enablement with digitalisation of businesses | • Collective nation building with indigenous industries<br>• Favourable policy landscape |

Economic impact has direct commercial implications; societal impact indirectly enables commercial benefit

# 01 Potential impact at the level of individuals

Individual users on ONDC are participants who largely operate as buyers, and in some capacity, as smaller sellers.

| LENS | GOAL | DESCRIPTION |
|---|---|---|
| Economic | Access to more goods | Individual buyers get access to a wider catalogue of new products, services, and providers that may otherwise be unavailable owning issues of discoverability, logistics, or literacy. |
| | Agency over transaction choices | Low barriers to entry and customisable options for more sellers on the marketplace results in better choice for buyers. This in turn improves consumer agency and decision-making. |
| | Rational user engagement | Network landscape is more competitive in pricing and quality of products with decreased cost to information and transactions for users. This results in rationality gains for individuals based on insight to price considerations. |
| Societal | Consumer-centred e-commerce | With democratisation of e-commerce, open networks enable pathways to consumer-centred practices in the entire supply chain that fosters transparency and participation. |
| | Inclusion of marginalised communities | Online unbundled marketplace opens avenues to reach remote and marginalised communities that otherwise have limited access to restricted nodes of product and service delivery. |

# 01 Potential impact at the level of firms

Firms are the participants that typically sell products or services on the network.

| LENS | GOAL | DESCRIPTION |
|---|---|---|
| Economic | Expanded clientele | Open networks enable access to a wider consumer base for sellers while unlocking pathways to innovative revenue channels with ancillary service provisioning. |
| | Opportunity with reduced costs | With an open network, businesses can strengthen their value chains while benefiting from the reduced investment in logistics, raw materials, and ancillary services. |
| | Discovery of new use cases and models | Unbundling of e-commerce provides an impetus to the creation of new marketplaces that businesses can leverage and extend associated services on. |
| Societal | Consultative evolution of businesses | With open feedback loops and an accessible network of buyers and sellers firms get the opportunity to benefit from a consultative evolution of the business landscape based on engagement with other stakeholders. |
| | Last-mile access | Disparate small, medium and micro-enterprises are afforded an opportunity to move online and overcome the digital divide through open networks. |

# 01 Potential impact at the level of the market

Democratisation of e-commerce with ONDC also benefits the larger market structure and trade practices.

| LENS | GOAL | DESCRIPTION |
|---|---|---|
| Economic | Impetus to industry | Higher engagement and last mile access provide an opportunity to spotlight local industries and results in generation of livelihood for a wider population. |
| | Growth of cross-border transactions | Open networks for e-commerce can enable ease of cross-border transactions resulting in higher global trade and exports of goods and services. |
| | Efficiency of market | Strengthening of markets and higher cross border trade results in the overall forex optimisation, resulting in bolstering local currency. |
| Societal | Collective nation building with indigenous industries | With the opportunity to support and spotlight local industries, open networks furthers the Make in India mission and promotes collective nation building. |
| | Favourable policy landscape | Insights from the operations of open networks can inform policy-making on themes such as taxation, trade regularisation, data flows and governance to become more business-friendly. |

# 02 What needs to be done to make open networks possible?

ONDC performs an essential orchestration function to enable the market while maintaining an open network across stages.

**Convene**
To ideate for problem identification and plan for solution mapping

- Vetting the appetite for ONs and mapping the ecosystem
- Establishing communications and partnerships with relevant stakeholders
- Identifying champions, roles, and responsibilities

**Bootstrap**
To kickstart and build the core technology, network, and governance

- Building the source code
- Articulating use-cases and raising funds
- Hiring and leveraging existing resources
- Conducting pilots and developing a proof of concept
- Outlining a governance model

**Grow**
To improve useability and deepen the community of support

- Enabling interlinkages and ancillary services within the infrastructure
- Improving user journeys and ease of operation
- Strengthening support ecosystem for capacity building and innovation

**Expand**
To innovate and scale for long-term resilience and value generation

- Scaling funds and developing revenue models
- Initiating new products, services, and network use cases
- Creating value through data analytics and insights;
- Strengthening partnerships and capacities

**Source:** ONDC

# Readiness assessment

**Use the following questions to evaluate the viability and potential for adopting open network solutions.**

## Viability

- [ ] Ecosystem of digitalized network participants to kick start the open network, i.e., a pre-existing set of digital apps and platforms delivering services
- [ ] Existing minimum viable volumes of existing digital commerce transactions in any one large sector or a handful of medium/small sectors
- [ ] Ecosystem of digital service providers who can work with network participants to enable open network protocols
- [ ] Pre-existing ICT infrastructure or easy access to cloud platforms for hosting Registry [E.g. in Tunisia  it is hard to adopt cloud platforms as they can't make cross-border payments with credit cards and hence it is difficult to quickly get on board a public cloud and set up Registry. So they need to fall back on local data centers.]
- [ ] Digitally savvy leadership talent to take up setting up and operations of the Open Network from an Enablement and Governance perspective
- [ ] Availability of service providers for various auxiliary services for digital commerce such as logistics, RSP, grievance redressal
- [ ] Basic legal and regulatory framework is in place on which the open network can be established such as data protection, e-commerce regulation, consumer rights, taxation framework for e-commerce etc.
- [ ] Essential set of business identifiers are in place to enable creation of a systematic Registry and to digitally verify their validity
- [ ] Digital Certificate Authority is in place to enable participants to sign transactions

## Potential

- [ ] Increasing penetration of smartphones and mobile internet
- [ ] Increasing digitally aware and digitally savvy population
- [ ] Large pool  small and medium sized businesses across various sectors who need digital enablement through the open network
- [ ] Growing ecosystem of digital startups in the economy providing customized or localized services to the local population

aapti institute

This is a work of independent research, commissioned by **ONDC** in 2023-2024.

It was built by **Aapti Institute**, a public research institute that works on the intersection of technology and society. Aapti examines the ways in which people interact and negotiate with technology both offline and online.

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# Notes

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