vitrifi

Vitrifi: Pioneering Smarter Networks with Data-Driven Intelligence

Vitrifi at a Glance

December 2024

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Transforming Connectivity

Empowering Intelligent, Sustainable Networks for a Connected World

At Vitrifi, we are on a mission to revolutionise how networks are operated, managed, and scaled – driving the evolution of connectivity from manual, reactive systems to autonomic, self-managing networks that are faster, more resilient, reliable, and sustainable.

Built on the principles of data mesh, our autonomic platform enables data-driven decisions across all levels of operations. By combining vendor-neutral, intent-based programmability with self-managing intelligence, it simplifies complex network operations, delivering seamless scalability, automation, and efficiency.

With data as its foundation, our solution hides the underlying complexity while empowering Communication Service Providers (CSPs) to unlock operational insights, enhance decision-making, and optimise networks end-to-end. This sets a new benchmark for intelligent network automation and operational excellence.
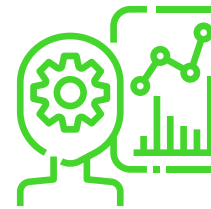
By enabling CSPs to scale operations efficiently, accelerate service provisioning, and deliver best-in-class user experiences, our platform empowers businesses, cities, and industries to stay seamlessly connected – effortlessly.
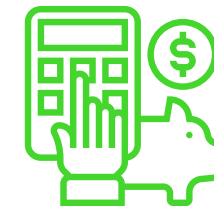
The Problem We're Solving

Modern Networks Face Rising Complexity, Inefficiency, and Sustainability Challenges

As data demand soars and networks grow denser and more complex, the traditional manual approach to managing connectivity is becoming unsustainable.
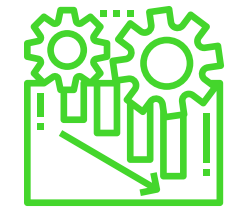
Companies face increasing pressure to deliver reliable, high-performance networks while controlling costs and addressing their environmental impact:

Increasing demand for data and connectivity is outpacing the capacity of manual processes.

High operational costs and inefficiencies are straining businesses.

Meeting ESG goals by reducing energy consumption, while maintaining reliability is a growing challenge.

Why does this matter? Networks are critical to modern life. We depend on them for everything: streaming, working, managing cities, healthcare, and more.

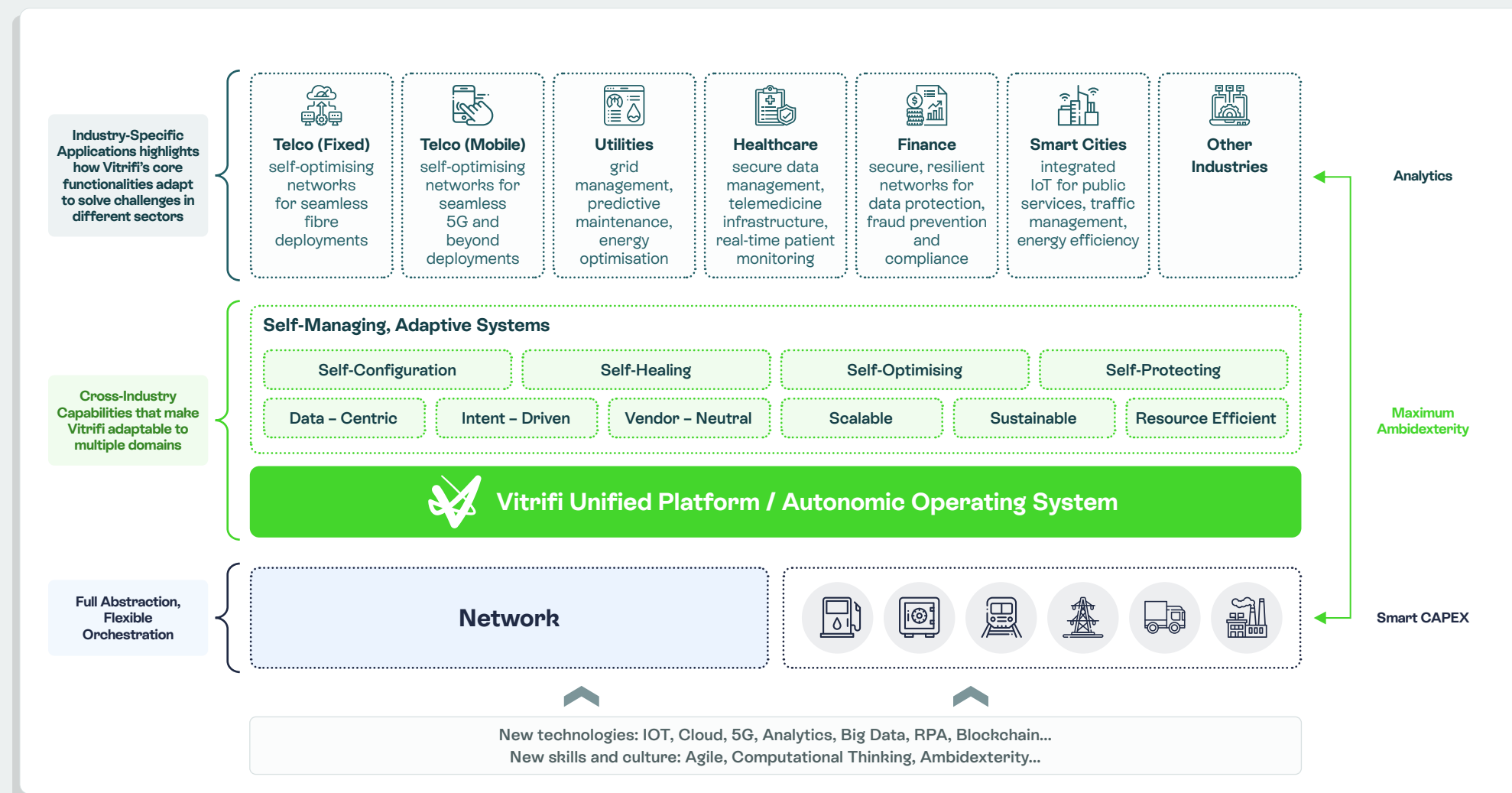But as the managing of networks becomes increasingly costly, inefficient and unsustainable - current solutions aren't built to meet these challenges at scale. These challenges require a smarter, more adaptive approach – one that Vitrifi is uniquely equipped to deliver – intelligent intent-based automation that works seamlessly alongside human expertise to create faster, more adaptive and sustainable systems.

The Solution

Vitrifi's Unified Platform

An adaptive, autonomic ecosystem that supports self-managing networks across industries – a scalable vision with profound cross-industry impact.

Vitrifi's autonomic platform, transforms how networks operate by integrating data mesh principles, intent-based programmability and self-managing intelligence.

Industry-Specific Applications highlights how Vitrifi's core functionalities adapt to solve challenges in different sectors

| **Telco (Fixed)** self-optimising networks for seamless fibre deployments | **Telco (Mobile)** self-optimising networks for seamless 5G and beyond deployments | **Utilities** grid management, predictive maintenance, energy optimisation | **Healthcare** secure data management, telemedicine infrastructure, real-time patient monitoring | **Finance** secure, resilient networks for data protection, fraud prevention and compliance | **Smart Cities** integrated IoT for public services, traffic management, energy efficiency | **Other Industries** |

Cross-Industry Capabilities that make Vitrifi adaptable to multiple domains

Self-Managing, Adaptive Systems

Self-Configuration · Self-Healing · Self-Optimising · Self-Protecting

Data – Centric · Intent – Driven · Vendor – Neutral · Scalable · Sustainable · Resource Efficient

Vitrifi Unified Platform / Autonomic Operating System

Full Abstraction, Flexible Orchestration

Network

New technologies: IOT, Cloud, 5G, Analytics, Big Data, RPA, Blockchain...
New skills and culture: Agile, Computational Thinking, Ambidexterity...

Analytics · Maximum Ambidexterity · Smart CAPEX

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1. Data Mesh Principles:
- Decentralised Data Ownership: each domain owns and shares its data, enabling scalability and adaptability across all operational levels.
- Self-Serve Data Architecture: ensures high data availability, empowering CSPs with actionable insights in real-time.
- Interoperability and Data Governance: seamlessly integrates data across silos, improving transparency and enabling compliance with global standards.

2. Vendor-Neutral, Scalable Design:
- Integrates seamlessly with existing infrastructure, across fixed fibre broadband and multi-access networks, enabling effortless adaptation to growth and evolving demands.
- Scales effortlessly to support industries beyond telecommunications, delivering consistent, data-driven results.

3. Energy-Smart and Sustainable Operations (supporting ESG goals):
- Optimises energy consumption and reduces operational waste through automated, data-driven decision-making.

4. Self-Managing Intelligence:
- Self-healing and self-configuring systems continually improve performance, minimising the need for manual intervention and ensure uninterrupted reliability.
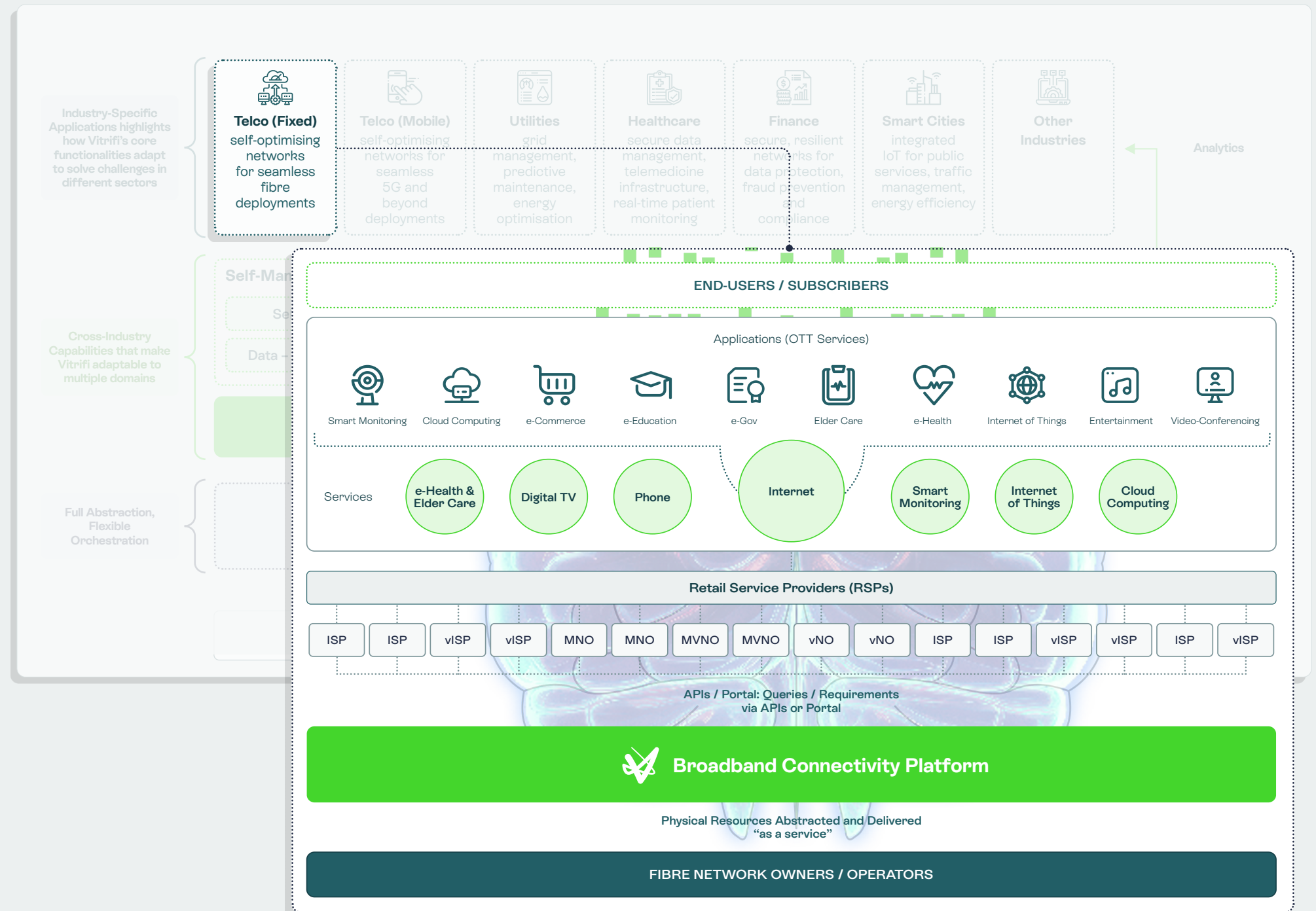
The Solution

Vitrifi's Unified Platform

Brain-Bending Elegance: It takes a new broadband operating system to orchestrate the complexities and mitigate the brittle nature of an archaic, complicated network infrastructure.

Vitrifi's platform provides unmatched operational and financial benefits for CSPs - encompassing Fibre Network Owners/Operators and Retail Service Providers (RSPs). By improving customer experience and operational efficiency through its powerful suite of modular components, the platform empowers CSPs to deliver next-generation services with unparalleled agility.

Powered by VALERIE (Vitrifi Autonomic Lattice Re-Configuration Engine), the "brain" behind our operating system, Vitrifi revolutionises network management and service delivery, enabling CSPs to streamline operations and unlock new revenue opportunities.
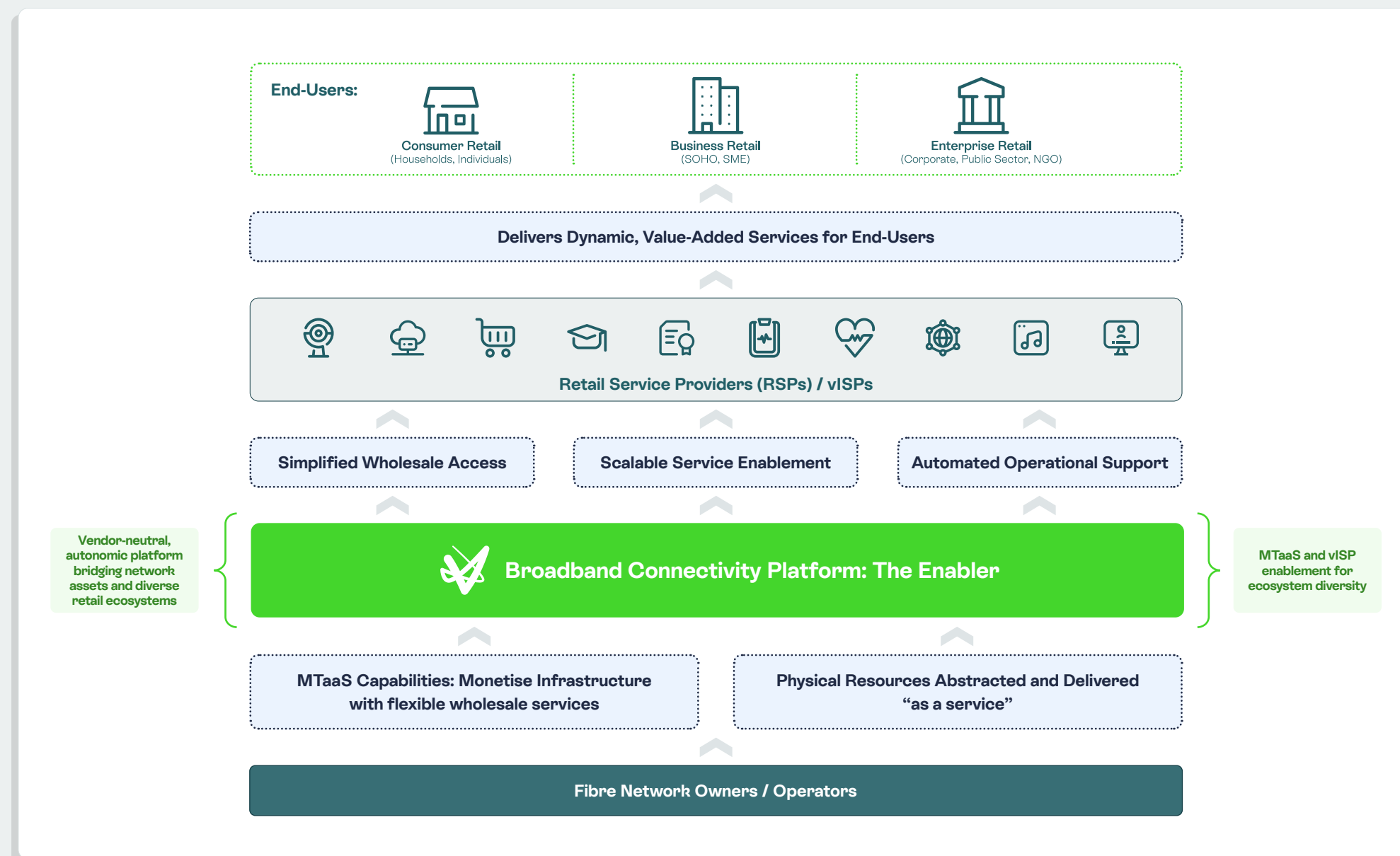
The Solution

Wholesale Proposition

Transforming Network Monetisation:
Vitrifi's wholesale capabilities – anchored in Multi-Tenancy as a Service (MTaaS) and vISP enablement – offer operators unprecedented flexibility in leveraging their networks.

This approach empowers telcos to:

1. **Leverage existing capital investments for greater returns:** monetise existing network investments by enabling new service layers.

2. **Diversify Revenue Streams:** bring multiple Retail Service Providers (RSPs) onto a single network and expand ecosystem partnerships.

3. **Evolve Operational Models:** choose to focus solely on infrastructure management or add services through wholesale and retail collaborations.

4. **Enable Larger Ecosystems:** seamlessly integrate into "networks of networks," creating value chains across multiple providers.

End-Users:
Consumer Retail (Households, Individuals)
Business Retail (SOHO, SME)
Enterprise Retail (Corporate, Public Sector, NGO)

Delivers Dynamic, Value-Added Services for End-Users

Retail Service Providers (RSPs) / vISPs

Simplified Wholesale Access · Scalable Service Enablement · Automated Operational Support

Vendor-neutral, autonomic platform bridging network assets and diverse retail ecosystems

Broadband Connectivity Platform: The Enabler

MTaaS and vISP enablement for ecosystem diversity

MTaaS Capabilities: Monetise Infrastructure with flexible wholesale services · Physical Resources Abstracted and Delivered "as a service"

Fibre Network Owners / Operators

By unlocking operational agility and enabling new wholesale revenue channels, Vitrifi ensures that telcos remain at the forefront of network innovation.
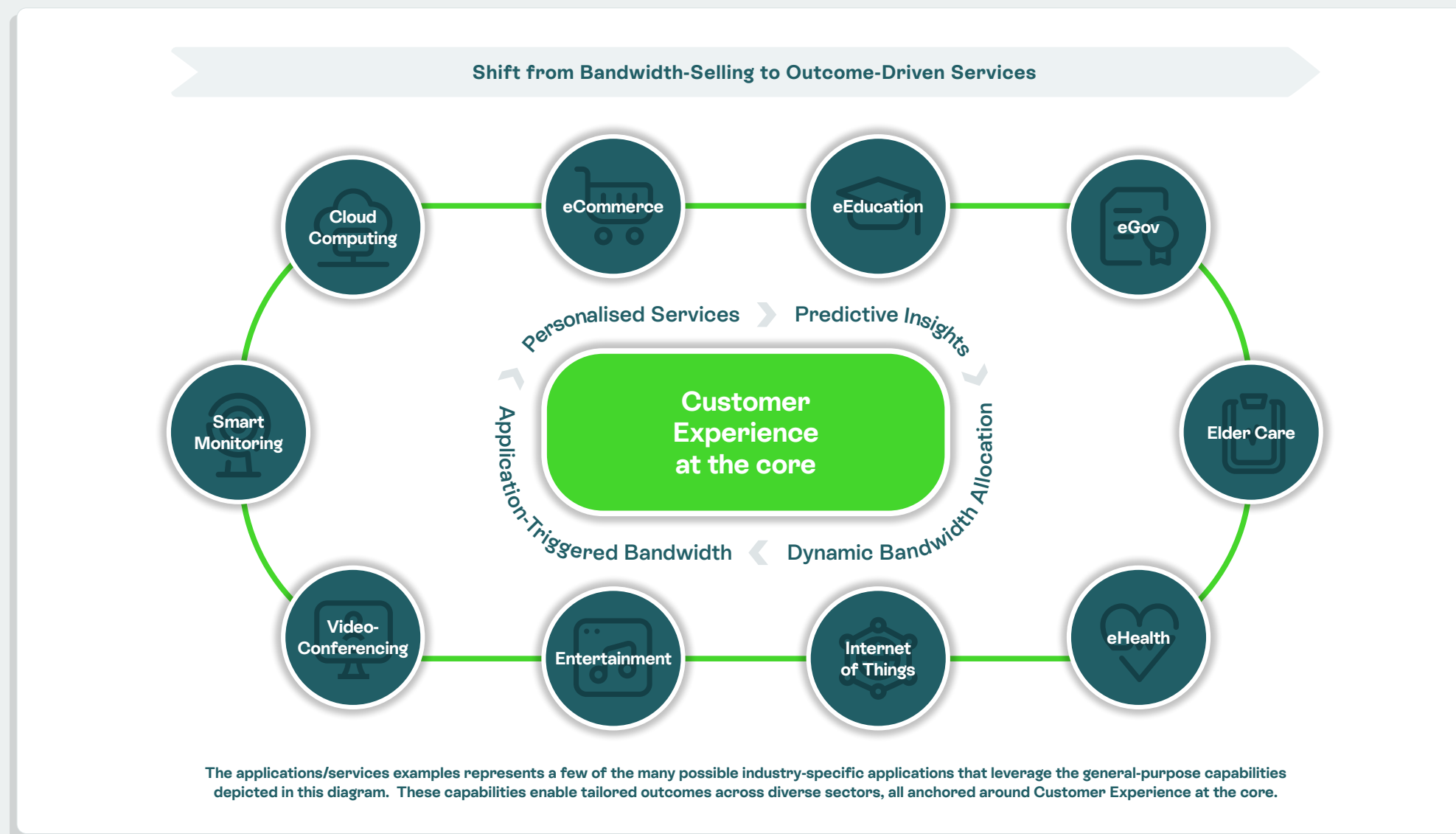
The Solution

Revolutionising the End-User Journey

Next-Generation Customer Experience: CSPs can move beyond commoditised offerings like "speed and bandwidth" to deliver transformative, outcome-oriented services.

Our platform:

1. **Empowers New RSPs:** through MTaaS and vISP enablement, to drive innovation with next-generation service providers.

2. **Drives Customer-Centric Growth:** enable application-triggered services (e.g., eHealth bandwidth) and context-aware solutions that dynamically adapt to user needs.

3. **Reimagines the CSP Role:** by shrinking and refocusing CSP capabilities, Vitrifi enables telcos to align more closely with customer outcomes.

4. **Delivers High-Fidelity Communications**: leverages advanced data analytics to anticipate demand, optimise services, and enhance both retail and enterprise experiences.

Shift from Bandwidth-Selling to Outcome-Driven Services

Cloud Computing · eCommerce · eEducation · eGov · Smart Monitoring · Elder Care · Video-Conferencing · Entertainment · Internet of Things · eHealth

Personalised Services · Predictive Insights · Application-Triggered Bandwidth · Dynamic Bandwidth Allocation

Customer Experience at the core

The applications/services examples represents a few of the many possible industry-specific applications that leverage the general-purpose capabilities depicted in this diagram. These capabilities enable tailored outcomes across diverse sectors, all anchored around Customer Experience at the core.

Clarifying Note:

Throughout this document, the term 'telco' is used synonymously with telecom operators or Communication Service Providers (CSPs). This encompasses a wide range of entities, including:

- Full-Service Operators (Fixed and Broadband)
- Fibre Network Owners / Operators (e.g., infrastructure providers)
- Retail Service Providers (RSPs) offering broadband and other digital services
- Virtual Internet Service Providers (vISPs)
- Mobile Network Operators (MNOs) and Mobile Virtual Network Operators (MVNOs)
- Other actors across the telecommunications value chain

By employing this inclusive terminology, we acknowledge the interconnected roles these entities play in delivering seamless communication services and driving innovation across the industry.
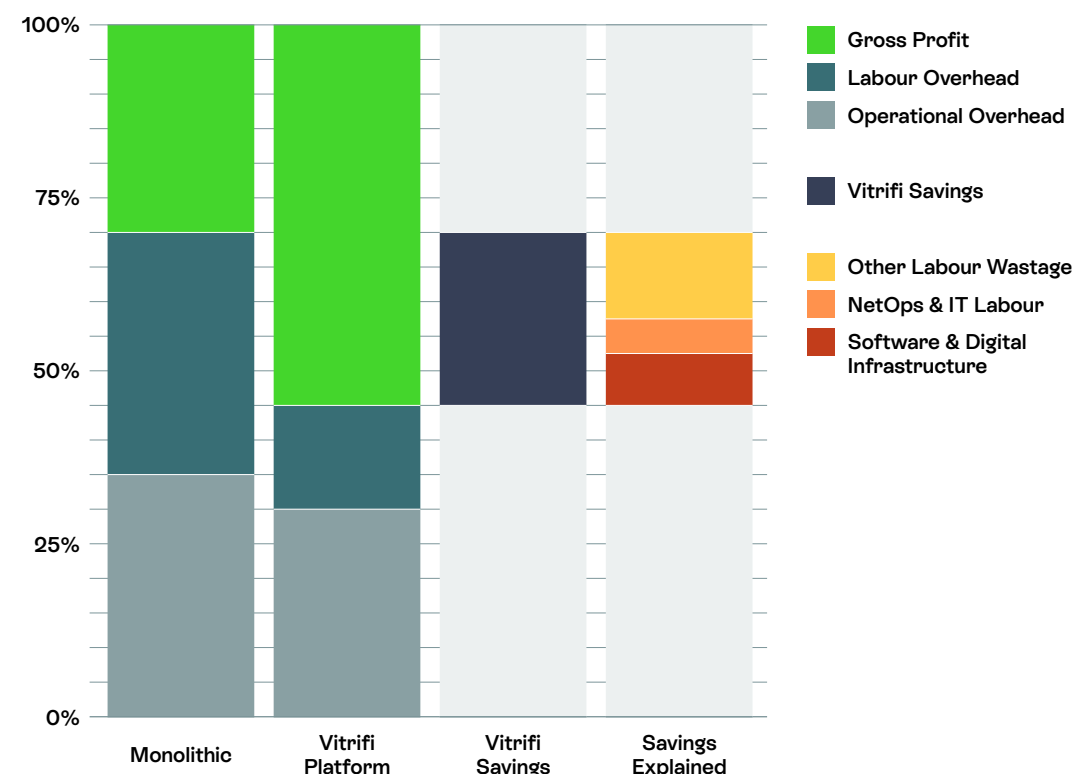
The Solution

Reducing Costs, Scaling Operations, and Optimising Efficiency

Unlike conventional AI-based and OSS/BSS solutions, Vitrifi's platform simplifies service delivery, reduces costs, and drives innovation through real-time data orchestration – leveraging machine learning and targeted intelligent systems to:

- **Proactively fix issues,** ensuring continuous reliability and minimising disruptions.

- **Seamlessly scale operations** across industries, from telecoms and utilities to healthcare and smart cities.

- **Reduce operational costs** by up to 30% through intelligent automation.

- **Optimise energy efficiency,** to meet global sustainability goals.

By hiding the complexity of network operations, the Vitrifi platform's intent-based programmability empowers Communication Service Providers (CSPs) to automate services and infrastructure end-to-end. This allows them to scale operations efficiently, accelerate service delivery, and provide best-in-class experiences to users and customers.

10-15%	of revenue for a typical telco spent on software & digital infrastructure
4.2%	of revenue for a typical telco spent on NetOps & IT labour
£7.10	per subscriber, per month attributed to IT & software
£4.00	per subscriber, per month wasted labour due to inefficient systems (truck roll, etc)
£4.2Bn	UK Gov estimated cost of Telecoms Security Act (TSA) compliance for the telco industry

Legend:
- Gross Profit
- Labour Overhead
- Operational Overhead
- Vitrifi Savings
- Other Labour Wastage
- NetOps & IT Labour
- Software & Digital Infrastructure

Chart categories: Monolithic, Vitrifi Platform, Vitrifi Savings, Savings Explained

Illustrative Example (using UK stats)

Vitrifi's platform drives significant savings, whilst drastically improving key performance areas for its customers: total experiences (UX, CX, PX, EX), scalability and cross-industry adaptability, compliance and data sovereignty, sustainability and digital inclusion.

Why Now?

The Market Opportunity

The telecommunications and broader digital infrastructure landscape is at an inflection point. Global demands for **faster, smarter, and greener connectivity** are reshaping how networks are built and managed.

Key Market Insights*

1. **Global CSP Network Investments:** CSPs are projected to invest over $1 trillion in network infrastructure by 2025, including upgrades in 5G, fibre broadband, and edge computing.

2. **Operational Expenditure Optimisation:** CSPs currently spend $67 billion annually on OSS (Operations Support Systems) and BSS (Business Support Systems), with rising needs for automated and data-driven solutions.

3. **Autonomic Networking Growth:** The autonomic networking market, driven by intelligent self-managing systems, is forecast to grow at a **CAGR of 20%** through 2032, with an estimated worth of US$30.2 billion – cannibalising traditional network infrastructure, OSS and BSS spend.

4. **CTS Market Trends:** Spending on Communications Technology Services (CTS) is set to reach **$173 billion by 2025**, reflecting the growing demand for data-centric and autonomous infrastructure management.
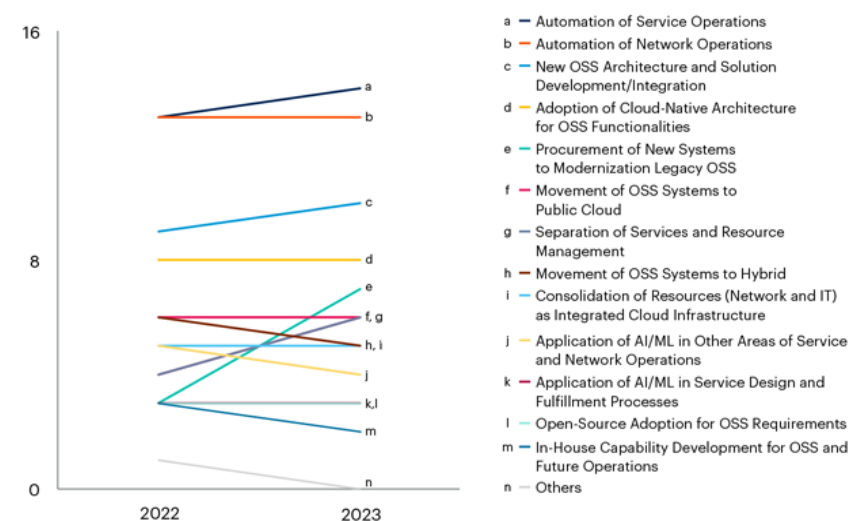
Proof of Value

Vitrifi has already delivered a sell-side (NetCo/NHO) scale-invariant multi-tenancy platform for wholesale services, focused on removing the costly barriers to entry for any buy-side entity, whether they be an ISPCo or an MSP needing vISP services (ServCo) or an enterprise needing connectivity or multi-site WAN solutions.

We have a strong pipeline of engagements across APAC, Europe and North America with initial proof of concepts demonstrating measurable reductions in service provisioning timescales, cost-to-serve and improved customer satisfaction - showcasing the transformative impact our platform can achieve.

Strategic Alignment

Gartner's 2023 OSS priorities highlight the demand for service operation automation, cloud-native architectures, and data-driven intelligence.

Changes in CSP OSS-Related Priorities Between Early 2022 and Early 2023

a — Automation of Service Operations
b — Automation of Network Operations
c — New OSS Architecture and Solution Development/Integration
d — Adoption of Cloud-Native Architecture for OSS Functionalities
e — Procurement of New Systems to Modernization Legacy OSS
f — Movement of OSS Systems to Public Cloud
g — Separation of Services and Resource Management
h — Movement of OSS Systems to Hybrid
i — Consolidation of Resources (Network and IT) as Integrated Cloud Infrastructure
j — Application of AI/ML in Other Areas of Service and Network Operations
k — Application of AI/ML in Service Design and Fulfillment Processes
l — Open-Source Adoption for OSS Requirements
m — In-House Capability Development for OSS and Future Operations
n — Others

n = 16 (2022), 15 (2023) count of rankings as top 3 priority by OSS vendors in their CSP customers

Unlike generic AI platforms, Vitrifi employs purpose-built intelligent systems that deliver measurable results:

- Data-centric operations, enabling CSPs to harness insights and continuously optimise performance
- Operational cost reductions of up to 30%
- Automation of resource management, service delivery, and troubleshooting
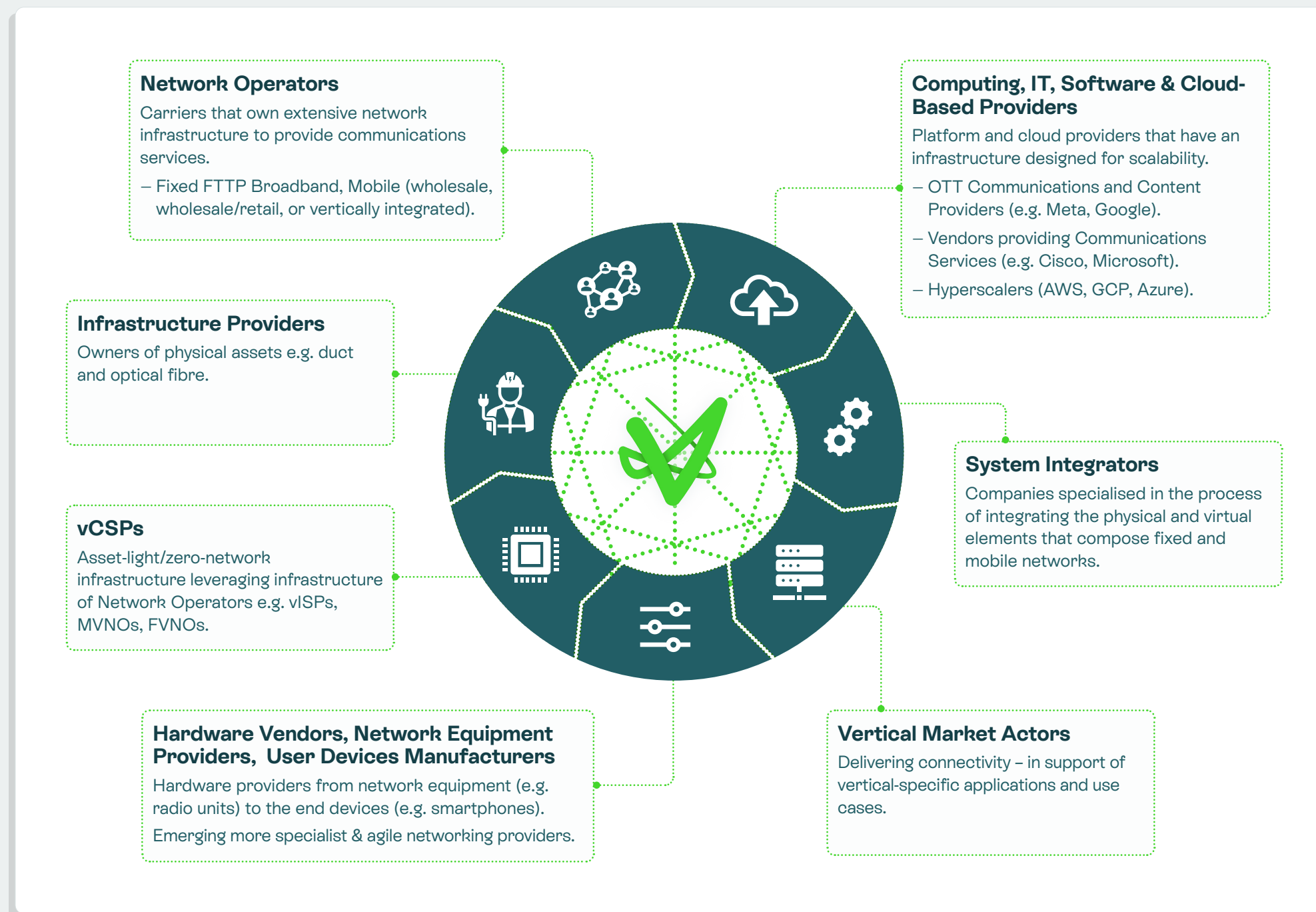- ESG-aligned solutions for energy efficiency and sustainability

This pivotal moment is a once-in-a-generation opportunity to modernise digital infrastructure, enabling smarter, more sustainable connectivity to support a hyperconnected world.

Looking Ahead

Roadmap for Growth

Vitrifi's phased growth strategy ensures value delivery at every stage as we expand our ecosystem of customers and partners:

- **2024–2026:** Revolutionising fixed broadband with proven cost savings and scalable autonomic solutions.

- **2026–2028:** Expanding into multi-access networks and cross-industry applications.

- **2028 and Beyond:** Delivering fully autonomic, cross-industry ecosystems.

Network Operators

Carriers that own extensive network infrastructure to provide communications services.

– Fixed FTTP Broadband, Mobile (wholesale, wholesale/retail, or vertically integrated).

Computing, IT, Software & Cloud-Based Providers

Platform and cloud providers that have an infrastructure designed for scalability.

– OTT Communications and Content Providers (e.g. Meta, Google).

– Vendors providing Communications Services (e.g. Cisco, Microsoft).

– Hyperscalers (AWS, GCP, Azure).

Infrastructure Providers

Owners of physical assets e.g. duct and optical fibre.

System Integrators

Companies specialised in the process of integrating the physical and virtual elements that compose fixed and mobile networks.

vCSPs

Asset-light/zero-network infrastructure leveraging infrastructure of Network Operators e.g. vISPs, MVNOs, FVNOs.

Hardware Vendors, Network Equipment Providers, User Devices Manufacturers

Hardware providers from network equipment (e.g. radio units) to the end devices (e.g. smartphones).

Emerging more specialist & agile networking providers.

Vertical Market Actors

Delivering connectivity – in support of vertical-specific applications and use cases.

Who We Are

Our People...

Founded in 2021 and funded by Fern Trading, a £3bn trading group managed by Octopus Investments, Vitrifi is at the forefront of transforming network operations. Our journey began with a mission to reimagine telecommunications, leveraging data-centricity to address critical challenges such as scaling fibre assets and reducing operational costs for wholesale operators.
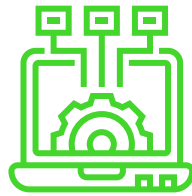
But our success isn't just built on revolutionary technology – it's driven by our people.

Our team brings together a diverse blend of deep technical expertise, and cross-industry digital infrastructure experience alongside seasoned commercial leaders who understand diverse market demands, and customer challenges.

This breadth and depth of experience allows us to bridge the gap between technological innovation and market relevance – allowing us to build next-generation technology while building real world value - and address evolving market needs and create scalable solutions that prioritise data-driven intelligence, operational efficiency, and sustainability.
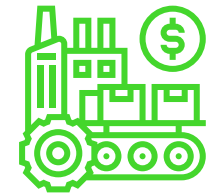
Vitrifi

Why Work With Us?

Harnessing the power of data-driven intelligence and automation, Vitrifi bridges the gap between today's challenges and future opportunities, enabling seamless connectivity for industries, cities, and communities worldwide.

Data-Driven by Design: built on data mesh principles, Vitrifi's platform empowers businesses to unlock and harness the full potential of their operational data.

Proven Results: demonstrated ability to reduce operating costs by up to 30% and optimise performance through real-time intelligence.

Versatility Across Industries: while telecommunications is our foundation, Vitrifi's platform extends to utilities, healthcare, and smart cities, offering scalable solutions tailored to each sector's needs.

Massive Market Potential: positioned at the intersection of US$1 trillion CSP investments, US$67 billion OSS/BSS spend, and fast-growing autonomic networking markets.

Collaborative Approach: we work alongside CSPs and partners to deliver innovative solutions that address today's challenges and tomorrow's opportunities.

Sustainability Leadership: by optimising energy and operations, Vitrifi is paving the way for greener, smarter networks.

Become part of our ecosystem of _intelligent, data-driven solutions_ that scale seamlessly, accelerate service delivery, and create lasting value across industries.

Vitrifi at a Glance – December 2024