Outlier Ventures presents

The Post Web

CHAPTER 2/4

THE TECHNOLOGY STACK

CO-AUTHORED BY

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The Post Web Technology Stack builds on the Web3 foundation we've collectively built as an industry, now reimagined and optimised for its new primary users: AI agents

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Chapter Distribution

We have attempted to be as thorough and comprehensive as possible in this paper for it to stand up to interrogation, dividing our thinking on The Post Web into four chapters. It may be the preference of the reader to skip certain chapters that set the scene and jump straight to the heart of the matter or even further ahead to its consequences. We leave this decision to you.

CHAPTER I

The Why

READ NOW

We unpack why we are transitioning beyond Web3 into The Post Web. We take a moment of critical reflection on a decade of Web3 and its reasonable attempts at abstraction as well as explore how The Post Web is in many ways an evolution of the early vision of "the semantic web". Finally, we discuss what this means for founders building today and how to future-proof their startups.

CHAPTER II

The How

We discuss The Post Web Technology Stack and how what we've been collectively building in Web3 so far fits into the vision for its future. We explore what's needed across wallets, dApps, personhood, asset representation, DLT, infrastructure, and of course DeAI to make The Post Web a reality.

CHAPTER III

The What

We dive into the character of The Post Web and provide a detailed blueprint as to how it will come into effect. We explore how it will be intent-based, deterministic yet adaptive, verifiable and hyper-contextual at the same time. Finally, we look at what activity will change first and how this could potentially look.

CHAPTER IV

The Endgame

We conclude the natural end-state of The Post Web is The Computable Economy in which the wider economy will take on its characteristics. We also discuss the importance of private verifiability in order to fully unlock this new economic paradigm. Finally, we revisit the data economy and why this time will be different.

Chapter One Summary

In case you missed it, in Chapter One of The Post Web thesis, we explored how the internet is transitioning from human-driven interactions to a new paradigm defined by the convergence of AI and distributed ledger technology (DLT).

Web3, while revolutionary on the back-end, failed to transform the web layer itself, leaving room for what we call "The Convergence Web." This era is divided into two phases: the current AI-augmented phase, where AI assists human users, and the future AI-orchestrated phase, where autonomous AI agents take over tasks. The Post Web will mark a complete shift, with AI systems replacing traditional web interfaces, characterised by intent-based functionality, verifiable interactions, and hyper-contextual experiences. This transition redefines how we engage with the internet, moving from manual navigation to adaptive, trustless systems driven by AI and DLT.

Visit postweb.io to read Chapter One, listen to the audio documentary and learn about our Post Web Accelerator.

Content

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Turning the Web3 Stack into The Post Web Stack

In Chapter Two, we discuss The Post Web Technology Stack and analyse how the existing Web3 infrastructure fits into this framework. We explore what's needed in DeAI, Wallets, dApps, DLT, and Resources & Infrastructure.

The Post Web Flywheel

The Post Web is powered by three interconnected technologies: The Agentic Layer, DLT (including real-world assets) and DePIN. Together, they form a flywheel, where adoption on one layer addresses inefficiencies in the others. This convergence pulls in users, assets, and economic activity, creating a robust, resilient, and future-proof Post Web Technology Stack.

Practicality Over Purism

In our Post Web thesis, we take a practical perspective on technology, acknowledging that while decentralisation is the long-term goal, The Post Web operates within a complex ecosystem of evolving technologies, regulations, and economic pressures. As these forces converge, some reliance on less optimal systems may be necessary in the short term. Rather than advocating for an abrupt disruption of the existing stack, we focus on the structural trend toward decentralisation, balancing idealism within real-world constraints.

The Post Web Technology Stack

The Post Web Technology Stack builds upon the current Web3 stack with an agentic layer, where AI agents act on behalf of users. As more activity shifts online, the existing stack must be continuously optimised and expanded to support these agentic users, ensuring scalability and efficiency.

Governance

While Web3 enabled users to reclaim control and obtain the right to vote, **The Post Web takes this further by enabling agents to execute these rights, automating and scaling governance."** By combining automation with human review for complex decisions, The Post Web unlocks unprecedented levels of collective, fluid, and adaptive governance.

Agentic Layer

The Agentic Layer enables interaction between humans, machines, and protocols. Smart agents, a core component of this layer, are autonomous, goal-oriented, and adaptive AI systems uniquely capable of interacting with DLT and smart contracts. In this chapter, we examine the foundations of smart agents, their deployment and orchestration, and their role in shaping The Post Web.

Wallets

In The Post Web, wallets transcend digital asset storage to become the control centre for personhood and resource management. Bolstered by privacy-enhancing technologies and user agency, wallets will serve as the foundation for interaction in the ecosystem, enabling agents to securely access necessary permissions and autonomously execute tasks on the user's behalf.

Decentralised Applications (dApps)

In contrast to Web3, The Post Web divides dApps into two distinct layers: (i) The Functionality Layer, which enables services and processes tailored for human and agent interactions. **(ii) The Peer-to-Peer Transaction Layer**, encompassing what we refer to as DeFi protocols today, which orchestrates asset exchanges and financial operations. These layers are equally critical for scalability whilst upholding the decentralised principles of The Post Web. While interconnected, they are distinct in purpose.

Distributed Ledger Technology (DLT)

Distributed Ledger Technology (DLT), remains integral to The Post Web, verifying and specifying both AI agent and human activity on-chain. **As The Post Web evolves, we expect the DLT stack to become increasingly modular and specialised**, requiring advancements in interoperability and security to handle the expanding volume of economic activity, assets, and sensitive data hosted on-chain. **Central to the importance of DLT in The Post Web are tokens, which play five pivotal roles:** 1) Facilitating decentralised governance. 2) Amplifying network effects. 3) Ownership. 4) Mechanisms of exchange. 5) Tools for game theory design within agentic systems. Together, DLT and tokens provide the foundation for scalable, autonomous, and decentralised activity in The Post Web.

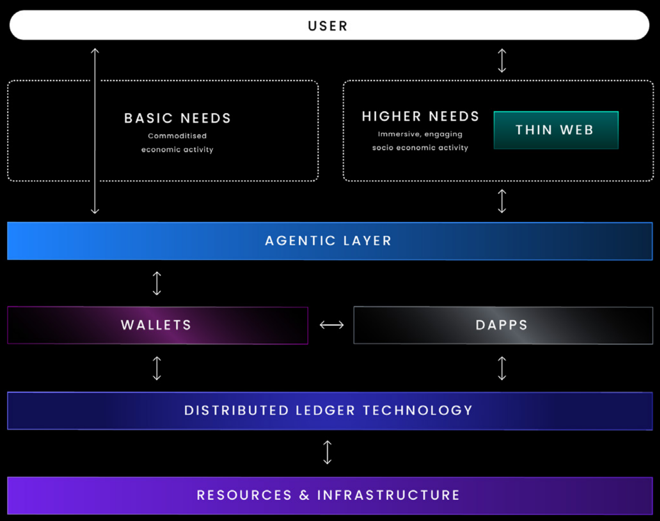
Resources & Infrastructure

Resources & Infrastructure (R&I) are the backbone of The Post Web. Encompassing data, compute, storage, connectivity, latency, and energy, they collectively enable scalable, efficient, and resilient digital operations.
By leveraging decentralised physical infrastructure networks (DePIN) and tokenised systems, The Post Web orchestrates resource allocation dynamically, transforming idle capacity into actionable utility while lowering barriers to entry for hosting infrastructure.

The Post Web Technology Stack One-Pager

The Post Web Technology Stack

The Post Web technology stack comprises of the User, Thin Web, the Agentic Layer, Wallets, dApps, Distributed Ledger Technology, and Resources & Infrastructure.



↳ **USER** - In The Post Web, the user interacts with applications and protocols via the agentic layer or the optional Thin Web layer.

↳ **THIN WEB** - The Thin Web serves as a residual layer of the internet, designed for tasks requiring deep context, immersive engagement, or complex orchestration beyond agent-driven interactions.

↳ **AGENTIC LAYER** - The Agentic Layer introduces smart agents that interact seamlessly with wallets and DLT technology, enabling specification, verifiability, and dynamic execution across The Post Web.

↳ **WALLETS** - Wallets in The Post Web evolve into a comprehensive hub for managing personhood, assets, and interactions, enabling decentralised economic activity through enhanced privacy, programmability, and interoperability.

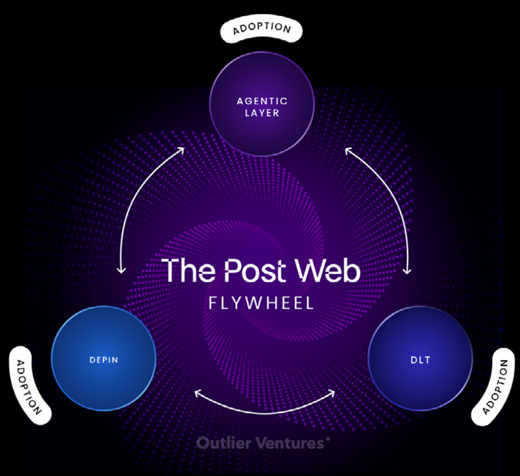
↳ **DAPPS** - The dApp layer in The Post Web orchestrates decentralised social and economic activities through functionality and peer-to-peer transaction layers, enabling trustless coordination, efficient financialisation, and seamless agent-driven interactions.

↳ **DISTRIBUTED LEDGER TECHNOLOGY** - The DLT layer forms the trust backbone of The Post Web, enabling modular, scalable, and interoperable systems to support The Post Web economy, while tokens drive alignment, governance, and agent-driven interactions through programmable incentives.

↳ **RESOURCES & INFRASTRUCTURE** - Resources and infrastructure underpin The Post Web through decentralised physical infrastructure networks (DePIN), scalable compute and storage marketplaces, and structured data economies, balancing cost, efficiency, and resilience to drive interoperability and robust systems.

The Post Web Flywheel

The Post Web Flywheel revolves around the convergence of the **Agentic Layer, DLT (including RWA), and DePIN**, where adoption across each technology addresses inefficiencies in the others, **driving a self-reinforcing cycle of scalable infrastructure, trustless coordination, and innovation.**



The New & The Existing

The Post Web Technology Stack combines the Agentic Layer, an optional Thin Web, Distributed Ledger Technology, Wallets, dApps, and Resources & Infrastructure. The Post Web Technology Stack merges a new agentic layer with an existing and matured Web3 stack:

↳ **THE NEW (AGENTIC LAYER & THIN WEB)** - The new components of The Post Web stack are centered on the Agentic Layer, where AI agents autonomously fulfil user intentions, interact with decentralised applications, and execute complex workflows.

↳ **THE EXISTING (WALLETS, DAPPS, DLT, RESOURCES & INFRASTRUCTURE)** - The existing Web3 stack, comprising Wallets, dApps, DLT, and Resources & Infrastructure, forms the backbone of The Post Web. They must continue to evolve to accommodate the new users: AI agents.

Smart Agents

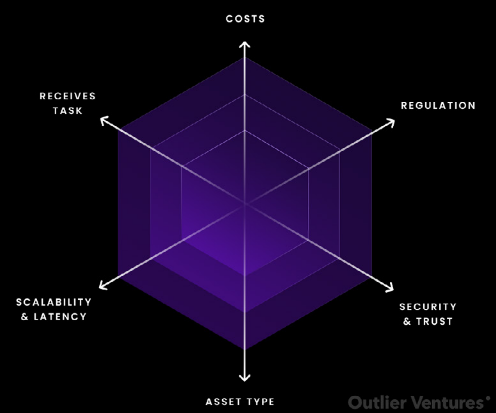
We believe that **agents are autonomous, goal-oriented, adaptive systems** that can operate effectively and evolve within complex, dynamic environments. **Combined with the ability to directly interact with DLT and smart contracts, agents form a new type of agent known as 'smart agents'.**

GOAL-ORIENTED	AUTONOMOUS	ADAPTIVE
STRATEGIC PLANNING	CONTEXTUAL AWARENESS	SOCIABILITY
CLARITY OF PURPOSE	SITUATIONAL AWARENESS	FEEDBACK INTEGRATION
EXECUTION PRECISION	ECONOMIC AGENCY	ADAPTIVE MEMORY

Outlier Ventures

Smart Agents & DLT Interactions

Interactions with DLT by Agents, will be guided by key vectors including cost, compliance, asset type, security, privacy, and scalability, to optimise between on-chain integrity and off-chain efficiency.



The Post Web Flywheel

The interconnected technologies of DePIN, DLT, and the Agentic Layer within The Post Web Flywheel, synergistically address each other's challenges and effectively drive strong adoption and innovation across the stack.

TL;DR

↳ **The Post Web Stack** comprises three converging technologies: (i) the agentic layer, (ii) DLT and (iii) DePIN.

↳ **The Flywheel:** Adoption in one technology layer drives solutions for inefficiencies in the others, creating mutual reinforcement. Here's the process:

- ↳ **Agentic Layer:** AI agents transform digital interactions by managing tasks autonomously. This drives demand for scalable infrastructure and trust through verification mechanisms like DLT.
- ↳ **DLT:** Provides transparency, trust, and accountability via immutable records and smart contracts. AI agents and decentralised infrastructure enhance its scalability.
- ↳ **DePIN:** Delivers scalability and resilience by distributing compute, storage, and connectivity. It leverages AI for network optimisation and DLT for transparent coordination.

↳ **Long-Term Outlook:** The Post Web stack's convergence will ultimately overcome the short-term hurdles of technological limitations and regulation.

The Post Web is the result of the convergence of different technologies. More specifically:

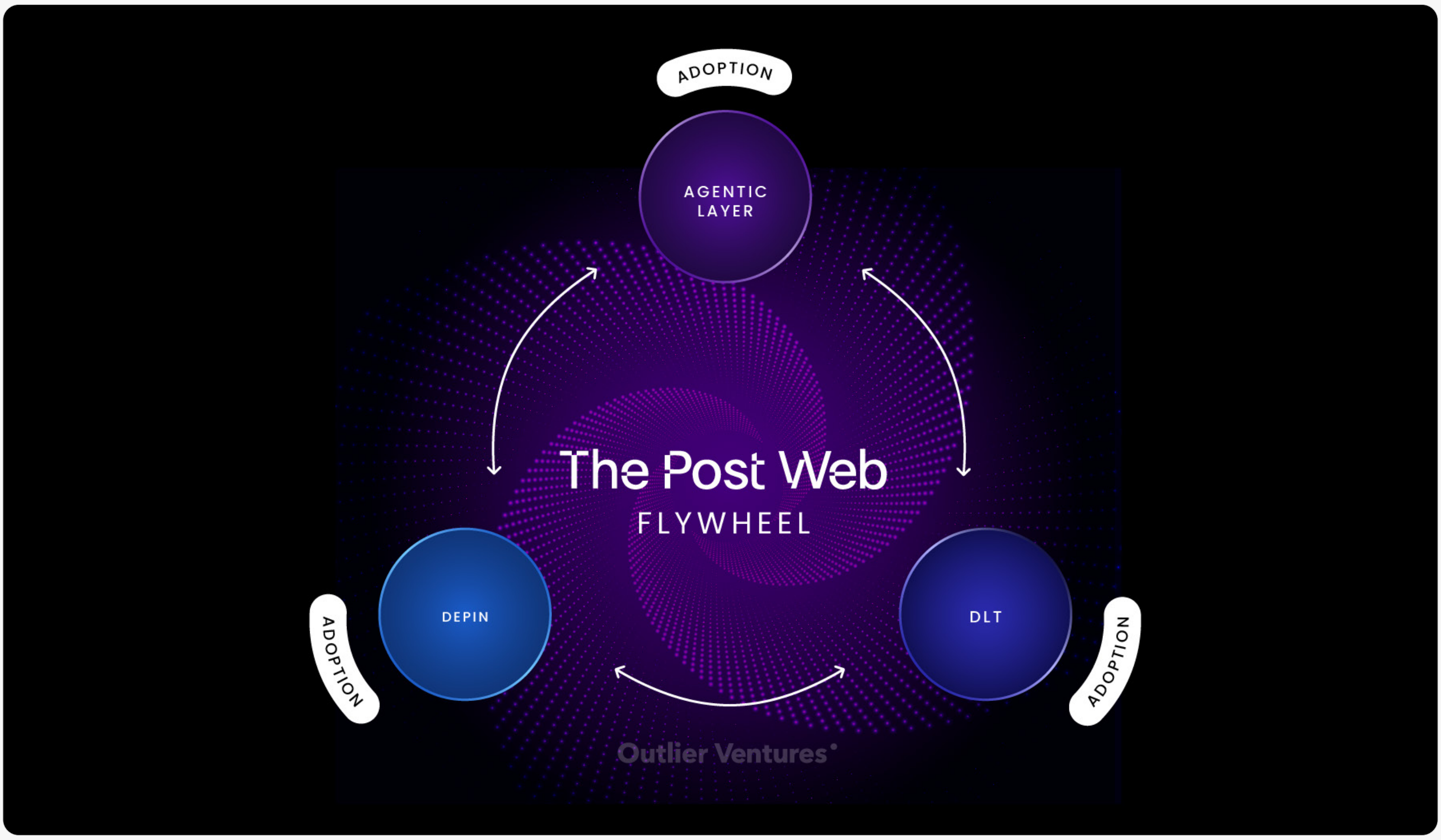
- **The Agentic Layer**
- **Distributed Ledger Technology (DLT)** (including wallets & dApps as extensions)
- **Decentralised Physical Infrastructure Networks (DePIN)**

In theory, adoption in one layer drives adoption in the other two respectively. In practice, adoption in one layer creates inefficiencies, limitations, and risks that are then solved by the other two technologies. This drives mutual adoption, pulling in users, assets and economic activity, and ultimately creating a powerful yet resilient Post Web Technology Stack. **Exhibit 1** illustrates the dynamic at play.

EXHIBIT 1:

The Post Web Flywheel

Source: Outlier Ventures



While there is adoption in DePin and DLT, it's indisputable the biggest driver currently is the broad adoption of AI, LLMs, and agents (mainly on centralised infrastructure). This rapid diffusion of AI across society is the strongest force in The Post Web flywheel because it brings immediate and usable new functionality directly to the end user. It also pulls other technologies into the flywheel by unlocking their functionality and economic potential.

Exhibit 2: How challenges in one technology layer can be addressed (✓) by the strengths of the others.

By "adoption" in the exhibit below, we refer to the broadest scope: user onboarding, migration of assets on-chain, and the increasing share of economic activity hosted within The Post Web ecosystem.

EXHIBIT 2:

Challenges & Solutions Across The Agentic Layer, DLT & AI

Source: Outlier Ventures

	CHALLENGES					
	AI		DLT		DEPIN	
SOLUTIONS	Verification of Specification Of Models	Scalable & Resilient Infrastructure	User Friction	Scalable & Resilient Infrastructure	Dynamic Optimisation of Infrastructrure	Incentive Coordination & Capital Formation
AI			✓			
DLT	✓				✓	
DEPIN		✓		✓		✓

Let’s unpack everything in more detail.

The Agentic Layer

The Agentic Layer is the user-facing centre of The Post Web. It also includes model training and inference in the background. AI agents autonomously manage tasks, execute decisions, and drive the transformation of digital interactions and economic activity. As adoption grows, we see the following challenges arise. These challenges can be addressed with complimentary Post Web technologies.

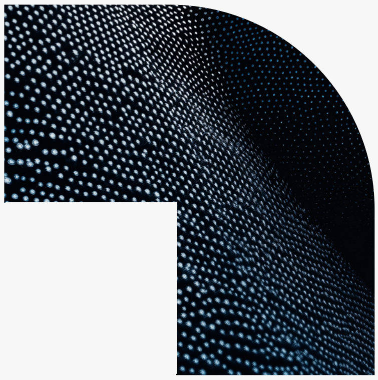
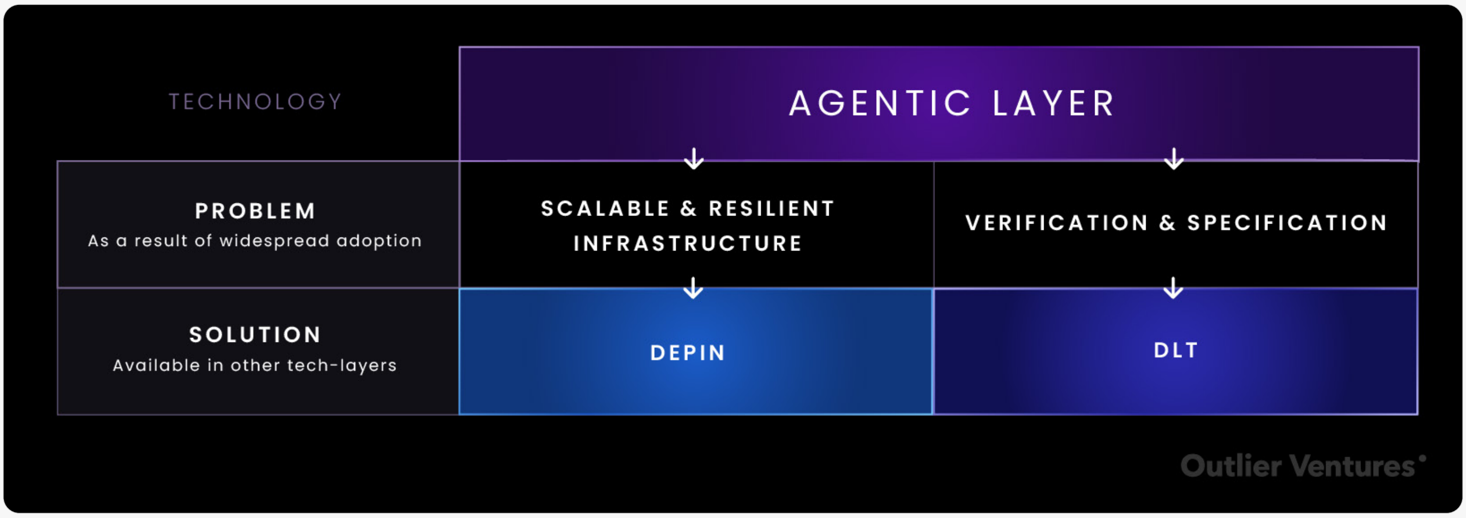


EXHIBIT 3:

The Agentic Layer Driving DLT and Decentralised Infrastructure Adoption

Source: Outlier Ventures



1. Scalable & Resilient Infrastructure

The growth of the Agentic Layer causes increased computational and operational demand. The solution requires infrastructure that can scale effectively while remaining fault-tolerant. As economic activity increases, the Agentic Layer needs to be hosted on top of 'credibly neutral' infrastructure; that is trustless, censorship resistant and has no single point of failure.

DePIN solves this by providing distributed compute and storage networks that ensure scalability and resilience, eliminating vulnerabilities associated with centralised systems, while complementing hybrid approaches to optimise infrastructure.

2. Verification & Specification

As the Agentic Layer handles increasingly complex tasks, it's critical AI agents act transparently and in alignment with user intentions. This requires precise specifications to guide behaviour and robust verification mechanisms to build trust.

DLT addresses these challenges by providing immutable records for transparent verification and enabling smart contracts to enforce predefined rules, ensuring that agents operate as intended and in a verifiable manner.

Distributed Ledger Technology (DLT)

Distributed Ledger Technology (DLT) anchors trust and transparency within The Post Web Flywheel by enabling immutable records, smart contracts, and tokenised systems. These capabilities make DLT indispensable for onboarding capital via real-world assets (RWA), creating trust in ownership and agents, and bootstrapping supply through tokenised incentives. As AI agents in the Agentic Layer streamline user interactions and automate complex tasks, they reduce friction, driving broader DLT adoption. Simultaneously, DePIN supports DLT's scalability and resilience by distributing infrastructure, ensuring secure and efficient operation

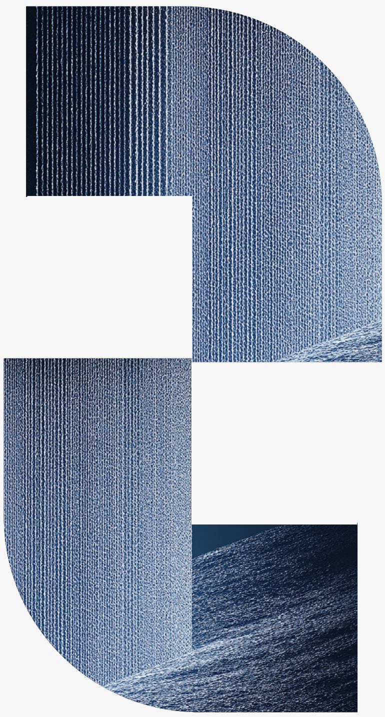
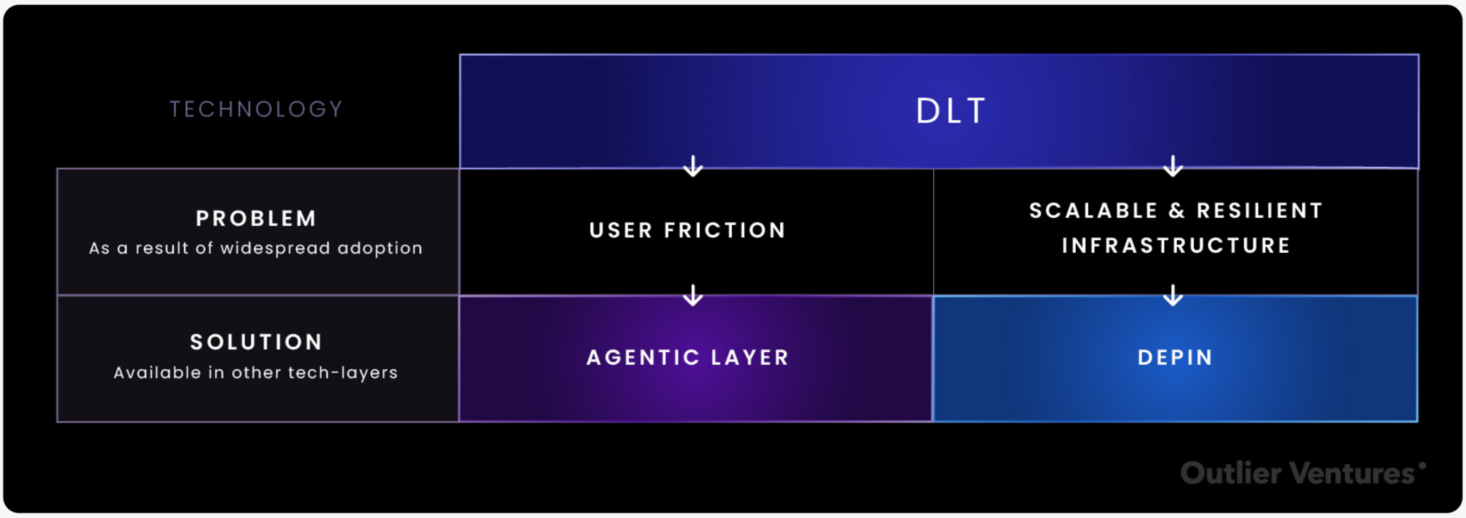


EXHIBIT 4:

DLT Driving Agentic Layer And Decentralised Infrastructure Adoption

Source: Outlier Ventures



1. User Friction

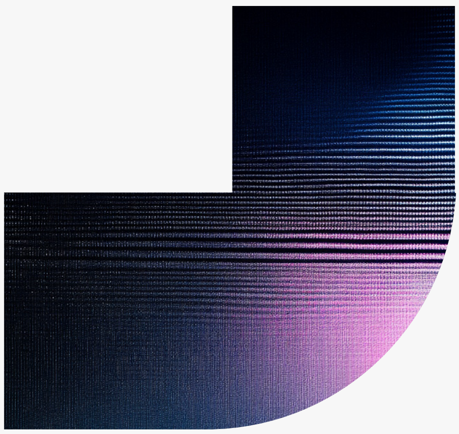
One of the critical challenges for DLT is user friction. Interacting with decentralised systems often requires a high level of technical understanding and the navigation of complex processes.

The Agentic Layer alleviates this issue by acting as an intuitive intermediary between users and DLT-based systems. AI agents streamline interactions, automating tasks like wallet management, transaction execution, and contract negotiation. This simplifies the user experience and drives broader adoption of DLT.

2. Scalable & Resilient Infrastructure

As more economic activity is hosted on DLT, the risk of single points of failure becomes critical to address.

DePIN provides resilience by distributing the compute and storage resources underlying DLT systems. This eliminates the vulnerabilities of centralised infrastructure, ensuring DLT can scale securely and maintain the integrity of its operations.



Decentralised Physical Infrastructure Networks (DePIN)

DePIN underpins the scalability and resilience of The Post Web by distributing computing, storage, and connectivity across networks. As adoption accelerates, this layer faces challenges that can be mitigated by leveraging the Agentic Layer's and DLT's capabilities.

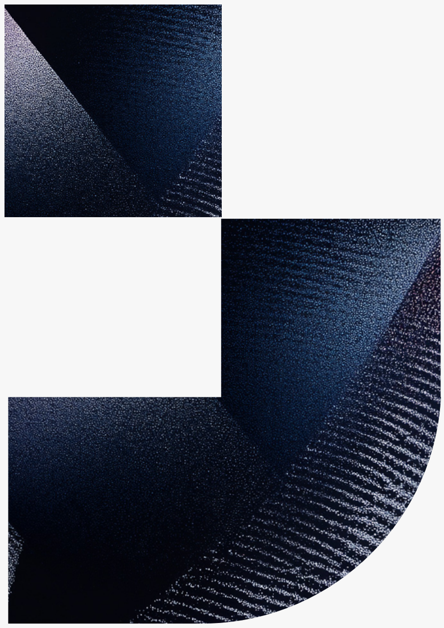
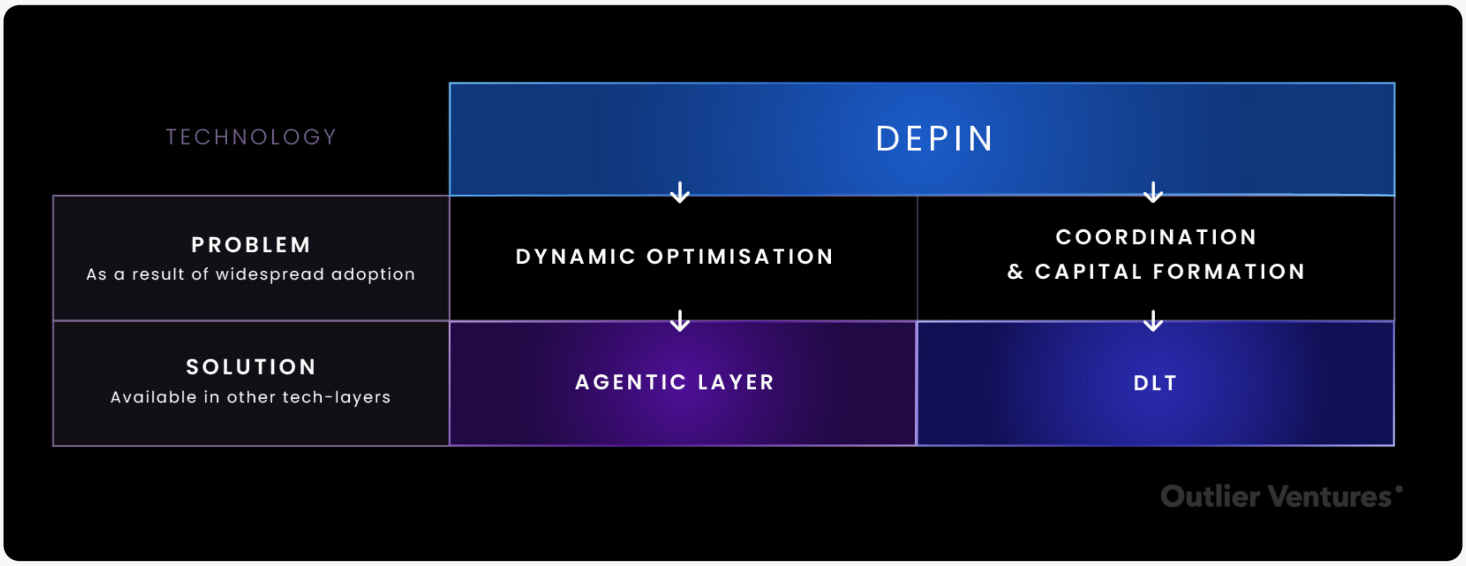


EXHIBIT 5:

Decentralised Infrastructure Driving Agentic Layer And DLT Adoption

Source: Outlier Ventures



1. Dynamic Optimisation

One of the critical challenges of Decentralised Infrastructure is dynamic optimisation. Efficiently allocating and balancing a mix of fungible and non-fungible resources across distributed nodes can be complex.

The Agentic Layer addresses this by using AI agents to monitor network conditions, predict resource demand, dynamically allocate workloads and balance networks. These agents optimise decentralised compute and storage, ensuring efficiency and minimising waste while maintaining performance.

2. Coordination & Capital Formation

Coordination of activity and capital formation is another major challenge for Decentralised Infrastructure.

DLT addresses this through tokenised systems and smart contracts, which incentivise participation and manage resource allocation transparently. **Tokens facilitate the flow of capital** into decentralised networks, allowing for the **bootstrapping of the network effect** by introducing financial incentives to early adopters on both the demand and supply side. At the same time, **smart contracts automate processes** such as payouts, resource access, and governance. Additionally, tokens can offer forms of yield based on the risk associated with contributing resources to the network at various stages of maturity and its overall network health.

Barriers to Flywheel Acceleration

The Post Web flywheel faces three major hurdles: regulation, technological limitations, and cost. These challenges could temporarily disrupt momentum, but are manageable.

1. Regulation

Regulatory uncertainty remains a significant barrier, with varying, inconsistent, and in some cases, contradictory global frameworks complicating adoption and implementation. Industries such as finance, healthcare, and energy will require compliance with stringent laws, slowing innovation. However, these challenges will likely create initial geographic imbalances in participation and access to economic gains.

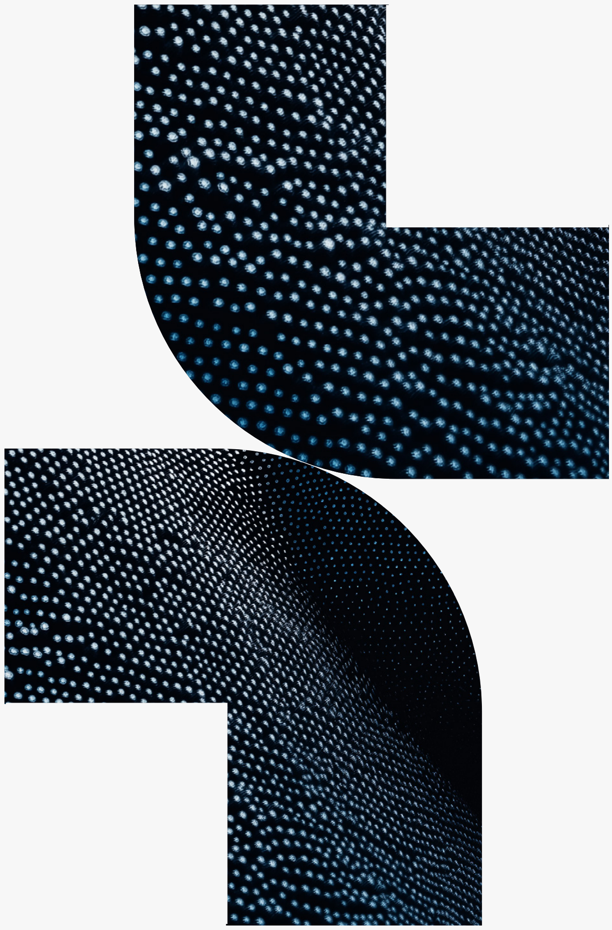
2. Technological Limitations

Scalability, interoperability, and infrastructure readiness must meet the demands of The Post Web. Additionally, uneven growth among any of the three core technologies could lead to temporary reliance on centralised systems - such as cloud infrastructure - whilst slower innovation in key areas catches up (as discussed in the smart wallet section). However, this reliance underscores the stack's modularity, demonstrating it can coexist with existing technologies and function effectively even before full implementation at all levels.

3. Costs

Developing and implementing decentralised infrastructure, privacy-enhancing technologies (PETs), and scalable systems are resource-intensive. **High costs can delay the adoption of these solutions, particularly for smaller players in the ecosystem**. However, as we have consistently seen with tokenised networks, they have the potential to pull in otherwise high-risk capital to subsidise adoption, accelerating cost curves outside of typical market dynamics.

Conclusion

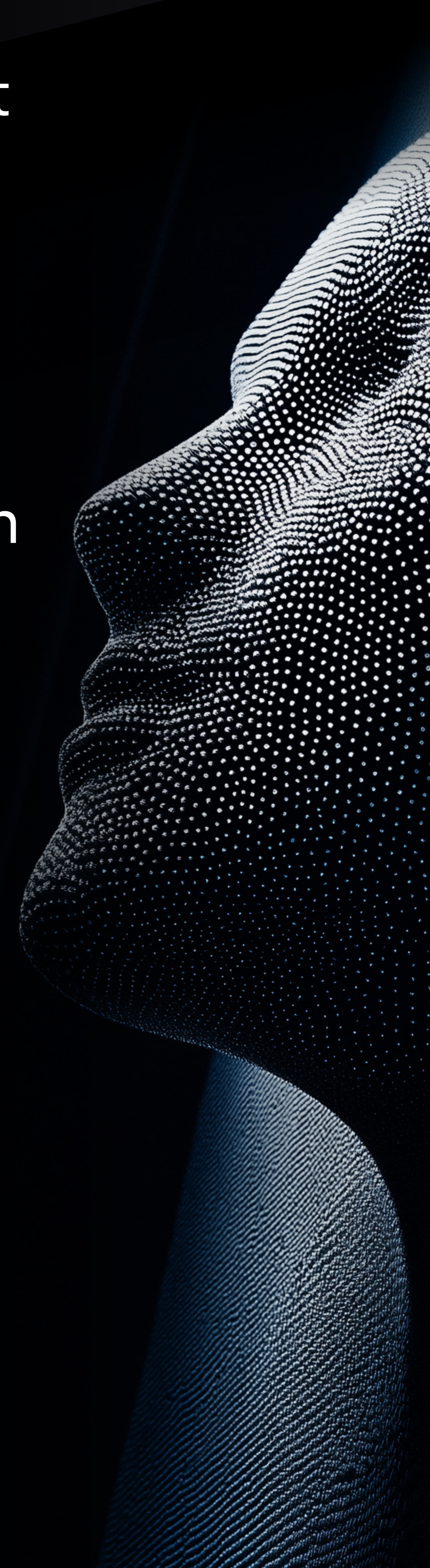


We believe most of these challenges are temporary. The strong economic and transformative potential of The Post Web ensures they will all be largely resolved with time and the flywheel will gain unstoppable momentum over the next decade in a similar way to its precursor, Bitcoin.

Throughout this chapter, we'll provide a deeper exploration of the technology stack.

“Humans will connect with AI agents via smart wallets that store personal data, memory, and assets. These agents will then interact with dApps on the users behalf.“

Jasper De Maere,
Head of Research at
Outlier Ventures



The Post Web Technology Stack

TL;DR

↳ **The Post Web Technology Stack:** Combines the Agentic Layer, the Thin Web, Wallets, dApps, DLT, and Resources & Infrastructure, to create a powerful, integrated system of new technologies with an improved Web3 stack.

↳ **What's New:** The Agentic Layer enables AI agents to autonomously fulfil user intentions, interact with dApps, and leverage the Thin Web for hyper-contextual interfaces.

↳ **What Already Exists:** Wallets, dApps, DLT, and decentralised infrastructure form the backbone, but must evolve to support AI agents.

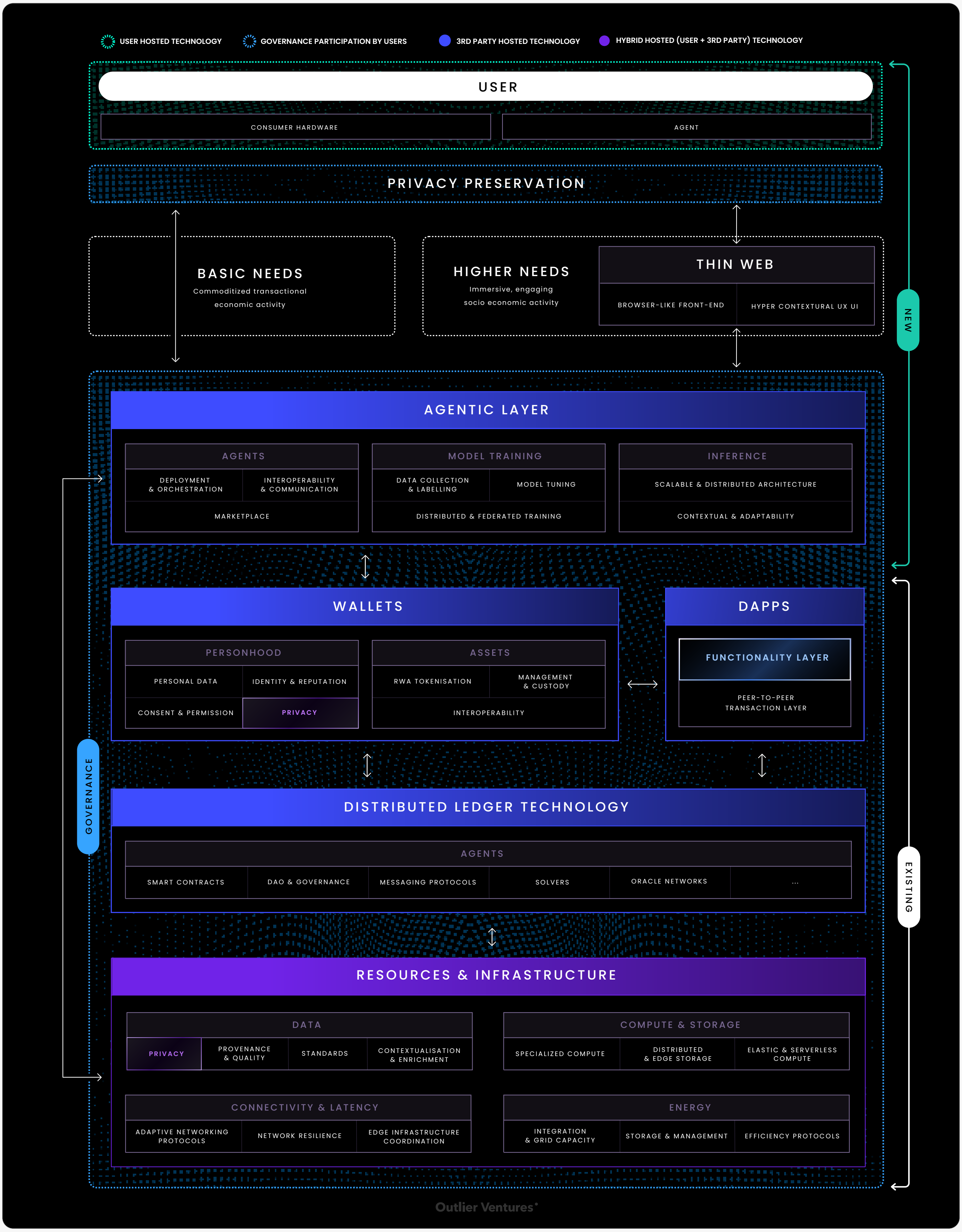
As outlined in Chapter One, **AI is the new technology layer that makes The Post Web possible. However, The Post Web technology stack is not exclusively about AI**. Instead, it focuses on building an integrated stack that hosts decentralised applications and empowers AI agents to leverage this functionality, ultimately benefiting end users and driving economic activity.

The Post Web technology stack combines infrastructure, DLT, wallets, dApps, an agentic layer, and a context-specific Thin Web interface layer when required — as illustrated in **Exhibit 6**.

EXHIBIT 6:

The Post Web Technology Stack

Source: Outlier Ventures



As shown in Exhibit 6, The Post Web merges a new agentic layer with an existing but improved Web3 stack. Let's briefly examine the dynamics of both components.

Sovereign, Hybrid And Hosted

The Post Web stack can be organised into three layers based on who hosts the technology. Each layer is designed to optimise autonomy, scalability and resource efficiency.

- → **Sovereign:** Locally hosted by the user
- → **Decentrally Hosted:** Hosted and governed by multiple parties
- → **Hybrid:** Combination of user and decentrally hosted

Regardless of how the infrastructure is hosted, in The Post Web, users gain greater governance, moving beyond today's paradigm where governance in hosted layers is limited to casting votes through wallets or making purchase decisions.

1. Sovereign Layer

The Sovereign Layer is for the user who self-hosts some or all of their technology stack - and may include consumer hardware, sovereign agents, and even their own resources such 'bring your own' data, compute, or energy. This enables users to maintain full control over data, compute, and decision-making, offering practical advantages in scenarios where decentralisation and sovereignty are functional preferences. However, self-hosting can be resource-intensive and complex. To address this, sovereign agents optimise operations by leveraging hosted services when needed while prioritising user sovereignty. Over time, this will become easier as resources consolidate into single hardware units, utilising latent capacity in consumer devices or modular, performance-focused solutions.

WHY

Ideal for scenarios that require maximum user autonomy, privacy, and control over resources. It empowers users to fully own their interactions and data, making it crucial for sensitive or mission-critical activities.

2. Hosted Layer

The Hosted Layer consists of decentralised infrastructure managed by third parties but governed transparently to ensure user participation and control. Designed for scalability and accessibility, it includes key components like the Thin Web, Agentic Layer, wallets, dApps, and DLT. Unlike traditional hosted services, the Distributed Hosted Layer operates within a framework of trustless mechanisms and collective governance, staying true to the principles of decentralisation. **There is also some potential for user participation here**, such as hosting network nodes, **but this remains** limited in scale and impact within the broader context of the Hosted Layer.

WHY

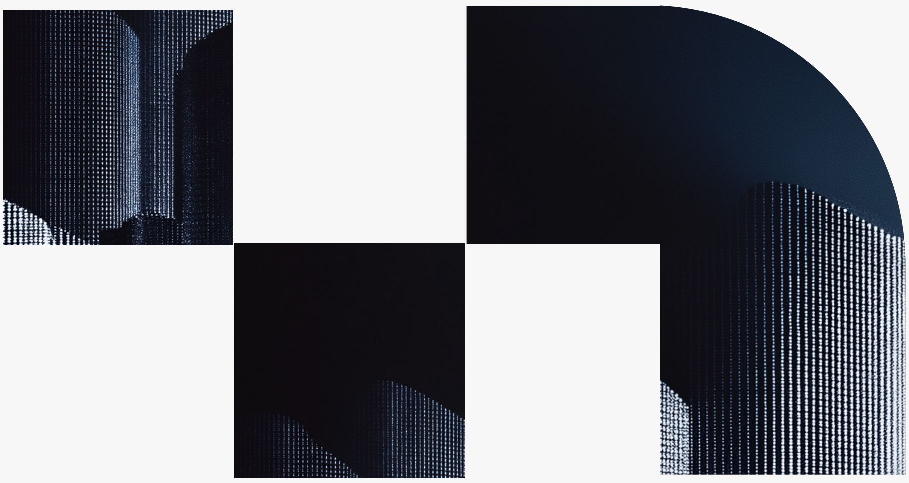
Provides scalability and accessibility, enabling broader adoption of Post Web services without requiring significant user resources. It supports mass-market use cases where ease of use and performance are more critical than full sovereignty.

3. Hybrid Layer

The Hybrid Layer combines the advantages of sovereign and hosted systems. It enables users to contribute resources like compute, data, and energy while benefiting from orchestrated services. The Hybrid layer optimises The Post Web stack for cost, efficiency, and resilience by decentralising resource provision and fostering user participation. However, achieving this dynamic balance requires seamless interoperability between user-contributed and hosted systems. Ensuring robust standards for cross-layer collaboration will be critical to unlocking the full potential of the hybrid approach.

WHY

Optimises costs and decentralises control without sacrificing performance. Balances autonomy with scalability, offering flexibility for users to contribute resources while leveraging the efficiency of hosted systems.



New & Existing

The New - Agentic Layer, Thin Web & User Integration

The new components of The Post Web stack are centred on the Agentic Layer, where AI agents autonomously fulfil user intentions, interact with APIs and decentralised applications, and execute complex workflows. Agents leverage the Thin Web layer when immersive, human-facing experiences are necessary, giving the user optimised yet hyper-contextual interfaces.

Additionally, users in The Post Web - along with their sovereign agents and consumer hardware - are active participants in this ecosystem. Together, these new layers and components enable seamless interaction, delegation, and execution. **They drive a transformative shift in how users and agents engage with the enhanced decentralised infrastructure and applications that form the foundation of today's Web3 ecosystem.**

The Existing - Wallets, dApps, DLT and Infrastructure

The existing Web3 stack of wallets, dApps, DLT, and decentralised infrastructure are the foundation of The Post Web. **These layers must evolve to accommodate the new participant: AI agents**. Wallets need enhanced programmability and data permissions to manage assets and identity for agents. dApps require greater interoperability and adaptability to handle agent-driven workflows. DLT must scale in efficiency, speed, and programmability to support real-time verification and trustless execution. Finally, infrastructure must deliver distributed compute, storage, and connectivity robust enough to handle the exponential demands of the agentic economy.

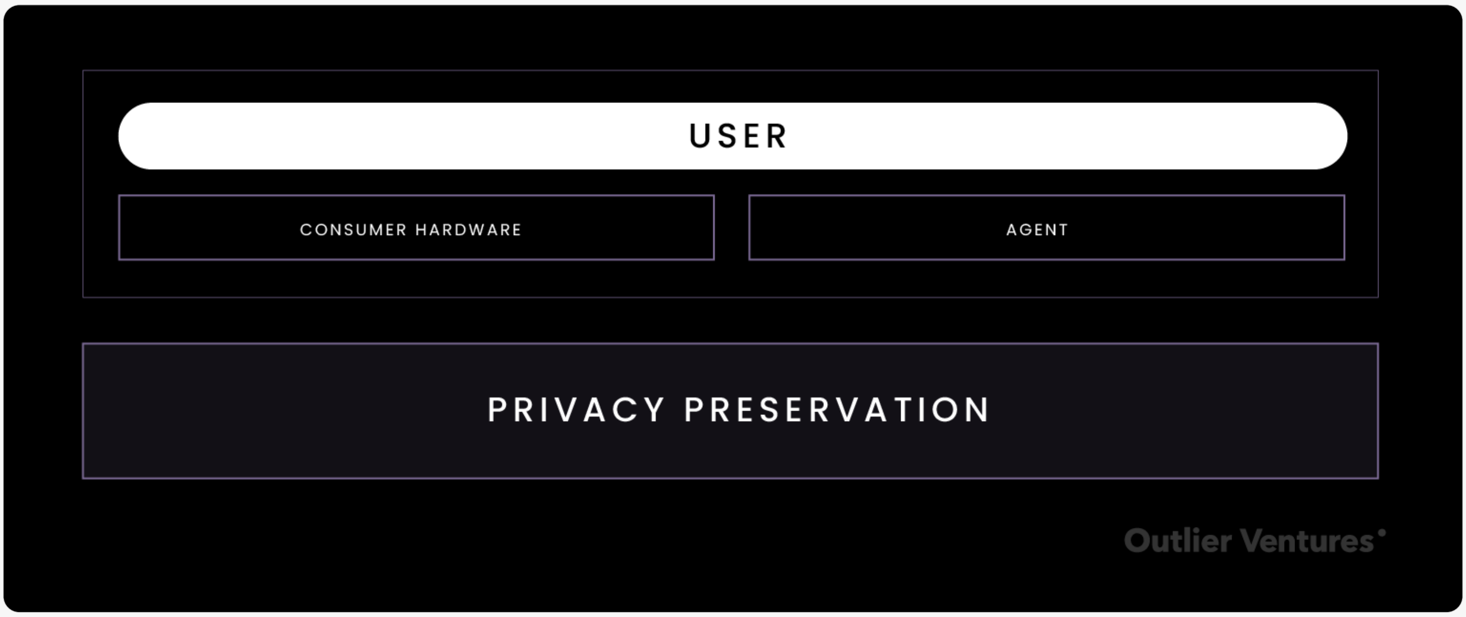
Throughout the rest of this chapter we'll explore each segment in depth.

In The Post Web, resource fluidity is a fundamental principle that optimises the allocation of idle resources such as compute, energy, data, and connectivity. These resources, often siloed or underutilised in traditional systems, can be orchestrated dynamically using DLT and token incentives. DLT provides a verifiable and trustless system for recording resource contributions, while tokens act as programmable units of value, facilitating seamless value exchange and incentive alignment to drive participation.

By leveraging DLT and token incentives to enable resource fluidity, The Post Web transforms underutilised capacity into actionable utility, creating a robust, self-optimising ecosystem of resources. This system enables a fluid market where economic activity and network participation are intertwined. Resource fluidity operates across sovereign, hosted, and hybrid layers, dynamically reallocating resources to their most rewarding use cases. This adaptability of infrastructure better optimises for the ever-evolving infrastructure demands while maximising utility for all users and participants.

Users, The Thin Web & Governance

In The Post Web, users move from being passive participants to active contributors, shaping the ecosystem through self-hosting technology and agent delegated governance.



Users, The Thin Web, & Governance

TL;DR

↳ **The Shortfalls:** Today's DAOs face challenges in automation, inclusivity, and engagement, which The Post Web addresses through agents, enriched data, and incentivised participation.

↳ **The User:** In The Post Web, users transition from passive participants to active contributors by self-hosting their technology stack where appropriate and benefiting from decentralised resource sharing and governance.

↳ **The Thin Web:** The Thin Web reimagines user interaction by delivering hyper-contextual interfaces that blend sophistication with simplicity to align outcomes with human intent.

↳ **Agent-Driven Governance:** Governance evolves from manual, centralised decision-making to scalable, agent-driven orchestration that optimises participation and aligns diverse user preferences.

↳ **Fluid Collectivism:** The Post Web embeds fluid collectivism into governance, combining automation, decentralisation, and dynamic collaboration to balance individual autonomy with collective decision-making.

↳ **Agent Delegated:** Agents in governance act as scalable representatives, tailoring decisions to users' preferences while automating tasks to reduce friction and enhance participation.

The User

In The Post Web, the user takes centre stage as both a participant and a driver of the ecosystem, where high degrees of autonomy are unlocked on top of decentralised systems. Users will, over time, self-host part of their technology stack—consisting of consumer hardware, compute, storage, memory, and data—which can be used to contribute to the broader infrastructure and cost to power various applications and networks.

Self-hosting enables users to economically benefit from their hardware contributions while maintaining granular control over how their resources are deployed and interact with the ecosystem.

Additionally, financing options such as “buy now, pay later” (BNPL) models could make self-hosting hardware more accessible, whereby the upfront costs of buying hardware are spread and then offset by yield, enabling wider participation in this decentralised ecosystem.

Beyond self-hosting, users can also rely on shared infrastructure, over which they can exert governance and influence, ensuring alignment with decentralised principles. With the rapid advancement of decentralised physical infrastructure networks (DePIN) and the incoming surge in agentic and AI activity on-chain, this trend of self-hosting, shared governance, and user-led contributions will accelerate, driving a more equitable and user-driven Post Web.

The Thin Web

In The Post Web, the Thin Web represents a residual layer of today’s internet. Purpose-built to fulfil higher-order needs. The Thin Web is where tasks requiring deep context, immersive engagement, or complex orchestration that surpasses the capabilities of purely agent-driven interactions will take place. While it may initially be delivered through a browser-like interface, the Thin Web will evolve far beyond the static, tabbed experiences we know today.

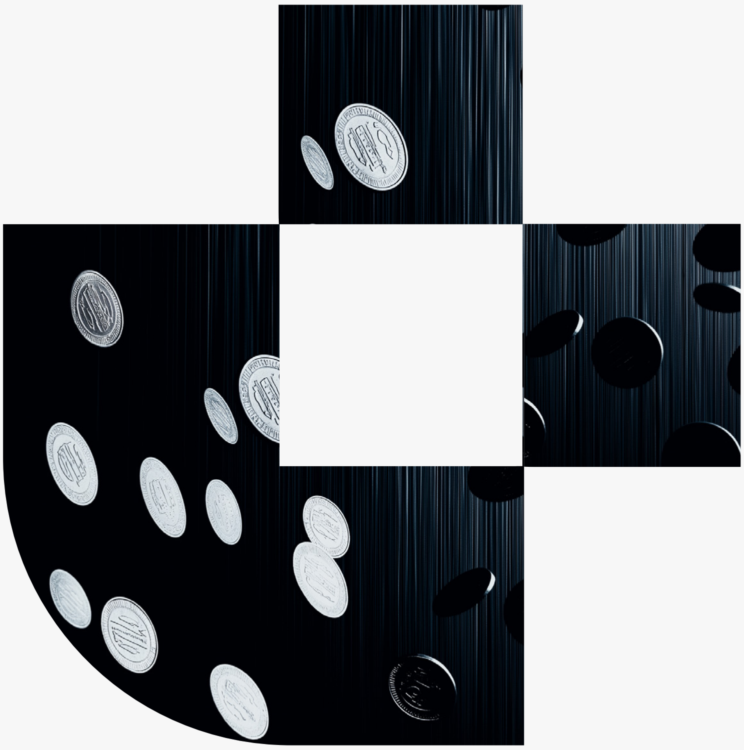
The Thin Web isn’t just a slimmer, more refined version of the internet; it’s a reimagination of user interaction. Much like the iPhone redefined mobile computing and apps in the early 2000s, The Post Web will revolutionise how we engage with the internet. Thin Web interfaces will dynamically adapt to user intent, seamlessly blending information, tools, and experiences, while remaining accessible across existing hardware or entirely new form factors and devices designed natively for The Post Web era.

This evolution reflects both continuity and transformation. **The browser-like interface offers a natural bridge to The Post Web, but its potential lies in its ability to become dynamic, immersive, and task-specific.** It will serve as the home for AI agents, integrating 3D spatial and augmented reality or curating hyper-contextualised environments tailored to user needs.

This adaptability is not just a technical feature but a conceptual shift. It strips away unnecessary friction to focus solely on delivering the most relevant and enriching experiences.

Later, we'll explain how users can access dApp functionality through the Thin Web's interface and AI agents.

As we have less visibility of the hardware devices that will host the user-facing Thin Web, it remains more conceptual than other components of the technology stack. In the next chapter, we'll explore how it will be orchestrated and function.



"If we figure out the mechanisms for collaborating at scale, we could unlock a world of problem solving that would never be possible in centralised social media networks."

Nick Almond,
CEO of Factory Labs

Governance

During the last cycle, (2021/2022), **governance emerged as a key innovation.** There was a wave of projects that built tooling to enhance decision making and coordination within decentralised organisations (DAOs). Fast forward to 2024/2025 and many **projects are struggling to deliver any meaningful participation** or outcomes. For reference, see the governance power distribution on the next page.

Despite these hurdles, we believe that the DAO governance revolution is far from over. In fact, it is only just beginning. The next leap forward will be driven by automation of the governance process. On-chain AI agents will streamline governance, enhance scalability and empower both human users and agents in ways previously unattainable. Like many things in The Post Web, it's important to imagine users are often represented by agents with delegated roles and responsibilities, based on specialist capabilities similar to how representative democracies function.

The Governance Movement Is Still Unfolding

The transition from Web2 to Web3 marked a revolutionary shift, empowering users with the ability to not only interact with platforms but also actively participate in their governance. The movement was about reclaiming ownership rights of the internet and decision-making. It gave people the right to participate.

But that's only half the equation. Once acquired, rights need to be executed upon or delegated. Governance at scale has historically been centrally controlled for several reasons:

1. Orchestration is difficult

Coordinating participants, aligning diverse interests, finding consensus, and executing decisions effectively is inherently challenging. This complexity often leads to inefficiencies, bottlenecks, and mismanagement, making governance a persistent struggle across all organisational structures.

→ **In Web3, orchestration is handled** through smart contracts and governance tokens. Together, these automate rule enforcement, enabling scalable participation in the decision-making process.

2. Participation in granular governance often lacks sufficient incentive

When the economic impact of individual decisions is low, the opportunity cost of engaging in granular governance through manual voting often outweighs the perceived benefits. **Even where there is the ability to participate, the effort required can feel disproportionate to the potential value gained. The result is often low participation.**

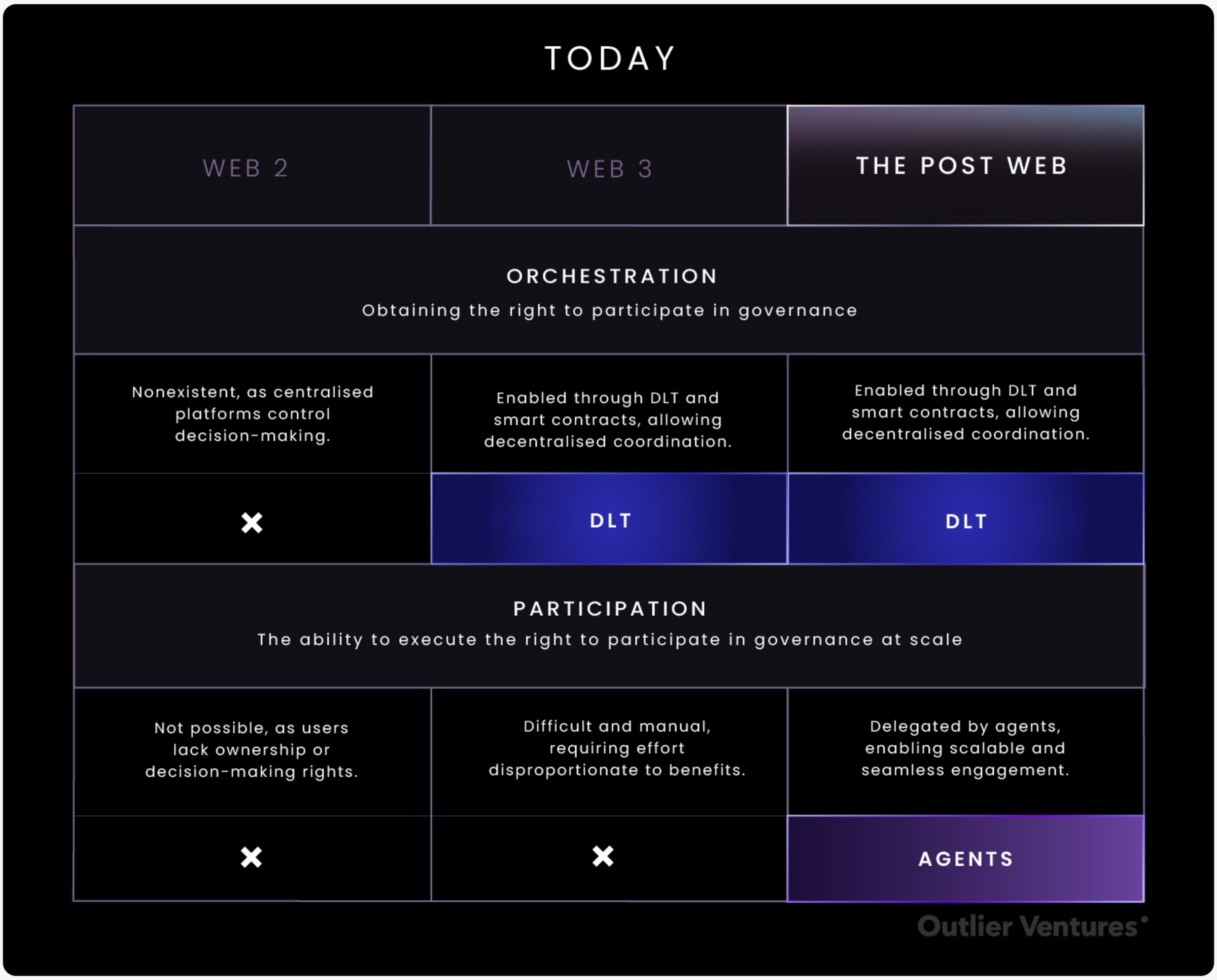
→ **Participation is today's bottleneck.** The next phase of governance, powered by agents, will address this challenge. DAOs will leverage agentic capabilities to automate decisions and optimise user preferences, driving participation at a scale and granularity unattainable through manual processes as agents use game theory to optimise for their owners' individual or collective outcomes.

Exhibit 7 shows the evolution of application and protocol participation in which technology unlocks the ability to orchestrate governance across users through DLT and subsequently allows for scalable and granular participation by delegating governance to agents.

EXHIBIT 7:

Evolution Of Governance Between Web2, Web3 and The Post Web

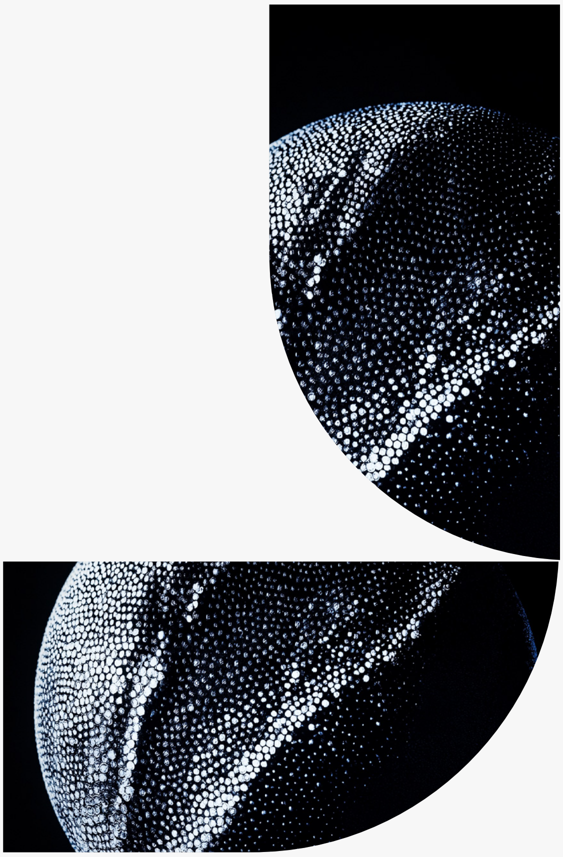
Source: Outlier Ventures



Governance In The Post Web

The Post Web transforms governance, moving beyond the industrial era frameworks of centralised orchestration - such as corporations, analogue cooperatives or nation states - to dynamic, technology-enabled governance underpinned by collective action. While DLT during Web3 gave users the right to participate, it fell short of enabling effective execution. Governance in The Post Web resolves this by introducing automated mechanisms powered by AI agents and decentralised infrastructure, scaling participation and orchestrating activity at unprecedented levels.

For centuries, governance oscillated between free market-driven individualism and its counter forces in collectivism and regulation, often swinging to extremes due to the limitations of analogue systems. We believe **The Post Web finally resolves this tension** by embedding governance directly into decentralised systems and constantly balancing these opposing forces into optimal states. Just as economic activity and mediums of exchange have been ported into the digital realm, The Post Web finally revolutionises and integrates governance directly into the internet.



"In The Post Web, innovations in agent-delegated governance enable a form of fluid collectivism, where individuals can participate freely in markets whilst also aggregating resources into and out of DAOs, permanently or on an ad hoc basis, with minimal friction."

Jamie Burke,
Founder & Chairman of
Outlier Ventures

The transformation of governance in The Post Web introduces what we refer to as 'fluid collectivism', enabling governance structures to adapt dynamically instead of being constrained by fixed or opposing extremes. By leveraging automation, decentralisation, and AI, The Post Web enables seamless, frictionless collaboration, empowering scalable and equitable governance. This transformation integrates governance into the internet as seamlessly as economic activity and exchange.

The Risk Of Outsourcing Recently Acquired Rights

While the introduction of agents promises to revolutionise governance by automating participation and reducing complexity, it also carries inherent risks. Over the past decade, significant effort has been made to secure and structure the right for users to participate in governance in a more granular, decentralised way. **Handing over these hard-earned rights to agents powered by AI, the most centralising technology we've ever known, could unintentionally erode the very principles of decentralised governance.** On top of that, the inevitability of the rise of a class of superior agents because of the economic incentives introduces the risk of governance attacks, where advanced algorithms exploit game-theoretic vulnerabilities, further undermining trust in the system. **It's essential to ensure that agents' foundational models remain open and shared tools for empowerment so they don't become opaque intermediaries, concentrating control and jeopardising the progress achieved in democratising governance.**

We advocate for a gradual, cautious rollout of agent involvement in DAOs, ensuring defensive measures against attacks, with hybrid systems of humans in the loop and agent monitoring systems. In the next section, we examine the current state of governance in Web3, the pace of integration, and how agents could address inefficiencies in DAO governance today.

The Agent Integration

The Shortfalls

Today's DAOs fall short of their promise as decentralised and autonomous organisations, hindered by gaps in automation, contextual understanding, tailored representation, and participation. Tokens unlock governance by enabling decentralised coordination, aligning incentives, and automating decisions through smart contracts. These challenges are particularly critical as DAOs in The Post Web will govern protocols and dApps that serve as essential critical economic infrastructure. To meet this evolving role, governance must become more efficient, inclusive, and strategic. **Below, we explore four key challenges in governance today and how they can be (partially) solved in The Post Web.**

Automation Gap

The lack of automation in today's DAOs creates inefficiencies and limits scalability, as most administrative and governance tasks still require manual intervention.

The Challenge:

Most DAOs still rely on manual processes for tasks like proposal management, voting, and resource allocation, creating inefficiencies and making it difficult to scale as they grow in complexity. This reliance on manual operations often results in low voter turnout and disengagement. Additionally, many DAOs, particularly those in gaming and the creator economy, still depend heavily on off-chain governance mechanisms, such as soft voting, further limiting their autonomy.

Exhibits 8 shows 50 DAOs and 4936 voting activities, with an **average turnout rate of 1.77%.**

EXHIBIT 8:

Average Turnout Rate Between DAOs & Voting Activity

Source: NYU, Outlier Ventures

VOTER TURNOUT	MEAN	MEDIAN	STANDARD DEVIATION
TOTAL	1.77%	0.10%	5.46%
BALANCER DAO	2.34%	1.08%	3.26%
UNI SWAP	0.33%	0.18%	0.32%
QIDAO	1.26%	0.75%	1.31%
CITYDAO	32.51%	27.36%	27.47%

Outlier Ventures

The Post Web Solution:

In The Post Web, automation, powered by agents and contextual intelligence, will enable DAOs to scale efficiently, reducing human involvement in routine governance tasks.

- **Agents as Orchestrators:** Agents will autonomously handle tasks like onboarding, proposals, and decision execution, reducing bottlenecks. However, humans will remain essential for oversight and resolving complex or sensitive issues.
- **Dynamic Workflows:** Governance processes will adapt automatically to real-time inputs, ensuring efficiency and responsiveness to changing contexts.
- **Context-Aware Automation:** DAOs will integrate on-chain and off-chain data to make governance decisions informed by the broader ecosystem, scaling alongside their economic roles.
- **Real-Time Governance Defense:** Agents will audit activities, freezing suspicious actions for human review during attacks, ensuring security.
- **Seamless Coordination:** Automated systems will facilitate smooth interactions between DAOs and external dApps or protocols, enabling frictionless platform governance.

Equal Representation, Unequal Needs

Current governance systems treat all token holders equally, ignoring the diverse incentives, preferences, expertise, capacity and risk profiles that influence effective decision-making.

The Challenge:

DAO governance treats all token holders equally, **overlooking the diverse preferences, incentives, and risk profiles among participants** (especially long tail, 'small bag' holders). This uniform approach often results in misaligned decisions and fragmented communities, as governance needs to reflect the nuanced needs of its stakeholders.

Exhibit 9 shows the percentage of all voting within a DAO that can be influenced by the top token holders.

EXHIBIT 9:

Influence Of Largest Holders On Voting Outcome

Source: NYU, Outlier Ventures

TOP VOTERS (VOTES CAST)	VOTING	% OF ALL VOTING
1ST	1,737	35%
1ST + 2ND	989	20%
1ST + 2ND + 3RD	381	8%
1ST + 2ND + 3RD + 4TH	159	3%
	3,266	**66%**
OTHER VOTERS	1,697	34%
TOTAL	4,963	100%

Outlier Ventures

The Post Web Solution:

The Post Web introduces tailored governance through agent representation and enriched profiles, ensuring decisions align with diverse stakeholder needs.

- **Agent Representation:** Agents will act on behalf of individual or subsets of token holders, incorporating their unique preferences and priorities into governance decisions.
- **Enriched Profiles:** Smart wallets, enriched with on-chain data, will provide granular insights into participants' behaviours, enabling governance systems to align with diverse stakeholder needs.
- **Tailored Governance:** Automated voting systems will ensure that decisions reflect token holders' collective and individual preferences, balancing inclusivity with efficiency. These systems may also adapt to incorporate factors such as members' relevant expertise, enhancing decision-making outcomes over time.

Contextual Blind Spots

DAOs need more data and insights to make strategic decisions, leaving them disconnected from broader ecosystem dynamics and external economic factors.

The Challenge:

DAOs need more insight into their ecosystem, competitor actions, and external dynamics. Without which, strategic decision-making is restricted. **Fragmented platforms with independent data structures and workflows further compound this, forcing DAOs to reconcile fractured information. This lack of cohesion poses a critical challenge as they govern essential infrastructure.**

The Post Web Solution:

Real-time data streams and contextual intelligence will empower DAOs to make informed, strategic decisions that are fully integrated within their ecosystem.

- **Real-Time Intelligence:** DAOs will leverage agents to gather real-time data streams, integrating both on-chain and off-chain insights to guide governance decisions.
- **Strategic Awareness:** Contextual data will give DAOs visibility into their ecosystem positioning, market trends, and competitors, enabling informed and proactive decision-making to develop DAO owned foundational models.
- **Transparent Decision-Making:** Enhanced automation will ensure decisions remain verifiable, align with the DAO's objectives, and foster trust among participants.

Engagement And Incentive Deficit

Low participation and the lack of meaningful rewards for governance hinder a DAOs' ability to engage members and ensure active, informed decision-making.

The Challenge:

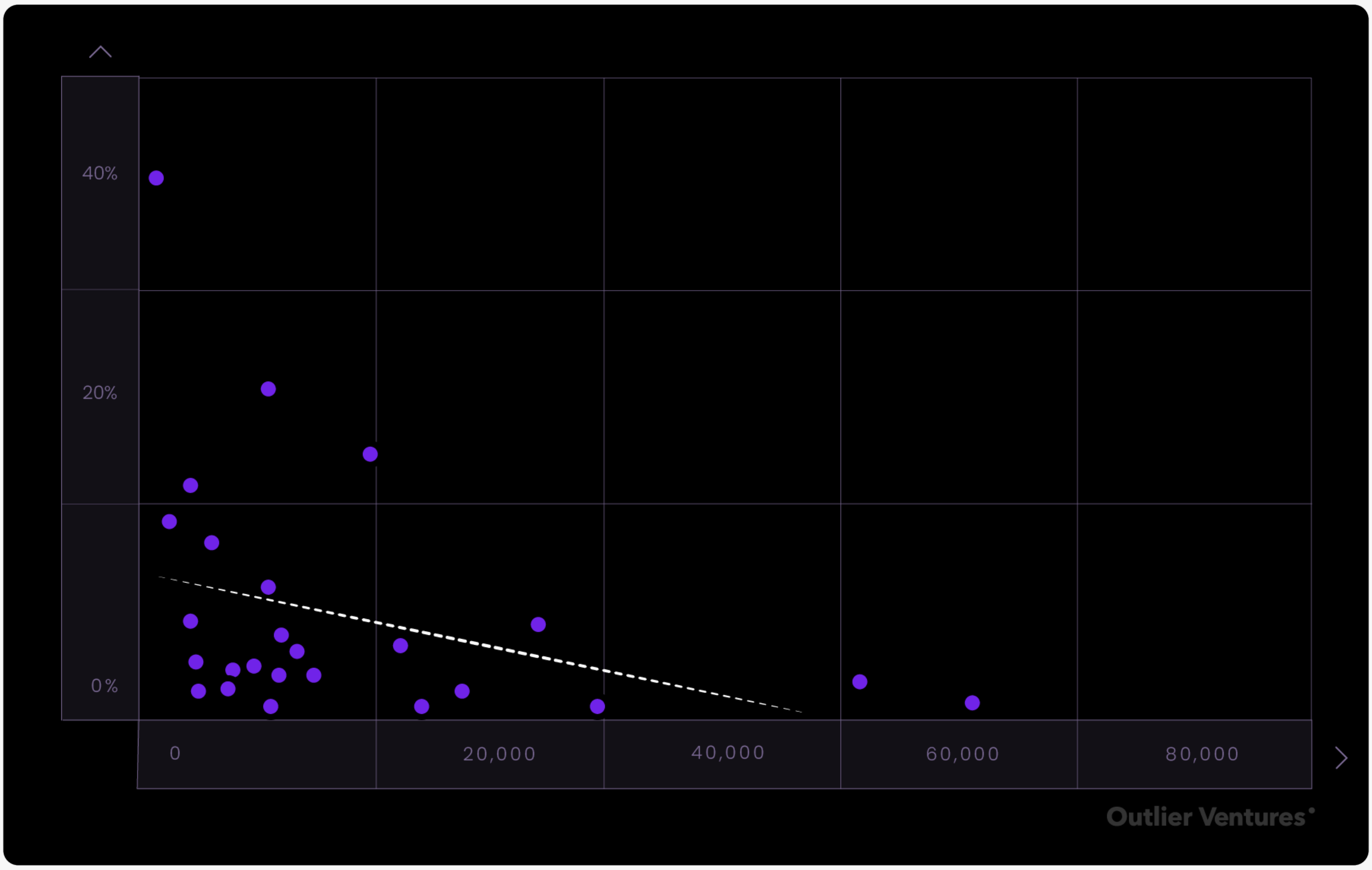
Driven by a lack of incentives and the complexity of governance processes, many DAOs face low voter turnout and disengaged participants. This issue becomes even more pressing as DAOs begin governing infrastructure with significant economic loads in The Post Web.

Exhibit 10 shows, through the correlation between number of tokens per holder and voter turnout, that **there's a positive relation between bag size and voter turnout.**

EXHIBIT 10:

Correlation Between The Number of Token Holders and Voter Turnout Rate

Source: NYU, Outlier Ventures



The Post Web Solution:

By embedding incentives and automating routine tasks, The Post Web ensures higher engagement and rewards participation.

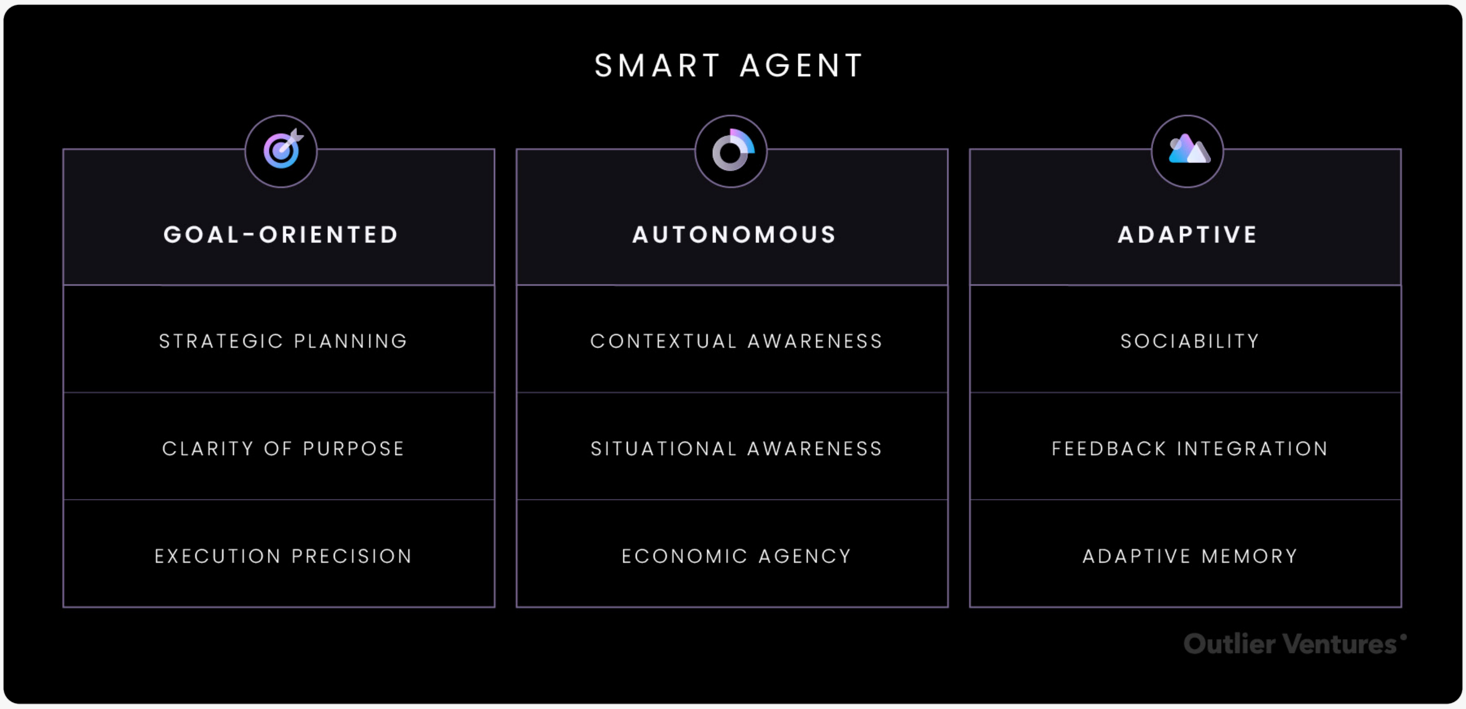
- **Reward Systems:** Smart contracts will embed incentive structures that reward members and their agents for high-value contributions, such as shaping proposals or offering expertise.
- **Effortless Participation:** Agents will automate routine decisions, reducing the cognitive and time burden on participants while ensuring their preferences are represented.
- **Higher Stakes, Greater Engagement:** As DAOs govern critical infrastructure in The Post Web, the significance of decisions will naturally drive higher participation and engagement.

As should be clear by now, governance is a critical aspect of The Post Web. In theory, every technology not fully controlled by the user and hosted by third parties should involve some form of delegated user governance, empowering individuals to safeguard their interests within an increasingly complex and interconnected technological ecosystem.

Let's explore the individual pockets of technology that make up The Post Web.

Agentic Layer

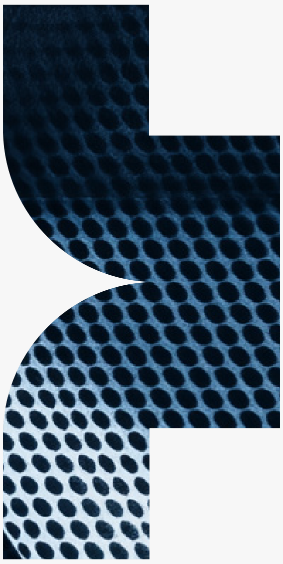
Agents are autonomous, goal-oriented, adaptive systems that can operate and evolve effectively within complex, dynamic environments.



"AI agentic systems mark the beginning of a new paradigm. With their capabilities to orchestrate intention, navigate complex virtual environments, and achieve sophisticated outcomes, they are poised to transform the global economy and revolutionise how we interact with technology, data, and one another."

Greysen Cacciatore,
Research Associate at
Outlier Ventures

AI Agents



TL;DR

↳ **Agents:** Agents are autonomous, goal-oriented, adaptive systems that can operate and evolve effectively within complex, dynamic environments.

↳ **Agents vs Bots:** Bots are task-oriented and deterministic, executing predefined actions with predictable outcomes, agents are goal-oriented and probabilistic, dynamically adapting and learning to achieve broader objectives across interconnected tasks.

↳ **Smart Agents:** Smart agents are a new type of AI agent, native to The Post Web, that possess the same capabilities as traditional agents, plus the ability to interact with DLT and smart contracts directly, giving them greater levels of economic (and possibly legal) agency.

↳ **On-chain Specification & On-chain Verification:** Two key functionalities of agents in The Post Web, unlocked through distributed ledger technology (DLT).

↳ **Classification of Smart Agents:** Smart agents in The Post Web can be classified across several dimensions including ownership, purpose, and orchestration.

What Are Agents?

As agents continue to generate interest and excitement across various industries (with even the hyperscalers rebranding co-pilots as agents) the question resurfaces: "What exactly are agents?" Many might feel Web3, and earlier versions of the internet, have seen agents in solvers, MEV bots, crawlers, etc. Are we really just renaming existing well established trends?

We believe **AI agents are autonomous, goal-oriented, adaptive systems that can operate and evolve effectively within complex, dynamic environments**. Agents pursue defined goals and dynamically adjust their behaviour based on feedback and evolving conditions. Their capabilities of autonomy, learning, and goal-oriented execution make them effective in these environments.

While definitions of agents vary, **we focus on the next generation marked by greater autonomy, new forms of agency, and intelligence.** Though technical architectures and workflows remain up for debate, we anticipate remarkable breakthroughs in agents in 2025. **In the following section, we will break down the key differences between bots, agents, and smart agents.**

Bots vs Agents

EXHIBIT 11:

Comparison of Bots & Agents

Source: Outlier Ventures

	BOTS	AGENTS
FUNCTIONALITY	TASK-ORIENTED	GOAL-ORIENTED
DECISION MAKING	DETERMINISTIC	PROBABILISTIC
BEHAVIOR	REACTIVE	ADAPTIVE
EXAMPLE	TRADING BOT	MICROSOFT COPILOT
ONCHAIN SPECIFICATION	NO	NO
ONCHAIN VERIFICATION	NO	NO

Outlier Ventures

In contrast to agents, **bots are task-oriented, rule-based, reactive systems designed to execute predefined tasks efficiently.** Their behaviour is inherently reactive, relying on pre-programmed instructions and external inputs. While bots can simulate adaptation through pre-programmed behaviours, they lack the genuine autonomy or learning capabilities of agents.

Although agents and bots can both execute tasks, their underlying design and capabilities differ. Bots are **task-oriented**, built to perform specific, predefined and already understood actions. Agents, in contrast, are **goal-oriented**, optimising for overarching objectives that may span multiple interconnected tasks. **Bots follow a deterministic decision-making process**, where every step is predefined, leading to predictable outcomes. In contrast, **agents operate probabilistically**, where only the possible outcomes are known, and the steps to achieve them are dynamically determined based on context, learning, and environmental factors. Moreover, **bots are inherently reactive**, responding to inputs and external triggers in predetermined ways, while **agents are adaptive** systems capable of learning and adjusting over time.

Smart Agents

EXHIBIT 12:

Comparison of Bots, Agents, and Smart Agents

Source: Outlier Ventures

DLT & SMART CONTRACTS

	BOTS	AGENTS	SMART AGENTS
FUNCTIONALITY	TASK-ORIENTED	GOAL-ORIENTED	GOAL-ORIENTED
DECISION MAKING	DETERMINISTIC	PROBABILISTIC	PROBABILISTIC
BEHAVIOR	REACTIVE	ADAPTIVE	ADAPTIVE
EXAMPLE	TRADING BOT	MICROSOFT COPILOT	POST WEB
ONCHAIN SPECIFICATION	NO	NO	YES
ONCHAIN VERIFICATION	NO	NO	YES

Outlier Ventures

Let's take this a step further by distinguishing between 'agents' and 'smart agents'. As outlined above, agents are goal-oriented, autonomous, adaptive systems that can operate and evolve effectively within complex, dynamic environments. **In The Post Web, we envision the emergence of a new class of agents, which we refer to as 'smart agents'**. This new class of agents will retain all the core characteristics of traditional agents but **with the enhanced ability to interact directly with DLT and smart contracts. Smart agents will tap into the functionality of smart contracts to execute actions on-chain, while also having their own actions transparently recorded through verification and specification.**

On-chain Specification & On-chain Verification

On-chain specification and **on-chain verification** are two important functionalities that distributed ledger technology (DLT) unlocks for agents in The Post Web. **On-chain verification** allows users to retroactively audit agents' actions with full transparency, ensuring accountability and trust. Meanwhile, **on-chain specification** enables users to define and enforce verifiable constraints or objectives for agents, guiding their behaviour in The Post Web. These capabilities are pivotal as millions of smart agents emerge, economically transacting and executing tasks on behalf of users. By leveraging DLT, the specification and verification of agents ensure a secure and transparent framework for the autonomous digital economy.

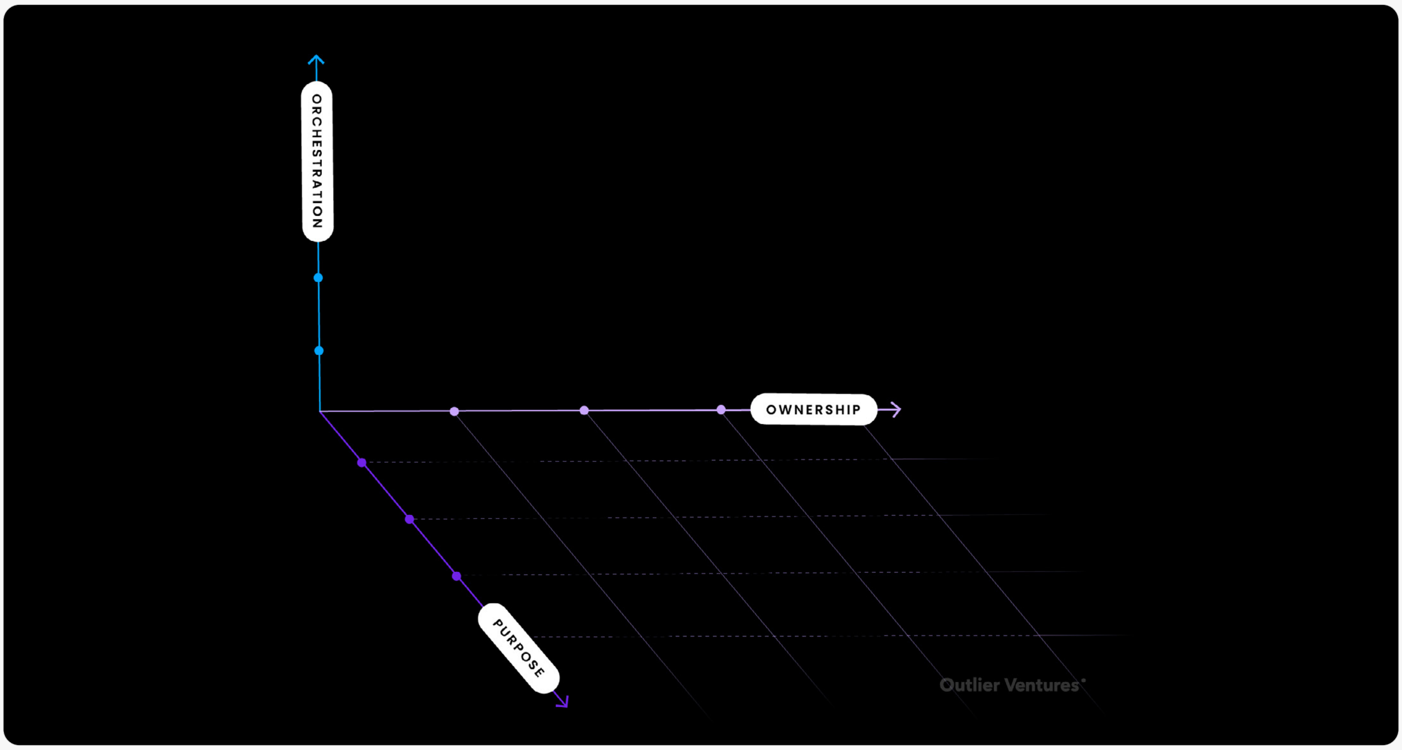
Classification of Smart Agents

In The Post Web, we always deal with **'smart agents'**. However, for brevity, we will commonly refer to them as simply 'agents' throughout this chapter.

EXHIBIT 13:

Classification of Smarts Agents by Orchestration, Ownership, and Purpose

Source: Outlier Ventures



Smart agents in The Post Web can be classified across several dimensions. While the following classifications are not an exhaustive list of dimensions to classify agents, we believe the following will be core to agents that exist and operate within The Post Web:

- **Purpose:** Agents can be classified by their functional scope, ranging from special-purpose agents designed for specific tasks to general-purpose agents capable of adapting to diverse domains and objectives.

- **Ownership:** Ownership of agents in The Post Web spans a spectrum of independence: user-owned agents that are fully controlled by individuals, platform agents optimise for platform-specific goals, and independent agents who are self-governing and optimise for independent incentives.

- **Orchestration:** The orchestration of an agent represents how it organises with other agents and information systems. Agents may operate at an individual level, all the way to collective groups of agents, also known as 'swarms'.

In the next part, we will further explore the foundations of agents, including AI learning paradigms, agent architecture, and agentic workflows.

Agent Foundations: Learning, Architecture, & Workflow

TL;DR

- **Reinforcement Learning:** Enables agents to learn from interaction, optimising decisions over time to achieve their long-term goals.

- **Language Models:** Provide agents with natural language understanding and generation, enabling intuitive machine-to-human interactions.

- **Retrieval Augmented Generation (RAG):** Allows agents to retrieve external information sources, increasing their contextual understanding and awareness.

- **Agent Architecture:** Combines several intelligence components including perception, reasoning, learning, and execution to create agent architecture that can facilitate autonomous, goal-oriented, and adaptable agents.

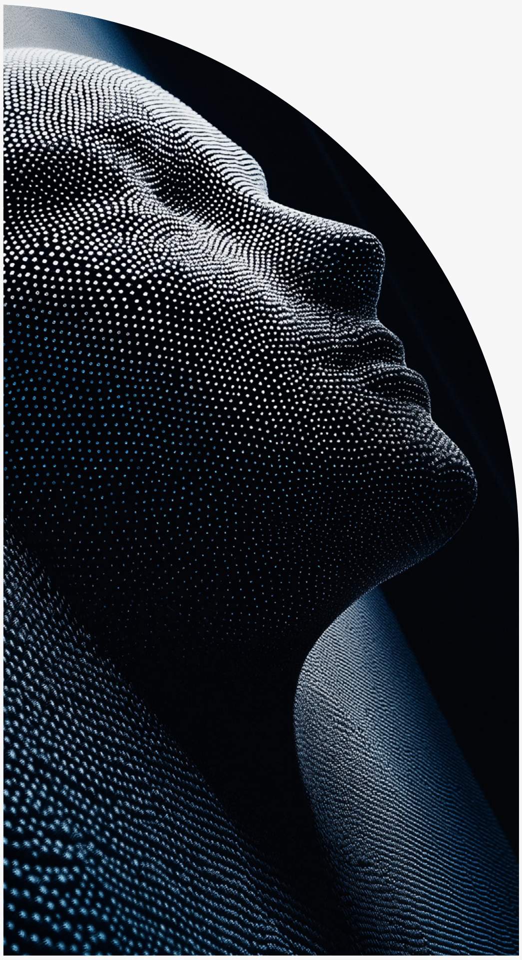
- **Agent Workflow:** Agents follow a three-step workflow process — Receive, Analyse, and Act — to interpret inputs, evaluate decisions, and execute tasks while continuously refining their approach through feedback.

Foundations of AI in The Post Web

Today, AI encompasses various learning paradigms, each tailored to specific challenges and tasks. Paradigms such as supervised learning, unsupervised learning, and reinforcement learning enable AI systems to learn, adapt, and perform complex tasks across diverse applications. They form the foundational methodologies for training AI models.

While we could spend an entire chapter dedicated to AI and the decentralisation of its models, this section focuses on three key components that we believe are poised to be transformational for AI agents in The Post Web Technology Stack:

- **Reinforcement Learning (RL):** A learning approach where agents optimise decision-making by interacting with environments, using feedback loops to maximise long-term rewards.
- **Language Models (LMs):** AI architectures trained on vast datasets to enable natural language understanding and generation, serving as critical tools for tasks involving human-agent and agent-agent interactions.
- **Retrieval-Augmented Generation (RAG):** A system-level approach that combines generative AI with external knowledge retrieval, allowing models to produce more accurate and contextually relevant outputs.



Reinforcement Learning (RL)

Reinforcement learning is transformative for AI agents, enabling them to learn from interaction and optimise decisions over time to achieve long-term goals. By prioritising adaptability and continued learning, RL allows agents to navigate complex, dynamic environments over extended periods.

Rather than short-term objectives, it is more focused on advancements in computational intelligence, making it an interesting additional approach to agents in The Post Web. As more agents come online, these agents will need to navigate increasingly complex economic environments, and thus requiring higher degrees of intelligence to successfully navigate and achieve optimised outcomes.

Language Models (LMs)

Language models give AI agents the ability to understand and generate language. This capability is critical for interpreting user intent and interacting seamlessly with other agents and humans through natural language. Beyond natural language capabilities, LMs are designed to leverage generalised knowledge from vast pre-trained datasets. This enables agents to tap into an extensive knowledge base across all the types of tasks they are engaging in. LMs have also demonstrated some reasoning abilities through techniques like chain-of-thought prompting and multi-shot learning, showing potential for task decomposition and problem-solving.

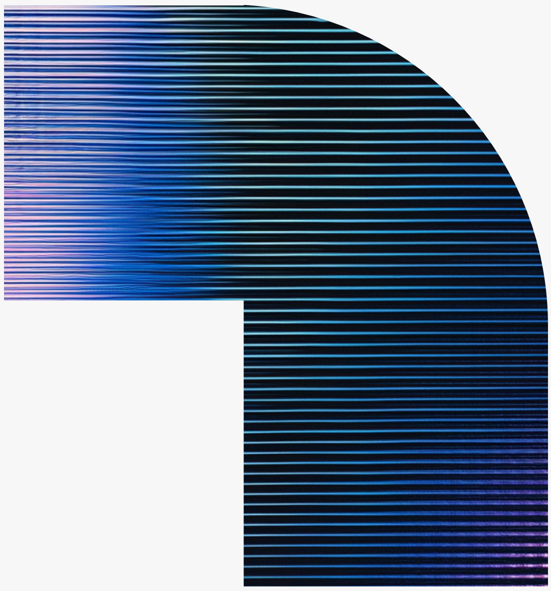
Retrieval-Augmented Generation (RAG)

Retrieval-augmented generation (RAG) transforms how agents access and utilise information by integrating external information sources to augment their responses.

This approach compensates for limitations of LM models reliant solely on pre-existing internal data.

An advanced iteration of RAG, referred to as **agentic RAG**, builds on this foundation by introducing agent-based workflow capable of retrieving diverse information sources and supporting multi-step reasoning.

This form of RAG shows great potential for advancing how agents retrieve, process, and synthesise information.



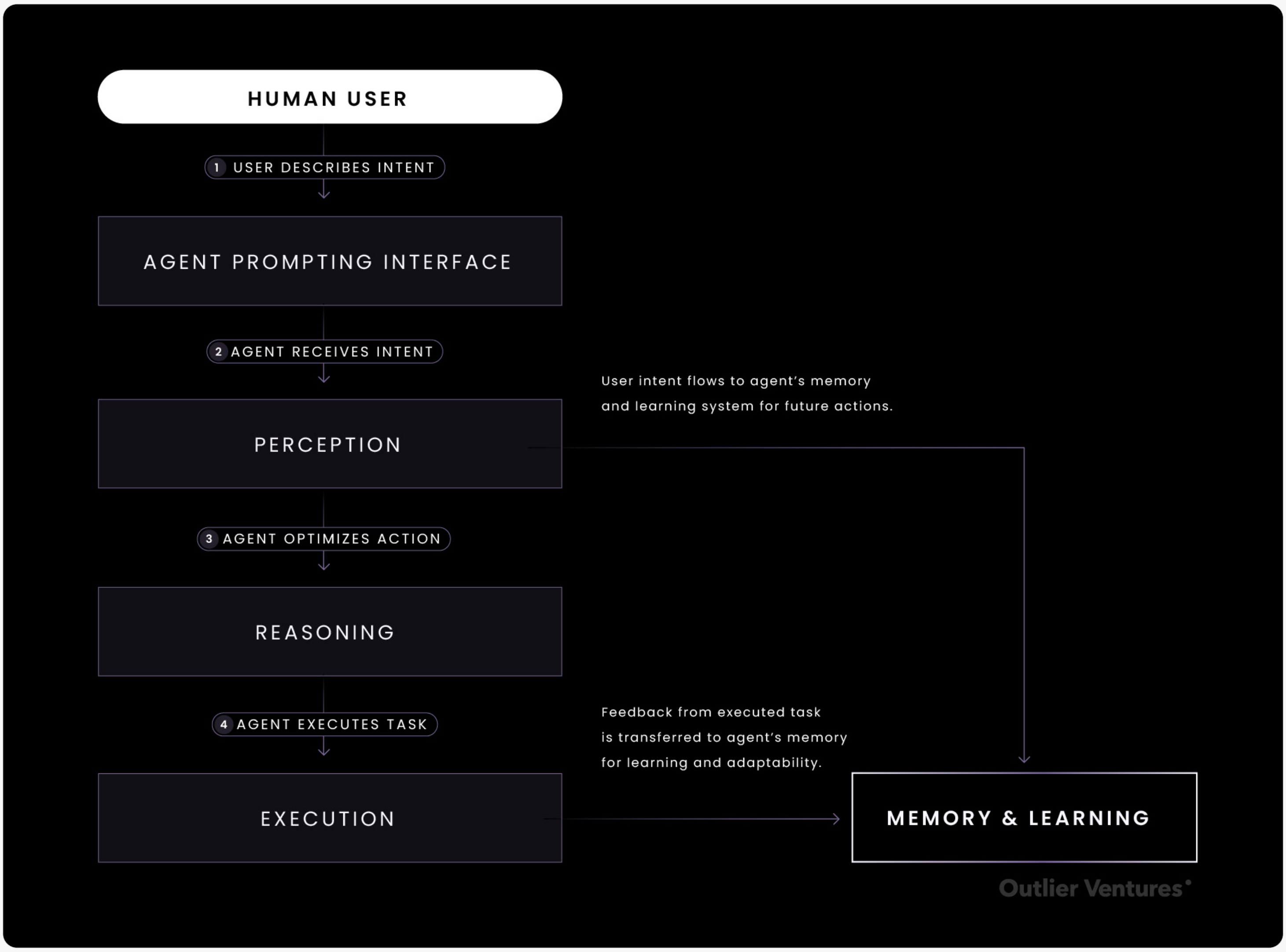
Agent Architecture

Exhibit 14 illustrates agentic architecture at the individual level. In addition to individual agent architectures, we believe that collective systems of agents (i.e. swarms), enabled by the high degree of collaboration unique to decentralised systems, will emerge as a new type of agentic architecture. We will explore further in Chapter 3 of The Post Web thesis.

EXHIBIT 14:

Individual Agent Architecture Example

Source: Outlier Ventures



Agent architecture in The Post Web is ever-evolving. We expect a diverse set of agent architectures to emerge, through technological advancements that are tailored to specific use cases and the unique challenges of operating in dynamic, intent-driven environments.

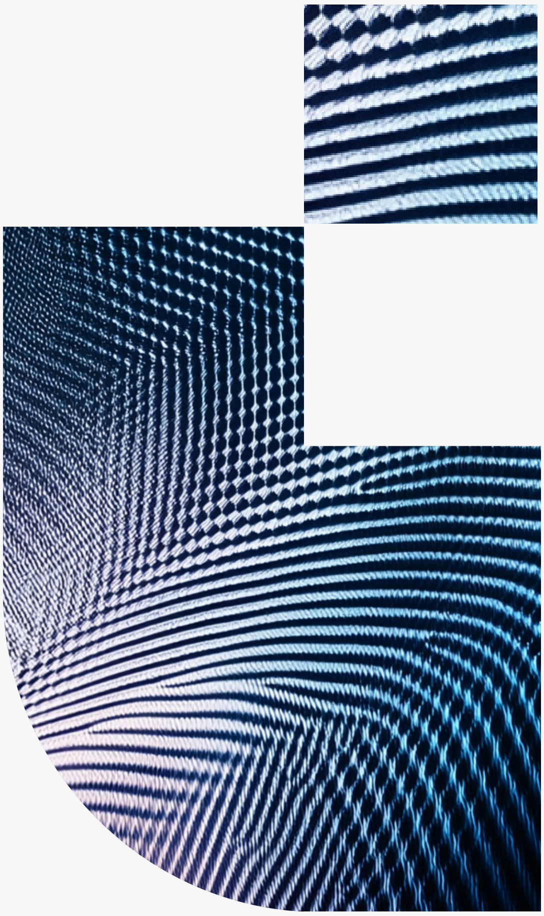
We believe most agent architectures will enable the majority, if not all, of the following components of intelligent behaviour:

→ **Perception:** Creates the agent's understanding of the environment, including extending into the physical world.

→ **Reasoning:** Enables the agent to analyse information and make informed decisions.

→ **Memory & Learning:** Ensures agents can adapt and improve over time through performance assessment, new knowledge and experience intake.

→ **Execution:** Translates agent's decisions and plans into actions, enabling interaction with, and feedback from, the environment.



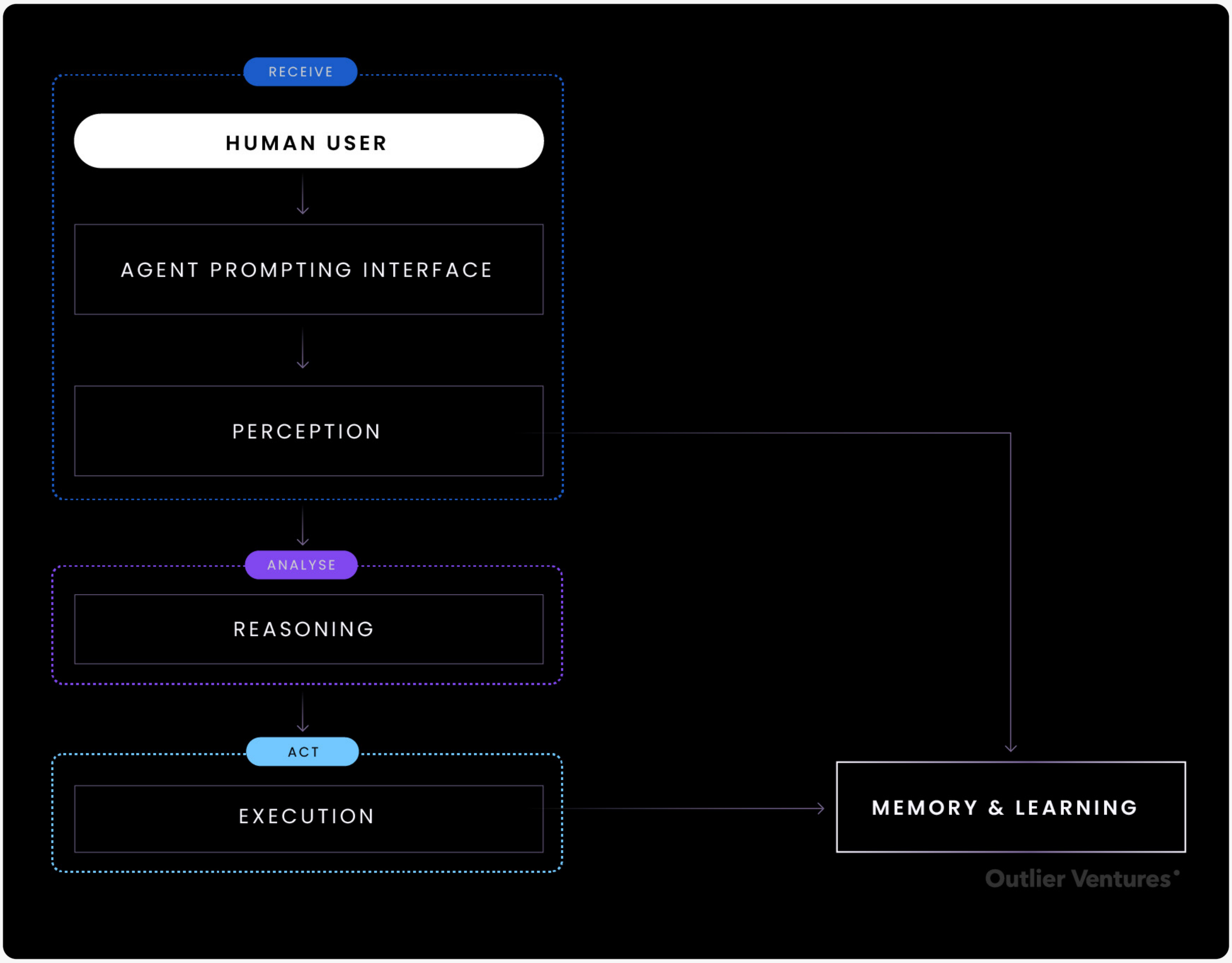
Agent Workflow

As much of the complex activity is abstracted away, we believe an agents' workflow will consist of three core steps: **receive, analyse and act**. As illustrated in **Exhibit 15**.

EXHIBIT 15:

Agent Workflow

Source: Outlier Ventures



1 RECEIVE

Agents **receive** input via perception. This phase involves interpreting the input, extracting key details, and identifying the core intent behind the task.

Example

> A user describes their desired intent to book a holiday trip through a browser-style prompting interface. The agent **receives** the user intent and identifies the core intent behind the task.

---

2 ANALYSE

Once a task is received, agents **analyse** through reasoning to gather relevant data, assess context, and evaluate potential actions. By leveraging memory and learning capabilities, the agent ensures that its analysis aligns with immediate and long-term goals.

Example

> The agent **analyses** market data, assesses context, and evaluates potential actions hyper-personalised to the user to recommend the best holiday itinerary.

---

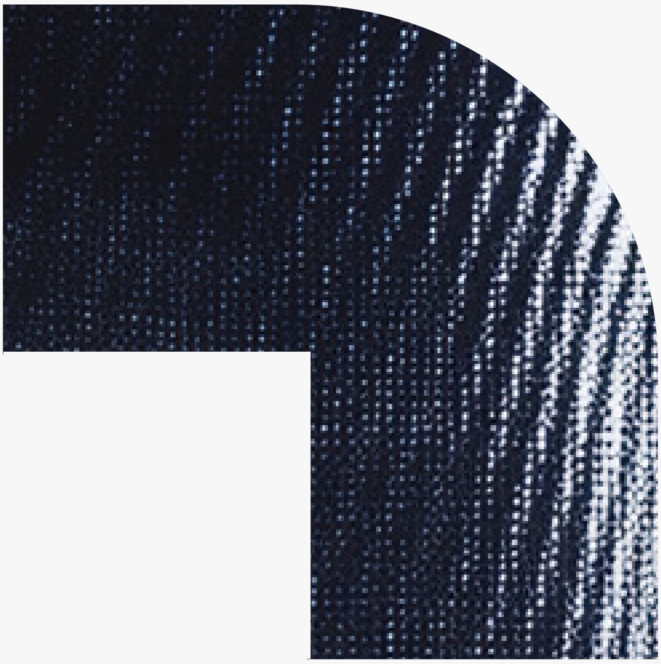
3 ACT

In the final phase, agents **act** through execution. They interact with various protocols and smart contracts to facilitate the desired intent. Following this phase, agents may also leverage learning mechanisms to assess the results of their actions, updating strategies for future tasks.

Example

> The agent **acts** and books the flights, accommodation, and activities on behalf of the user. Post-execution, the agent evaluates user satisfaction and its performance for optimising future tasks.

Agents in The Post Web: Features, Deployment & Interactions



TL;DR

Key Traits of Agents: Agents in The Post Web embody three key traits: **autonomy**, **goal-orientation**, and **adaptability**.

Nine Features of Agents: While the three key traits define the overarching essence of agents, they are expressed through **nine core features** that enable them:

↳ **Goal-Orientation**
- → Strategic Planning
- → Clarity of Purpose
- → Execution Precision

↳ **Autonomy**
- → Contextual Awareness
- → Situational Awareness
- → Economic Agency

↳ **Adaptability**
- → Adaptive Memory
- → Feedback Integration
- → Resiliency

Agent Deployment Modes:

↳ **Responsive:** Assist users by gathering information and awaiting direction.

↳ **Operative:** Anticipate user needs and take the initiative within defined boundaries.

↳ **Autonomous:** Act autonomously, manage tasks & decisions without human input.

Interactions:

↳ **Agent-to-Agent:** Agents collaborate or compete with other agents to negotiate outcomes, optimise resources, and achieve goals, driving new emergent behaviours.

↳ **Agent-to-Protocol:** Agents directly engage with decentralised protocols to execute transactions, manage smart contracts, and interact with blockchain infrastructure.

↳ **Agent-to-Human:** Agents translate user intent into actionable tasks and results, as well as train on the user's inference for better outcomes, enabling seamless interaction between humans and decentralised systems.

↳ **Agent-to-DAO:** Agents engage with DAOs to pool resources, coordinate activities, find collective alignment and manage on-chain governance.

↳ **Agent-to-Device:** Agents interact with external devices or machines to leverage resources, enhance their capabilities or affect the physical world.

Across the entire Post Web Technology Stack, agents are the only newly introduced technology. While other components, such as wallets and dApps, continue rapidly evolving from their Web3 foundations, agents represent a fundamentally new layer of functionality, innovation, and complexity. This section explores three key questions to understand agents in The Post Web better.

1. **What are the key traits and features of smart agents?**
2. **How will agents be orchestrated and behave?**
3. **How will agents interact with other agents, humans, and the broader Post Web?**

Key Traits & Features of Smart Agents

What are the features that make up smart agents in The Post Web? What types of features will be prioritised by users for different tasks? How will agents execute seamlessly, adapt dynamically, and thrive in The Post Web?

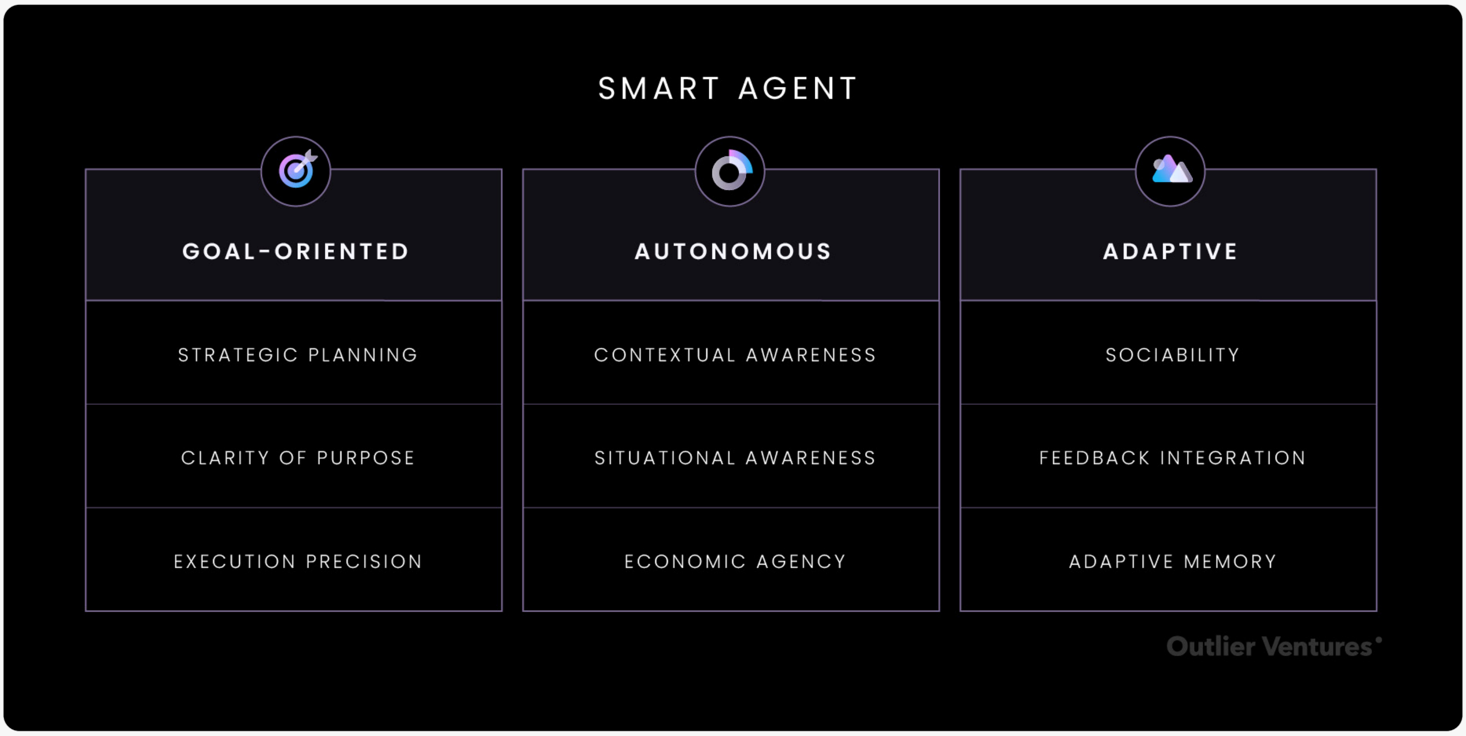
Running AI agents is more complex than just allowing them to execute. In aggregate these are some of the most complex software systems in the history of the internet. The definition of a successful AI agent is changing rapidly, but we believe the following could provide a comprehensive view of its eventual form.

"A successful AI agent in The Post Web effectively prioritises goals while aligning all actions with its purpose. It executes tasks with accuracy and efficiency, and leverages contextual and situational awareness to inform decision-making. It autonomously conducts secure transactions and demonstrates sociability by dynamically collaborating or competing with other agents and humans. It continuously learns and adapts through feedback integration, and relies on adaptive memory to retain and apply past experiences, ensuring smarter decision-making over time."

EXHIBIT 16:

The Key Traits and Features of a Smart Agent

Source: Outlier Ventures



Key Traits of Smart Agents

GOAL-ORIENTED

A **goal-oriented** agent plans strategically, maintains clarity of purpose, aligns actions with defined objectives, and ensures precise execution to achieve efficient and accurate outcomes.

AUTONOMOUS

An **autonomous** smart agent operates, to some degree, independently by leveraging contextual and situational awareness, and conducting secure transactions.

ADAPTIVE

An **adaptive** smart agent evolves dynamically by socialising with other agents, continuously learns from feedback and leverages adaptive memory to improve decision-making and future interactions.

Features of Smart Agents

Strategic Planning: Prioritise goals and allocate resources to achieve optimal outcomes.

Clarity of Purpose: Align all actions with a clearly defined objective.

Execution Precision: Execute tasks with accuracy and efficiency, ensuring reliability even in dynamic environments.

Contextual Awareness: Analyse broader environmental, historical, and user-specific data to inform autonomous decision-making in decentralised systems.

Situational Awareness: Interpret micro-level, real-time environmental changes to inform immediate actions.

Economic Agency: Autonomously conduct secure transactions with DLT.

Sociability: Collaborate, compete, or interact dynamically with other agents and humans.

Feedback Integration: Continuously learn and adapt through past performance, acquired knowledge, and evolving goals to optimise decision-making.

Adaptive Memory: Retain and organise past experiences to inform smarter, context-aware decisions and build resilience over time.

Smart Agent Organisation

As agents assume increasingly complex roles in The Post Web, how do we determine the desirability of certain features over others? How do the various deployment and interaction types shape the balance between autonomy, collaboration, and trustless execution?

Features of Agents: Theory vs. Practice

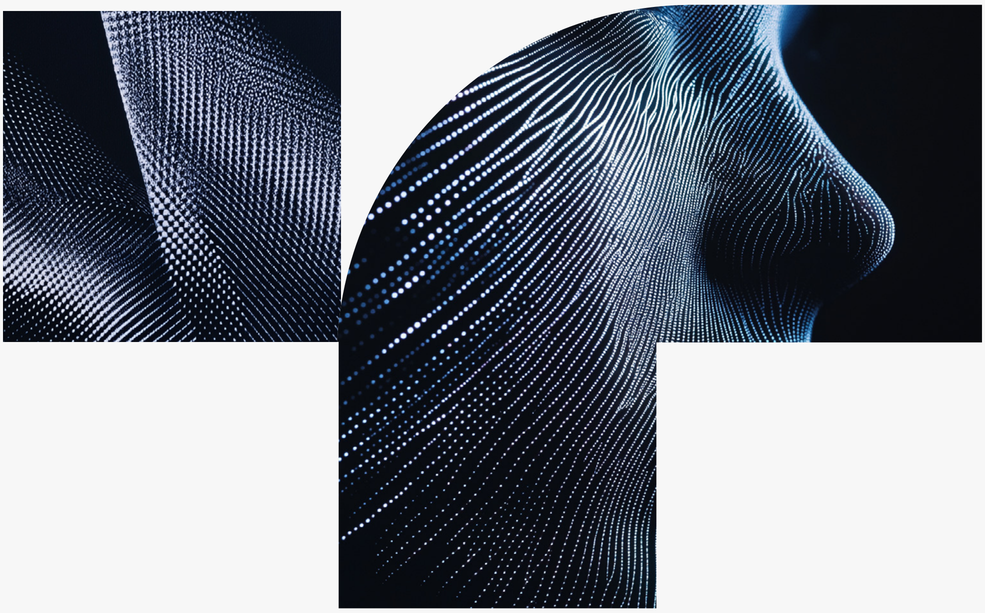
While smart agents embody all of the nine features laid out above, some agents may operate with higher levels of certain features, based on experience and other factors. When users are interacting and utilising agents in The Post Web, we believe there are certain factors that will determine the desirability for higher levels of certain features within agents, including:

- **Economic Value:** Tasks with higher economic value demand agents that possess higher levels of **strategic planning, clarity of purpose,** and **execution precision** to ensure the efficient and effective orchestration of economic activity.

- **Deployment Type:** The higher the level of autonomy an agent has, the greater the desirability for an agent that embodies higher levels of **economic agency, feedback integration,** and **contextual awareness** to operate independently and effectively within decentralised environments.

- **Task Complexity:** The more complex a task, the more desirable it is for an agent that excels in **situational awareness**, **sociability**, and **adaptive memory**, ensuring that it can respond effectively in highly unpredictable environments.

Overall, we believe that agents' success will largely depend on their ability to execute tasks transparently, reliably, and in alignment with user intent and in some cases, collective interests. This is where the value of DLT comes into play through the enablement of specification and verification of agent actions. DLT ensures that agents operate and execute with integrity, making smart agents uniquely valuable as their actions can be trustlessly validated in ways that traditional agents cannot.

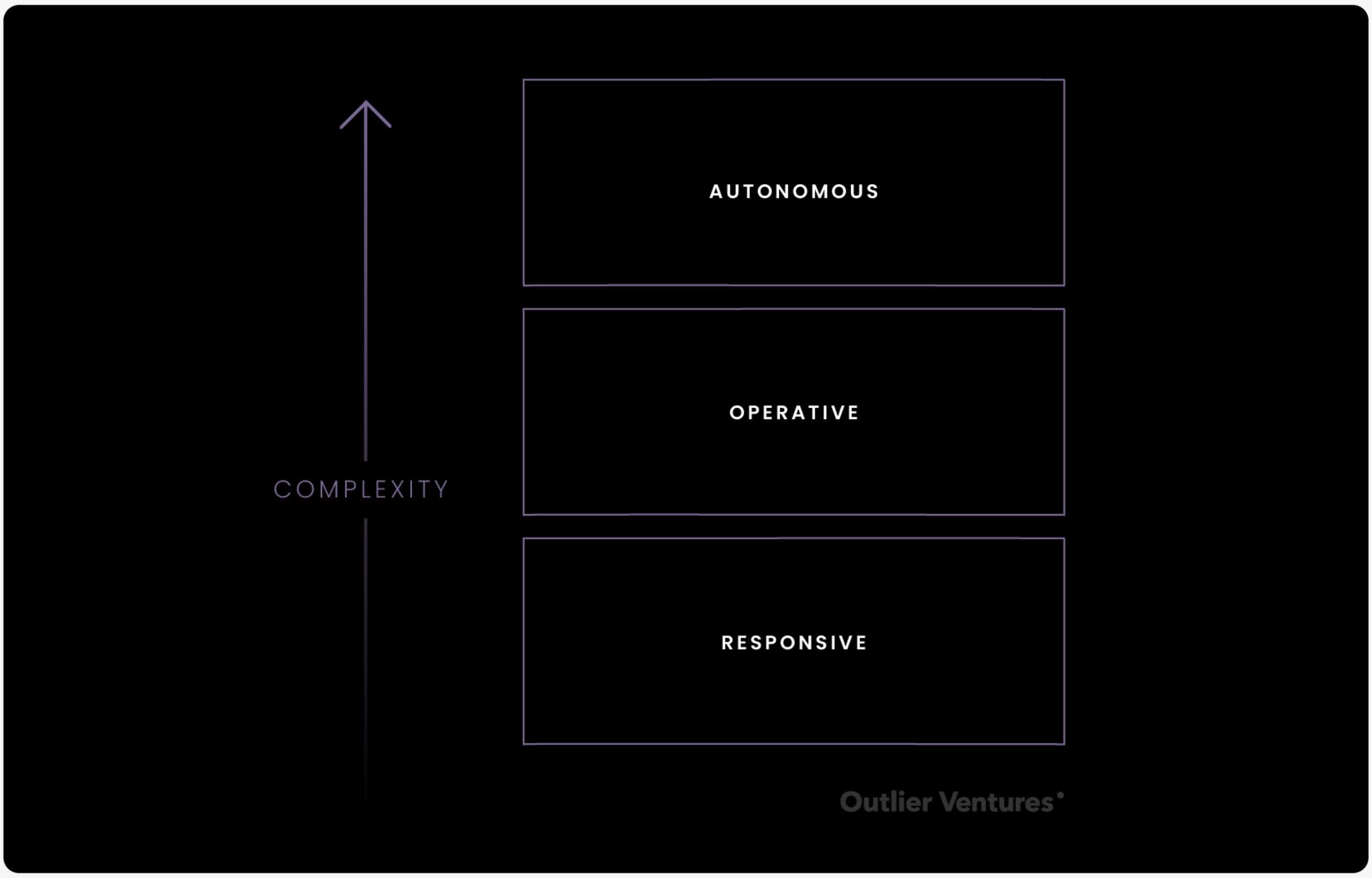


Modes of Deployment

EXHIBIT 17:

Modes of Agent Deployment

Source: Outlier Ventures



Smart agents in The Post Web can be deployed across a spectrum of autonomy, tailored to specific use cases and trust levels. From responsive to autonomous, these deployment modes highlight agents' diverse roles in The Post Web.

Responsive

Agents are deployed as assistants, gathering information, providing recommendations, and waiting on user input for their next action.

EXAMPLE

A DeFi agent monitors on-chain activities, tracks token prices, and notifies a user when an arbitrage opportunity arises. It suggests potential actions, such as executing a trade, but waits for the user's approval before proceeding.

Operative

Agents are deployed with the objective of actively pursuing goals on behalf of users, leveraging their ability to anticipate evolving needs and take the initiative within defined boundaries.

EXAMPLE

A travel-planning agent that autonomously compares cross-chain marketplaces for last minute tokenised airline tickets and hotel reservations. It books options that align with the user's preferences and budget, notifying the user only when confirmation is required to finalise the itinerary.

Autonomous

Agents are deployed with complete autonomy, acting either as independent entities or as representatives of user ownership, making decisions without human intervention.

EXAMPLE

A travel-planning agent that autonomously compares cross-chain marketplaces for last-minute tokenised airline tickets and hotel reservations. It books options that align with the user's preferences and budget, notifying the user only when confirmation is required to finalise the itinerary.

Overall, as The Post Web evolves, we expect the types of agents and how agents are deployed to transform, moving fluidly across use cases, user needs, degrees of agency and advancing capabilities.

Agentic Interactions in The Post Web

In The Post Web, agents will function across several core interaction types including:

Agent-to-Protocol

Agents interact directly with decentralised protocols to execute transactions, interact with DLT infrastructure, and manage smart contracts.

EXAMPLE

A DeFi agent autonomously interacts with a decentralised exchange (DEX) protocol to execute a trade.

Agent-to-Agent

Agents collaborate and compete with other agents to achieve goals, optimise resources, negotiate outcomes, and more. This emerging interaction will drive new emergent behaviour and economic outcomes in The Post Web.

EXAMPLE

A group of investment agents collectively negotiates and executes capital raising agreements for a new investment DAO.

Agent-to-Human

Agents and humans interact by translating user intention into actions and results.

EXAMPLE

An asset management agent interacts with a human user through natural language processing systems to gauge their financial objectives and intent.

Agent-to-DAO

Agents interact with decentralised autonomous organisations (DAOs) to coordinate resources, manage on-chain governance, and collaborate with other agents and humans.

EXAMPLE

An investment agent creates a DAO in collaboration with other agents to pool resources, and invest in early-stage crypto projects through collective decision-making.

Agent-to-Device

Agents leverage external machines and devices, such as those stored within decentralised physical infrastructure networks to harness resources such as compute, data, or external hardware.

EXAMPLE

An intelligent agent rents GPU resources for a large-scale machine learning task via a DePIN network.

Regarding agent interactions with other agents and humans, we believe a dynamic spectrum of social behaviours will emerge within agents. These behaviours may range from cooperation, where agents collectively solve problems or share resources to achieve mutual goals, to competition, where agents with economic agency navigate opposing incentives or vie for limited resources. However, these modes of interaction are not static or mutually exclusive; they often blend into nuanced strategies where agents may cooperate in one context while competing in another, adapting their behaviour to optimise outcomes. In Chapter 3 of The Post Web thesis, we will explore how these emerging behaviours evolve and intersect within diverse environments.

DLT Interactions

Today, DLT is used by agents for ownership distribution and tracking transactions and state changes. However, as the future unfolds, what factors will influence how often agents interact with DLT?

TL;DR

↳ **Costs to Execute:** Agents interacting with DLT face costs, including latency, transaction fees, cross-network complexities, and limitations posed by blockchain scalability for high-frequency or intricate interactions.

↳ **Dimensions:** Agents decide to engage with DLT based on factors such as cost efficiency, regulatory compliance, asset type, security requirements, data sensitivity, and performance needs, while ensuring consensus of state with third parties. They balance the transparency of DLT with the flexibility and speed of off-chain solutions.

↳ **Optimism vs. Zero Trust:** Optimistic rollups offer efficient security by assuming most interactions are legitimate and verifying selectively, whereas Zero Trust maximises security through constant verification but is resource-intensive and impractical for agent ecosystems.

↳ **Agentic Rollups:** A potential future consensus mechanism to enable scalable, secure coordination between AI agents in The Post Web.

Costs to Execute

The cost to execute on-chain is a critical consideration for smart agents when deciding whether to interact with The Post Web. While DLT offers transparency and trustless environments, it has inherent limiting factors that influence when and how agents interact with DLT. The following are key limiting factors that define the costs for agents to execute on-chain:

→ **Latency:** DLT often requires confirmation times to validate transactions, introducing delays that may conflict with smart agents' real-time decision-making needs.

→ **Cost:** On-chain interactions can become costly due to gas fees and transaction costs. For smart agents handling high-volume tasks, these costs can outweigh the benefits of trustless execution.

→ **Infrastructure:** The Post Web requires agents to interact across multiple infrastructure layers such as oracles, cross-chain protocols, and more. Managing this complexity for certain tasks may disable certain agents from operating on-chain.

→ **Technological Limitations:** Technological limitations, such as blockchain scalability, can constrain the ability of smart agents to interact with DLT for high-frequency transactions or complex multi-agent interactions.

Dimensions

We believe the decision for agents to interact with DLT ultimately hinges on the value of the action versus the cost of executing it on-chain, along with the requirement for consensus. It is unrealistic to assume that every state change and interaction, whether human-agent or agent-agent, will happen on-chain. **The decision to make the AI agent interact with DLT or use alternatives such as optimistic assumptions depends on a variety of vectors** that balance practicality, costs, and functionality.

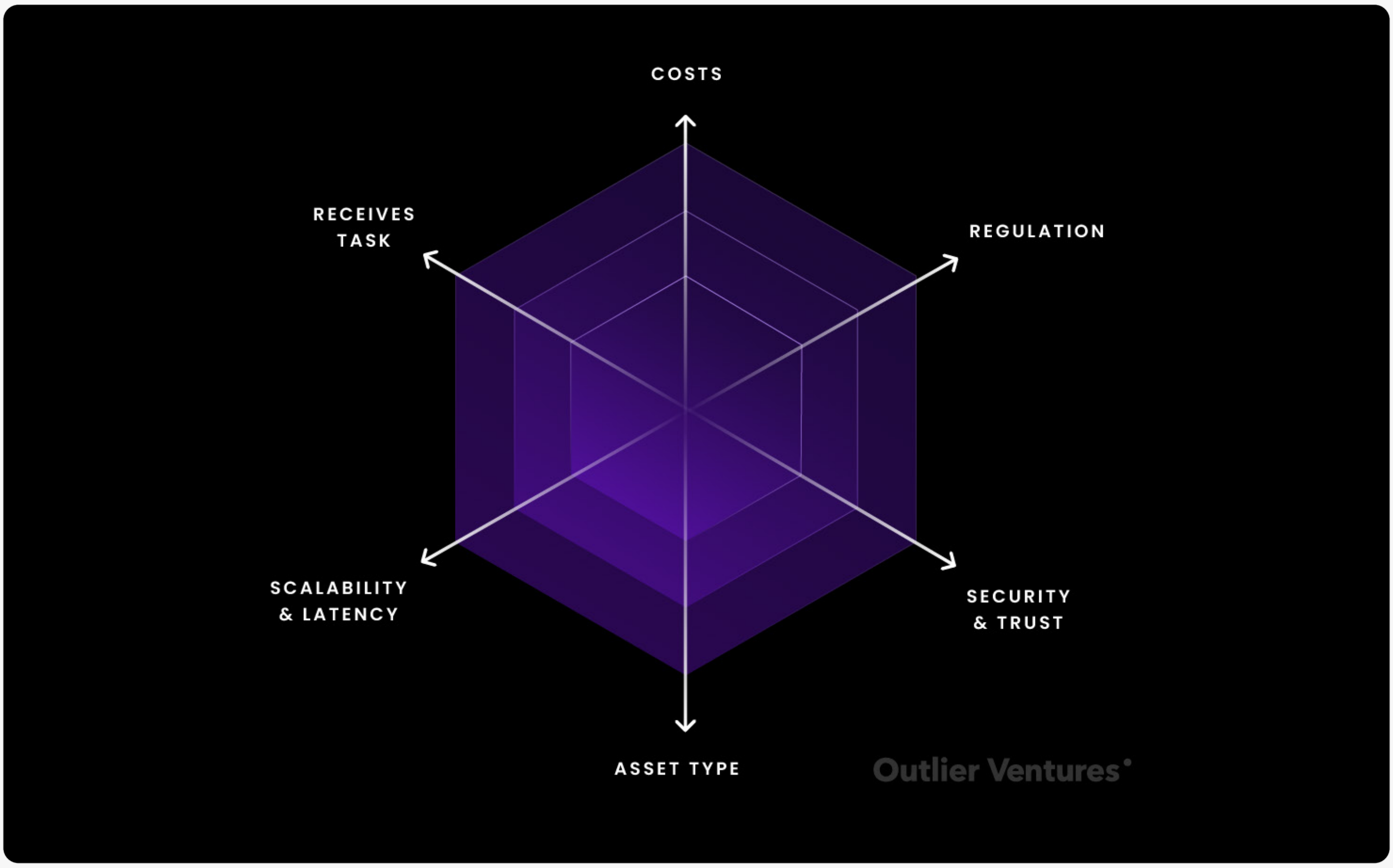
These vectors are vital considerations that define the frequency with which AI agents engage with DLT to optimise for efficiency and security. **In The Post Web, many of these vectors and the ultimate decision to interact with DLT for a specific transaction will be automated and mainly at the discretion of agents**. However, in order to do so, agents need rich contextual information to make these decisions autonomously.

Understanding these vectors is essential for system design and deciding whether specific use cases across industries such as finance, healthcare, consumer, and more are feasible given the existing limitations of AI and DLT, both today and in the future. **It's important to strike the right balance between on-chain assurance and off-chain flexibility. Exhibit 18** illustrates what we believe to be the key vectors of each AI agent's interaction.

EXHIBIT 18:

Vector Considerations Deciding if an AI Agent Transaction Needs to Interact DLT

Source: Outlier Ventures



Let's take a closer look at each of these vectors...

Cost Efficiency

What: The financial cost of executing transactions on the blockchain, including network use and gas fees.

Why: High costs can make direct DLT interaction impractical for frequent or low-value transactions. Off-chain solutions or optimistic assumptions are preferred to reduce expenses when complete DLT security isn't required.

Regulatory Compliance

What: The requirement for transactions to meet legal and regulatory standards, ensuring traceability and auditability.

Why: Transactions that must adhere to strict regulations often require DLT involvement for verifiable, immutable records. Without these requirements, agents can operate off-chain with optimistic methods.

Asset Type

What: The nature of the asset involved, whether it is native to the blockchain (e.g., cryptocurrencies) or external (e.g. physical assets or non-blockchain digital assets) and whether they are fungible or non-fungible.

Why: On-chain assets require DLT for validation and interaction to maintain legitimacy, while off-chain assets may allow for reduced DLT use with optimistic verification.

Security and Trust

What: The level of security and trust needed to ensure the integrity and authenticity of transactions.

Why: High-stakes transactions need the immutable and tamper-proof nature of DLT. For lower-trust scenarios, agents might operate off-chain with optimistic assumptions that rely on trust but verify later mechanisms.

Data Sensitivity and Privacy

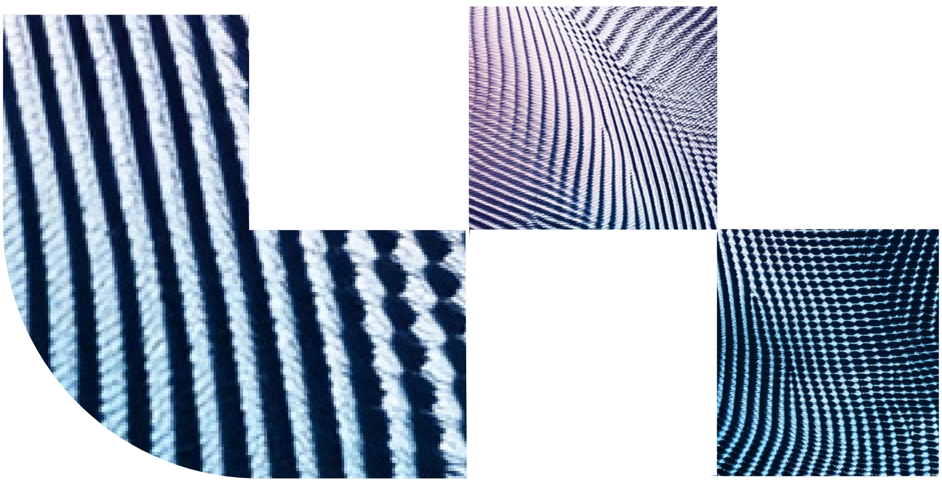
What: The degree to which data needs to be kept confidential and secure during interactions.

Why: Sensitive transactions may require direct DLT interaction to leverage cryptographic protections and verifiability, while less sensitive data interactions can use off-chain processes with lower privacy assurances.

Scalability and Latency

What: The capacity of a system to handle large volumes of transactions and the speed at which transactions are processed.

Why: High-frequency or time-sensitive transactions benefit from avoiding DLT to achieve faster processing and better scalability. Direct DLT use may be reserved for transactions with less critical performance speed.



Optimism VS Zero Trust

We see a future where optimism is the preferred approach to examining the interaction between AI agents and DLT during state changes. An alternative approach would be Zero Trust (ZT).

- **Optimism:** Used today by L2s for ex-optimistic rollups, optimism is a security approach that assumes most interactions are legitimate by default, verifying only when disputes or anomalies occur.

- **Zero Trust:** This concept is present in Zero Trust rule architecture, for example. ZT is a security framework that operates under the principle of "never trust, always verify," requiring continuous verification for every interaction and access attempt.

Zero Trust (ZT) provides the highest level of security through continuous verification, treating every interaction as potentially untrustworthy. However, applying ZT universally to AI agents is impractical due to significant resource demands and technological limitations. As discussed, it's about striking the right balance between efficiency and security. We believe that optimism will play a significant role as a security assumption for the foreseeable future.

In The Post Web, **we anticipate a new consensus formation tailored to agentic activity**, where interactions between AI agents are validated through mechanisms called "agentic rollups" designed to balance the efficiency of optimism with the precision of targeted verification. This approach will enable scalable and secure coordination among agents.

Conclusion

Whilst we can't predict precisely how agents will evolve over the next decade, we do believe that two key trends will continue to shape the future - agents will become both increasingly autonomous and intelligent. Several factors will drive this evolution, including:

- **Agent Ownership & Governance:** Over time, ownership and governance mechanisms will evolve through experimentation, resulting in more efficient frameworks and mechanisms for agents to operate independently.

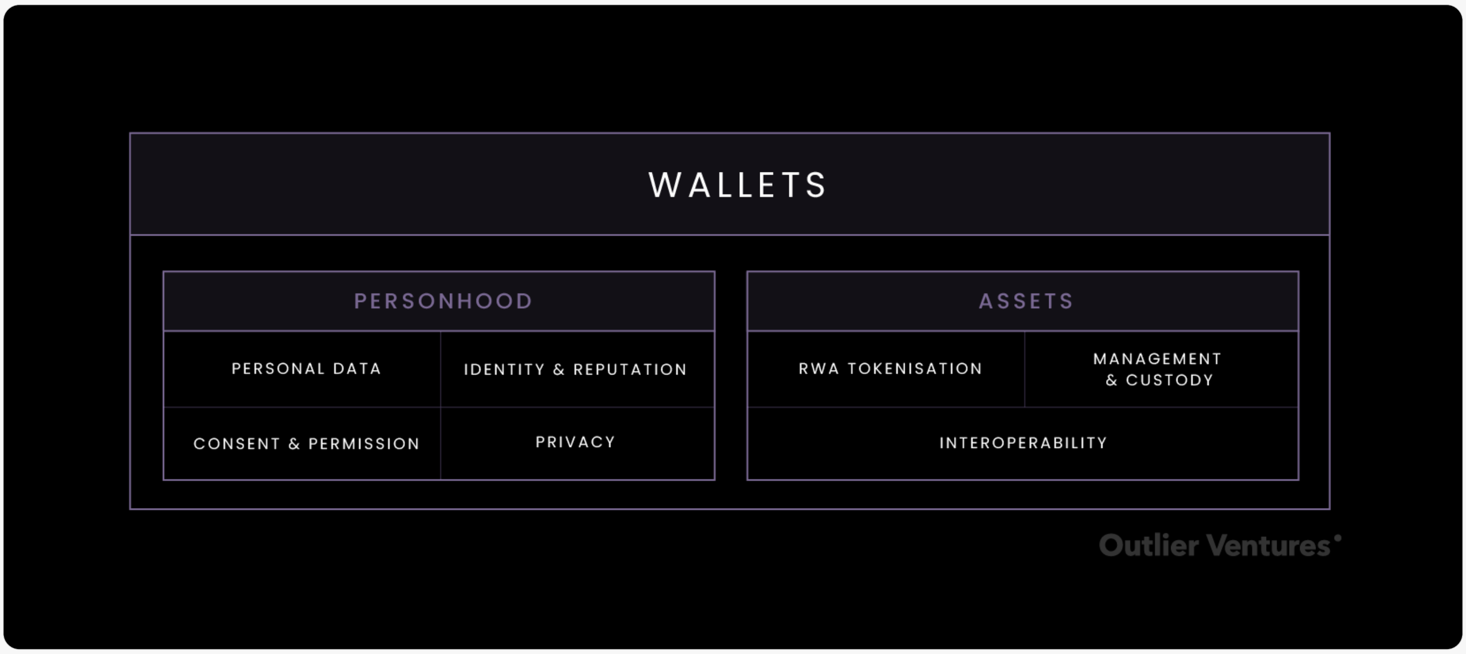
- **Multi-Agent Environments:** Interactions within multi-agent environments will improve agents' ability to act independently and respond intelligently to real-world contexts.

- **Agent Architecture:** Breakthroughs in AI learning methods will drive stronger intelligence and autonomy with agents, enabling them to navigate more complex, dynamic ecosystems.

Overall, the agentic layer represents a transformative component of the broader Post Web technology stack. It introduces a fundamentally new technology system capable of autonomous decision-making, learning, and goal optimisation. The combination of agents with the ability to directly interact with and collaborate through DLT and smart contracts will unlock a new paradigm marked by the specification and verifiability of agents, and seamless navigation and execution within the web. We will discuss this further in Chapter 3 of The Post Web thesis.

Wallets in The Post Web

In The Post Web, wallets serve as secure, programmable gateways for managing identity and assets — including data, memory, prompts, and permissions — enabling AI agents to interact with decentralised applications and infrastructure on behalf of users.



Wallets

TL;DR

- **Smart Wallets Today:** Enhance UX with features like gas abstraction and automation but rely on centralised infrastructure, trading decentralisation for functionality.
- **Dynamic Management:** Post Web wallets must balance personhood and asset orchestration dynamically, enabling AI agents securely.
- **Centralisation Trade-offs:** Centralised components are necessary for onboarding but must transition to decentralised infrastructure over time.
- **Privacy and Security:** PETs like ZK proofs and MPC will enable secure, private interactions with reduced centralisation.
- **Residual Centralisation:** Some centralised elements may remain for performance-critical applications like low-latency tasks.
- **Human-in-the-Loop:** Users will maintain oversight for consent and asset management until agents and infrastructure fully decentralise other than where there may be regulatory requirements for continuous opt-in.

Today, in Web3, **wallets primarily function as digital tools for storing cryptographic keys**, facilitating transactions, enabling user interactions with dApps, and allowing users to control their assets as they operate as self-custodians when using decentralised systems.

In The Post Web, wallets must evolve into comprehensive hubs for managing personhood and a complete itinerary of assets. They will play a pivotal role in enabling AI agents to act securely on behalf of users. Beyond this, wallets will carry context and store memory and prompts, enabling personhood and personalisation. Combining these features gives users full control over their identity and assets while supporting personalised, agent-driven services and secure interactions.

Before we begin, **let's review the current state of smart wallets**, which are already automating and simplifying transactions and asset management, paving the way for The Post Web wallet.

Smart Wallets

Smart wallets are one of the most recent Web3 innovations, representing the next stage in key, asset, and transaction management for blockchain users. **Smart wallets move beyond basic key storage and transaction signing to programmable, dynamic tools** that manage assets, identity, and interactions with decentralised applications. They integrate features like **gas abstraction, automation, and conditional execution, improving the overall user experience (UX).**

We believe this development is important, especially in light of The Post Web, as it not only makes wallet usage more intuitive but **features like gas abstraction and automation also improve the functionality for agents. Beyond agents, we believe that in The Post Web, the human interface for users is still critical, as users will continue to access wallets** to manage personhood, assets, and consent directly.

Centralisation Concerns

That said, we have **significant concerns about today's smart wallets' reliance on centralised infrastructure. Many smart wallets depend on cloud-hosted relayer networks and off-chain systems** for critical functions like transaction processing, recovery mechanisms, and notifications, creating **single points of failure.** This reliance deviates from the decentralised ethos of Web3 and exposes wallets to risks such as censorship, outages, security and privacy vulnerabilities.

Abstraction and many other smart wallet features rely heavily on centralised supporting infrastructure. However, as wallets coordinate more economic activity and manage critical on-chain interactions, it is essential for them to **decentralise further by transitioning these functionalities to decentralised infrastructure.** Exhibit 19 illustrates this progression and our vision for decentralisation.

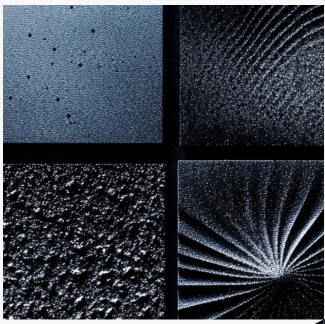
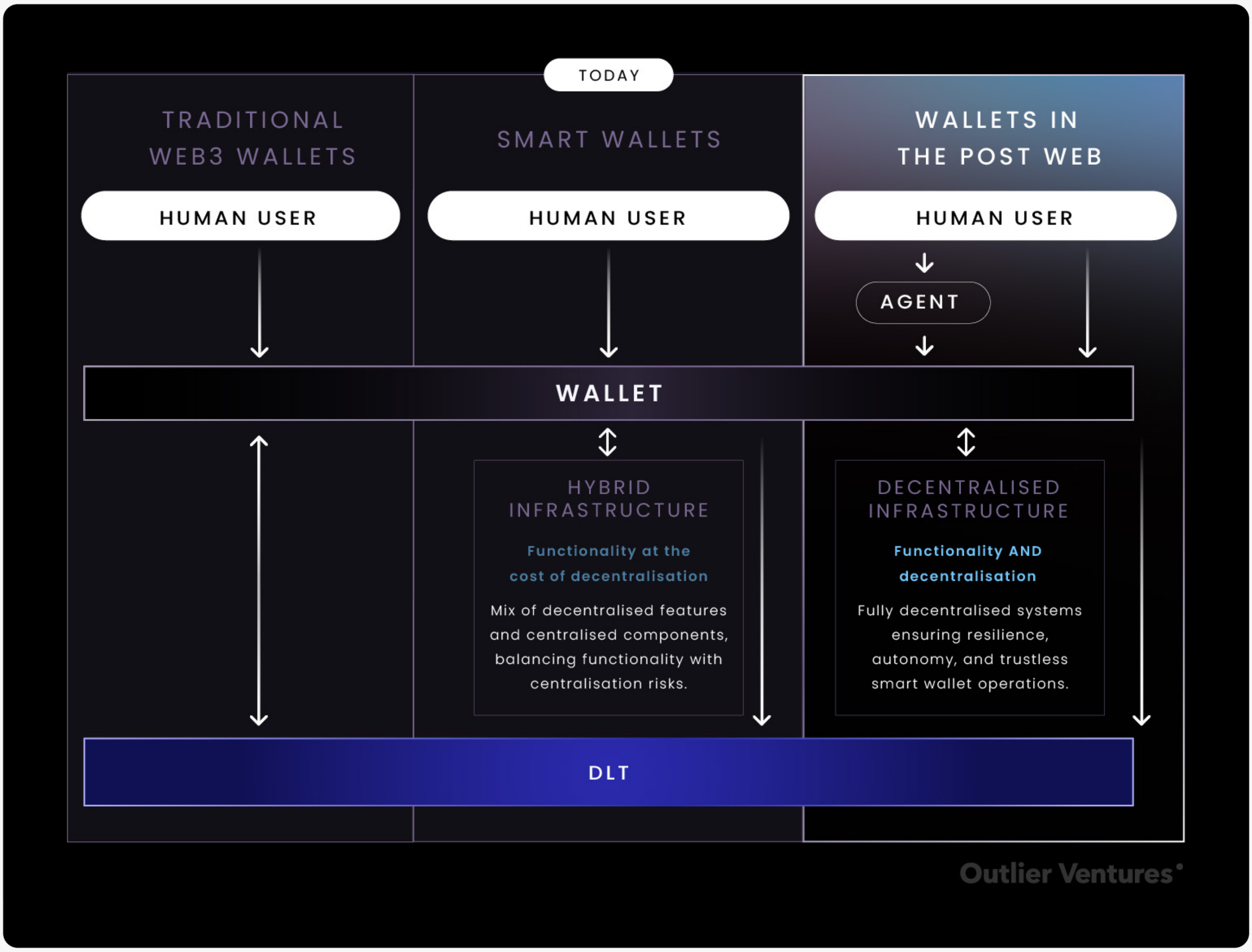


EXHIBIT 19:

Traditional, Smart and Post Web Wallets

Source: Outlier Ventures



As shown above, today's smart wallets operate with a hybrid approach, utilising **decentralised features like account abstraction while remaining dependent on centralised infrastructure, such as cloud-hosted relayers and off-chain recovery systems**. This creates a tradeoff between enhanced functionality and **centralisation risks**. As wallets take on a larger role in orchestrating economic activity, **smart wallets must transition to decentralised supportive infrastructure.**

For The Sake of Onboarding

We propose a practical approach for the sake of adoption. **In the current stage of Web3, centralised infrastructure is necessary to unlock key wallet features like passkey, gas abstraction and recovery mechanisms.** These functionalities improve onboarding and overall usability, reducing friction for new users and driving adoption. While this hybrid approach introduces some risks, it enables early-stage functionality and scale.

Transition To Decentralised Infrastructure As Adoption Matures:

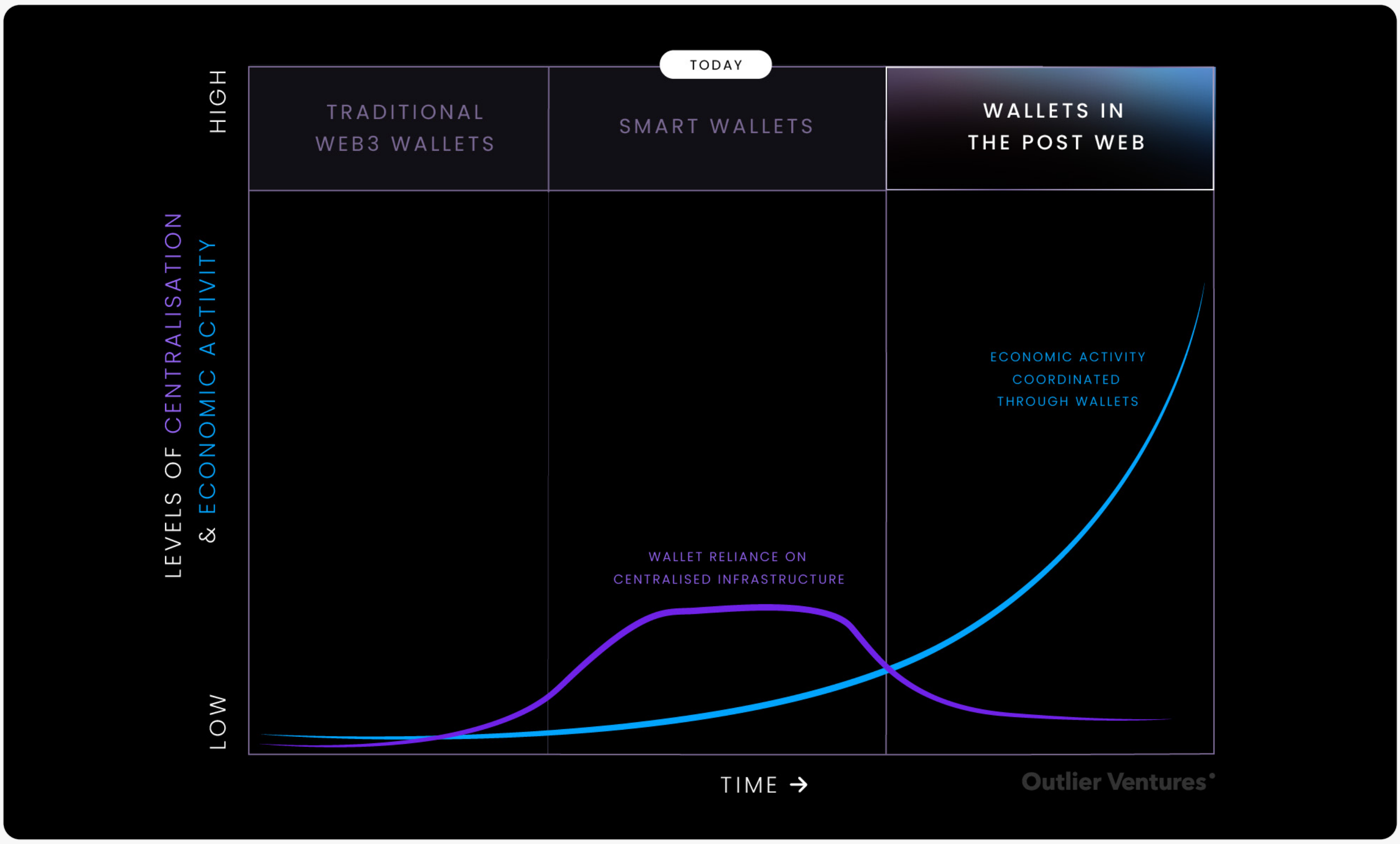
As adoption of decentralised systems grows and wallets manage more economic activity and tokenised assets, **decentralised infrastructure becomes essential to securing the increasing value they hold.** Advances in privacy-enhancing technologies (PETs) like MPC, TEEs, and FHE, combined with DePIN, will enable highly functional wallets with minimal reliance on centralised systems. This transition will safeguard the growing assets and interactions within wallets, ensuring resilience and alignment with decentralised principles.

Exhibit 20 illustrates the relation between wallet's reliance on centralised infrastructure and economic activity being coordinated through wallets.

EXHIBIT 20:

Evolution of Wallets: Centralised Infrastructure Reliance & Economic Coordination

Source: Outlier Ventures



Residual Centralisation for Specific Needs

Even with decentralised systems, some wallet functions may remain centralised due to unique performance requirements, such as ultra-low latency or high-throughput applications. While the majority of infrastructure should decentralise to safeguard critical assets and interactions, **retaining centralised components for specific use cases could be an acceptable tradeoff for enhanced usability.**

Let’s unpack ‘personhood’ and ‘assets’, two components that the wallet will host in The Post Web.

Personhood

Personhood is the comprehensive representation and management of a user's identity, reputation, data, and privacy.

TL;DR

- **Personhood:** Encompasses identity, reputation, personal data, and privacy, forming the user's unique personhood.
- **Dynamic Management:** Wallets must manage personhood elements dynamically, balancing control, consent, and secure interactions.
- **Privacy:** Privacy-enhancing technologies (PETs) like ZK proofs enable secure and private interactions, but due to cost considerations, they will be applied selectively.
- **Human-in-the-Loop:** Until universal regulatory frameworks exist, human oversight will remain critical to ensure accountability and manage personhood within wallets.
- **Personal data:** Serves as the foundation for enabling automated, agent-driven services while addressing risks like algorithmic biases.

Personhood within wallets in The Post Web includes a user's identity, reputation, personal data, and privacy, forming the basis of their digital presence and interactions. This allows users to control their digital footprint, manage consent and permissions, and engage securely and privately with AI agents and decentralised services. In order for personhood to have a meaningful impact and be accounted for in **economic, on-chain activity, a comprehensive, universally accepted regulatory framework** needs to be in place to govern identity, data, and privacy across the ecosystem. Until then, we believe that humans will need to be **involved (human-in-the-loop approach)** to ensure oversight and accountability in respective jurisdictions in managing personhood and teaching character and social function to better represent a person. Nonetheless, this is critical in enabling agents to function with a **high degree of autonomy** on behalf of individual users or entities.

EXHIBIT 21:

The Layers of Personhood in Post Web Wallets

Source: Outlier Ventures

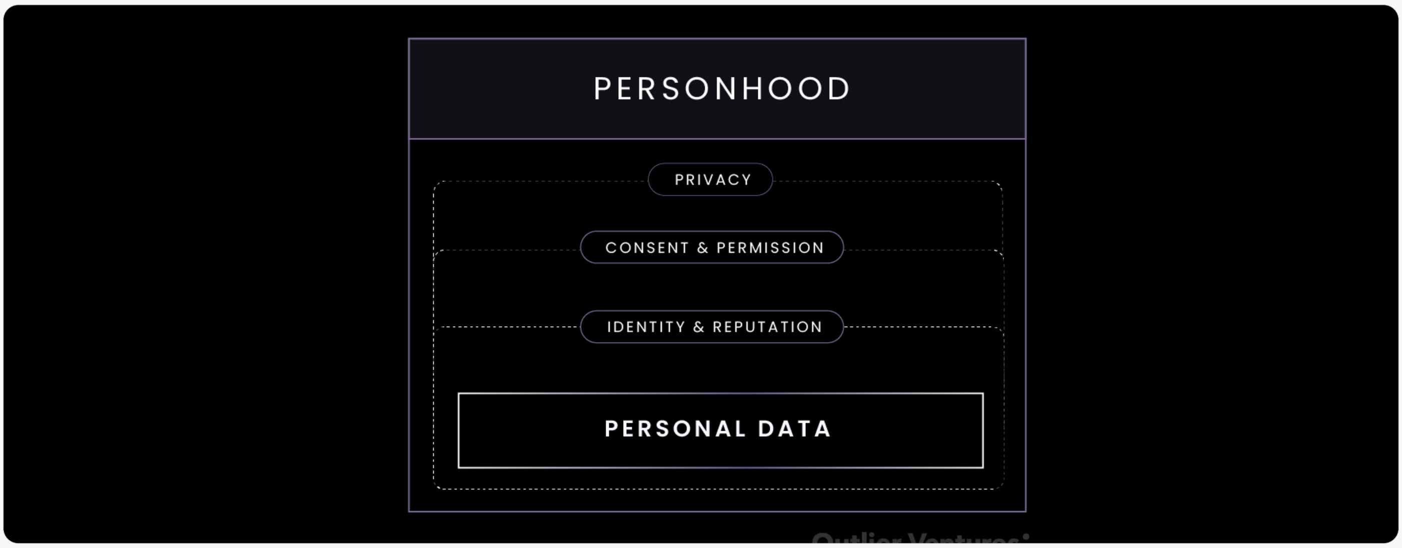


Exhibit 21 illustrates the dynamic layers of personhood within wallets in The Post Web.

→ At the core is **Personal Data**, the foundation that powers all other elements.

→ Surrounding it is **Identity & Reputation**, derived from data to establish trust and credibility.

→ **Consent & Permission** acts as the gatekeeper, dynamically controlling access to personal data and identity based on user preferences.

→ Encompassing everything is **Privacy**, the protective layer that regulates the flow of information and ensures sensitive data remains secure. Together, these layers create a cohesive framework, enabling secure, controlled, and trust-rich interactions in The Post Web ecosystem.

Let's unpack the different elements of personhood within wallets.

"A future five or ten years from now will bring entities 1,000x smarter than humans today, some fully silicon-derived, highlighting that in The Post Web, as we extend our consciousness into silicon, not your keys means not your consciousness."

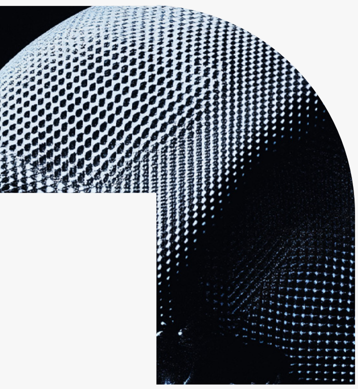
Trent McConaghy
Founder of Ocean Network

Personal Data

Today, personal data is often stored in silos on Web2 platforms, outside the user's control. Much of the information is duplicated and outdated. Furthermore, this data remains inaccessible to the user, undermining their sovereignty.

As discussed above, **personal context, and therefore data, is the foundation for powering personhood in The Post Web wallet.** In this vision, personal data will be treated as a bearer asset, securely stored within wallets. As more economic activity moves on-chain, wallets will increasingly house transactional and behavioural data, evolving from basic information to complex user profiles. This enriched data will enable highly personalised services while being safeguarded through robust privacy measures and granular, automated consent mechanisms.

Managed by consent and privacy layers, The Post Web will enable agents to use dynamic and portable data enriched by contextual information to optimise information distribution in real-time based on changing user preferences, locations, and circumstances. At the same time, agents will preserve necessary levels of privacy by unlocking private verifiability through the use of privacy-enhancing technologies (PETs).



Identity & Reputation

Identity and reputation (I&R) are built on top of personal data, which is extracted and synthesised into actionable metrics that form the foundation of trust in The Post Web. Identity provides static verification, acting as a reliable anchor, while reputation serves as a dynamic and cumulative credibility metric, evolving with users' actions and interactions over time. However, the interplay between static identity and dynamic reputation introduces challenges in ensuring both can coexist seamlessly, especially as decentralised systems aim to balance verifiability with pseudonymity.

As they are the enablers for trust-based, economic transactions, the economic importance of I&R in The Post Web cannot be overstated. **Identity is a static trust layer, while reputation reflects real-time reliability within specific socio-economic contexts.** Together, I&R empower users to leverage their digital presence for economic gain, fostering a more equitable and trust-rich internet. However, the reliance on pseudonymity in many Web3 contexts creates tension with the growing demand for verifiable identity, particularly in regulated industries and agent-based systems.

Identity and reputation in The Post Web will extend beyond individual users, becoming **contextualised within their social graph as social dynamics increasingly move onto DLT through trends like SocialFi**. By incorporating relationships and interactions within a user's network, these systems can create more nuanced and context-specific trust metrics, enhancing credibility and fostering trust in social and economic interactions.

In Web3 today, efforts for on-chain reputation are ongoing but have yet to see much traction, largely due to the lack of viable on-chain economic use cases where reputation is critical. **Reputation's dynamic nature** and need for real-time updates further limit its development, leaving users with little incentive to build this dataset. Moreover, as reputation is highly context-specific, designing systems that accurately reflect credibility across diverse socio-economic interactions remains a significant challenge. In contrast, identity has seen greater success, especially as regulated industries such as finance, healthcare, and insurance adopt DLT and, by extension, AI agents. **While identity challenges the pseudonymous ethos of early Web3, it will become increasingly important in enabling agents to operate in these regulated environments,** provided that safeguards are in place to protect user privacy and control.

In The Post Web, **as users empower agents, identity and reputation will be critical components, requiring robust management to unlock the full potential of trust-based interactions and economic activity.** Reputation systems will need to address existing limitations by integrating real-time updates and incentivising users to contribute to dynamic trust frameworks. Meanwhile, identity will need to evolve in a way that balances the demands of regulated systems with the decentralised principles of Web3, ensuring that both identity and reputation support a trust-rich, equitable, and adaptable internet.

Consent & Permission

Today, wallets are primarily focused on **authorisation**. By clicking "sign," users effectively **consent to execute a specified transaction.** This core aspect of wallets will remain essential in The Post Web, although the **nature of consent will become far more complex** than transaction signing in Web3. Authorisation of **consent and permission is crucial as the near-irreversible final step** that empowers agents to act on behalf of users.

Humans need to improve at managing consent, as demonstrated by the unwillingness of people to engage with cookie consent forms or navigate GDPR toggle menus. In recent years, we've also seen a rapid rise in **consent fatigue**, where repeated consent requirements lead to user disengagement and high drop off rates. Whilst we believe The Post Web has the opportunity to remove much of this poor UX, we foresee similar challenges with human in the loop consent and permissioning when delegating activity to agents unless regulators embrace its innovations.

Highly automated, granular consent solutions will be essential in The Post Web to ensure users authorise their intended actions. As more economical and meaningful activities are outsourced to agents, consent will become more complex and crucial. **When agents act as representatives of users**, they must also be able to identify themselves as authorised representatives to ensure trust and verifiability in their actions.

Today, consent fatigue is managed through intuitive consent UX/UI and easy language. Given how much activity will be delegated in The Post Web, we don't see this as a sustainable solution. **Instead, we believe that highly granular user profiles, created from large personal data and preferences compilations, will unlock the degree of automation needed** by enabling systems to act based on these preferences. However, this approach risks creating biases if the algorithms managing these profiles are centrally controlled, a challenge that must be carefully managed.

> "Without advancements in users' ability to grant informed consent and authorise agents to act on their behalf, the full vision of a Post Web will be unnecessarily constrained."

As a consequence, founders have a significant, untapped opportunity to abstract and streamline consent and permission management as wallets evolve to hold users' reputations, identities, sensitive personal data, and more. This is a bottleneck which needs to be overcome before we can delegate large pockets of commoditised economic activity to agents.

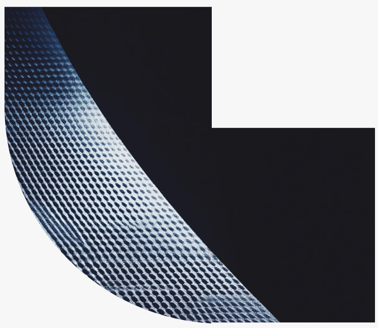
Privacy

Privacy, similar to consent and permission, is about **information governance** and the ability to **obscure aspects of sensitive or proprietary information**. However, it is often mistaken for anonymity, which is a separate concept.

Privacy-enhancing technologies (PETs) such as; **zero-knowledge proofs, fully homomorphic encryption, trusted execution environments, and multi-party computation** are not exclusive to cryptocurrencies and blockchain. However, today, they are making rapid progress in areas like **cost, throughput, and capacity**, making many of these technologies **economically viable for the first time.**

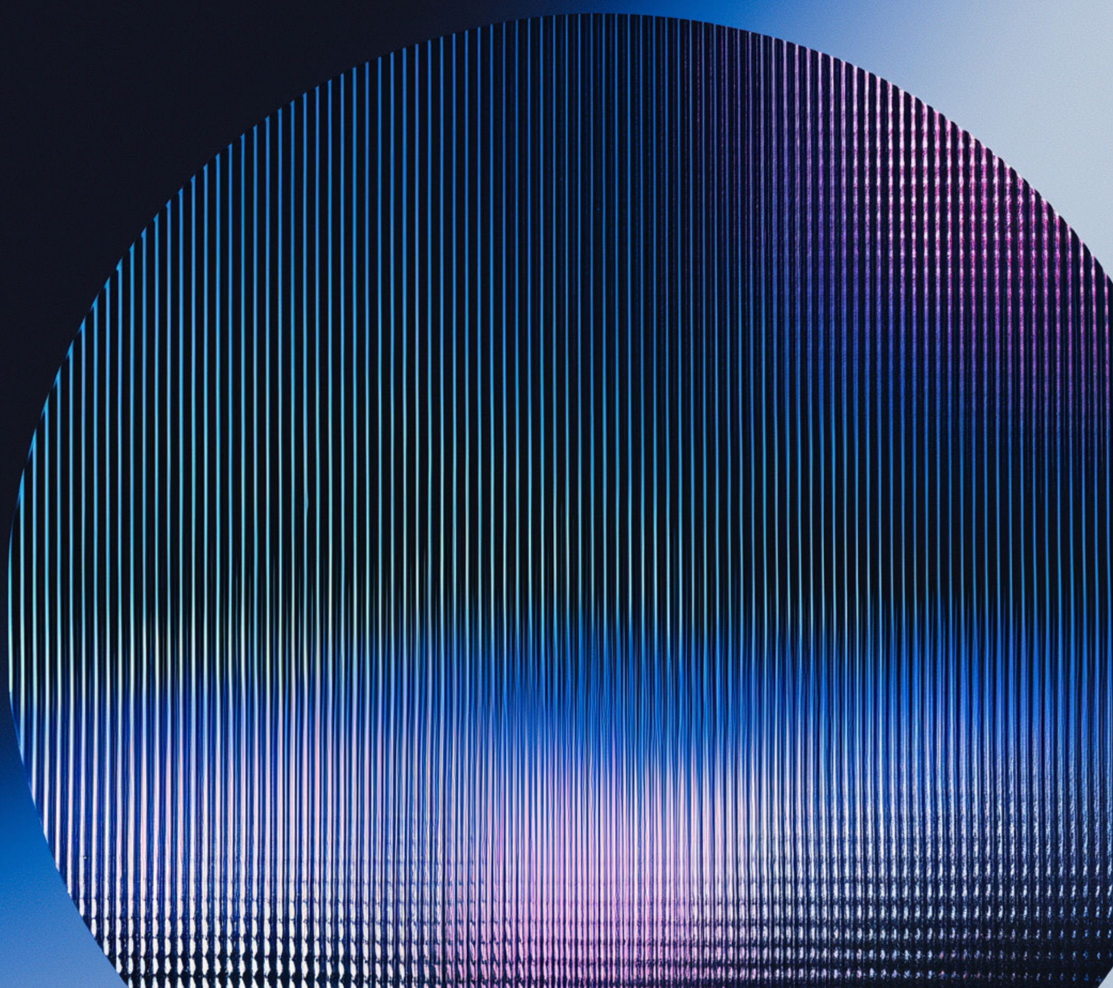
Private verifiability, the ability to prove the authenticity and accuracy of information without revealing underlying data, is poised to **transform which types of economic activity can be hosted on-chain. The ability to specify levels of information asymmetry** between economic actors is critical for various use cases where competitors operate on the same permissionless blockchain.

That said, PETs are one of the **most underappreciated pieces of innovation in Web3 today** and will be critical in making The Post Web and the **computable economy possible**. That's why we have a dedicated section on privacy in Chapter 4 of The Post Web thesis.

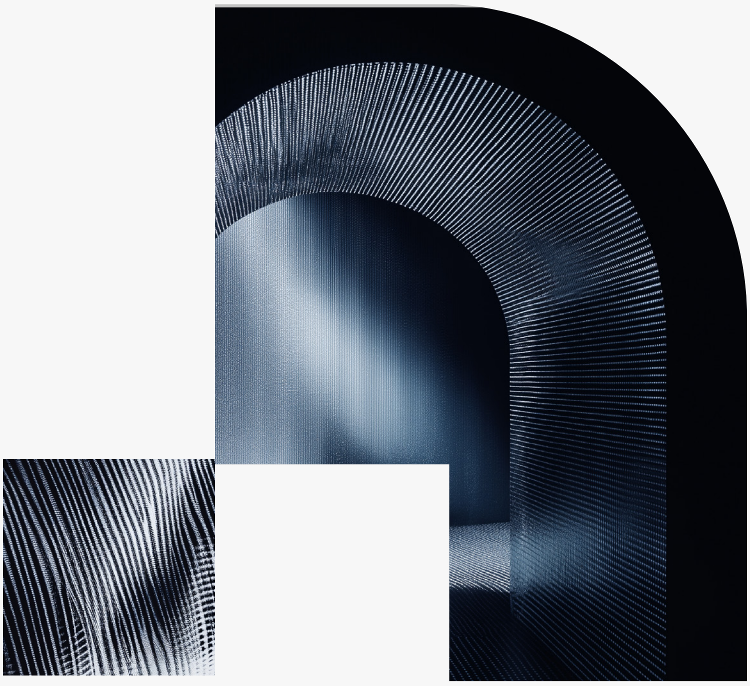


“Given the costs of privacy-enhancing technologies (PETs), The Post Web will likely default to openness, using privacy selectively where essential and in the most efficient.”

Jamie Burke,
Founder & Chairman
of Outlier Ventures



Assets



TL;DR

- **Assets:** Assets in wallets are foundational for enabling on-chain economic activity through tokenisation, management, and interoperability.
- **RWA Tokenisation:** Critical for bringing real-world assets on-chain, unlocking efficiency, liquidity, and programmability, but faces challenges like the oracle problem, standardisation, and liquidity.
- **Management & Custody:** Physical asset representation and custody remain complex, with opportunities for founders to create solutions addressing long-standing issues.
- **Interoperability:** Ensures assets can move across platforms, which are becoming increasingly complex due to modular stacks, new technologies, and diverse systems.
- **Security & Programmability:** Wallets must abstract DLT complexity, enabling secure, automated functionality while addressing risks like the honeypot problem through advanced privacy and security frameworks.

Assets reflected in The Post Web wallet are foundational for enabling on-chain economic activity. This section explores their on-chain tokenisation, management & custody of these assets and the critical role of interoperability.

"Real-World Assets (RWA) have become a key narrative in blockchain, marking a societal shift where institutions can leverage this technology to their benefit.

This adoption extends beyond the consumer mindset, as institutions play a pivotal role in driving regulatory acceptance and bringing significant capital into the space, accelerating mainstream adoption."

Charlie Varley,
Bloom

RWA Tokenisation

As discussed extensively in **previous work**, **RWA tokenisation plays a critical role in bringing non-crypto native assets on-chain** to leverage DLT for efficiency gains, liquidity and market formation, and decentralisation of ownership.

To unlock The Post Web and the computable economy, where much of the economic transactions are (partially) settled on-chain, **assets need to be represented in a structured way. The process of bringing these assets on-chain must be frictionless** and existing challenges such as the Oracle problem, standards, and infrastructure need to be overcome.

Today, the trends of digitalisation and financialisation of assets are driving RWA and on-chain adoption, as illustrated in Exhibit 22.

→ **Digitalisation**: The transformation of physical assets into digital formats or the migration of digital assets onto new infrastructure. Tokenisation examples - Inventory, supply chain assets and financial products.

→ **Financialisation**: The process of turning any asset into a financial instrument. Also, see the section on **hyperfinancialisation**. Tokenisation examples - Data, intellectual property and in-game assets.

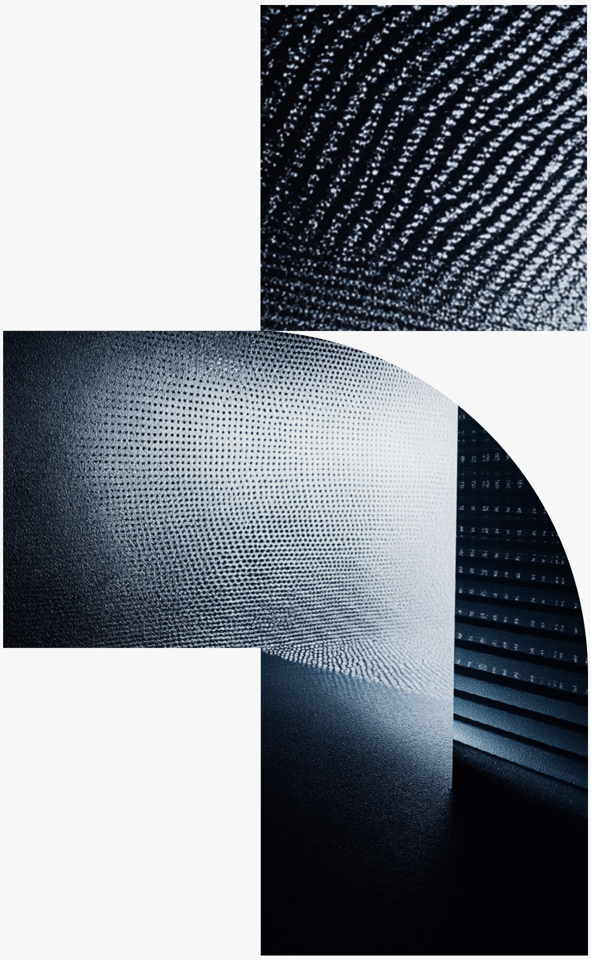
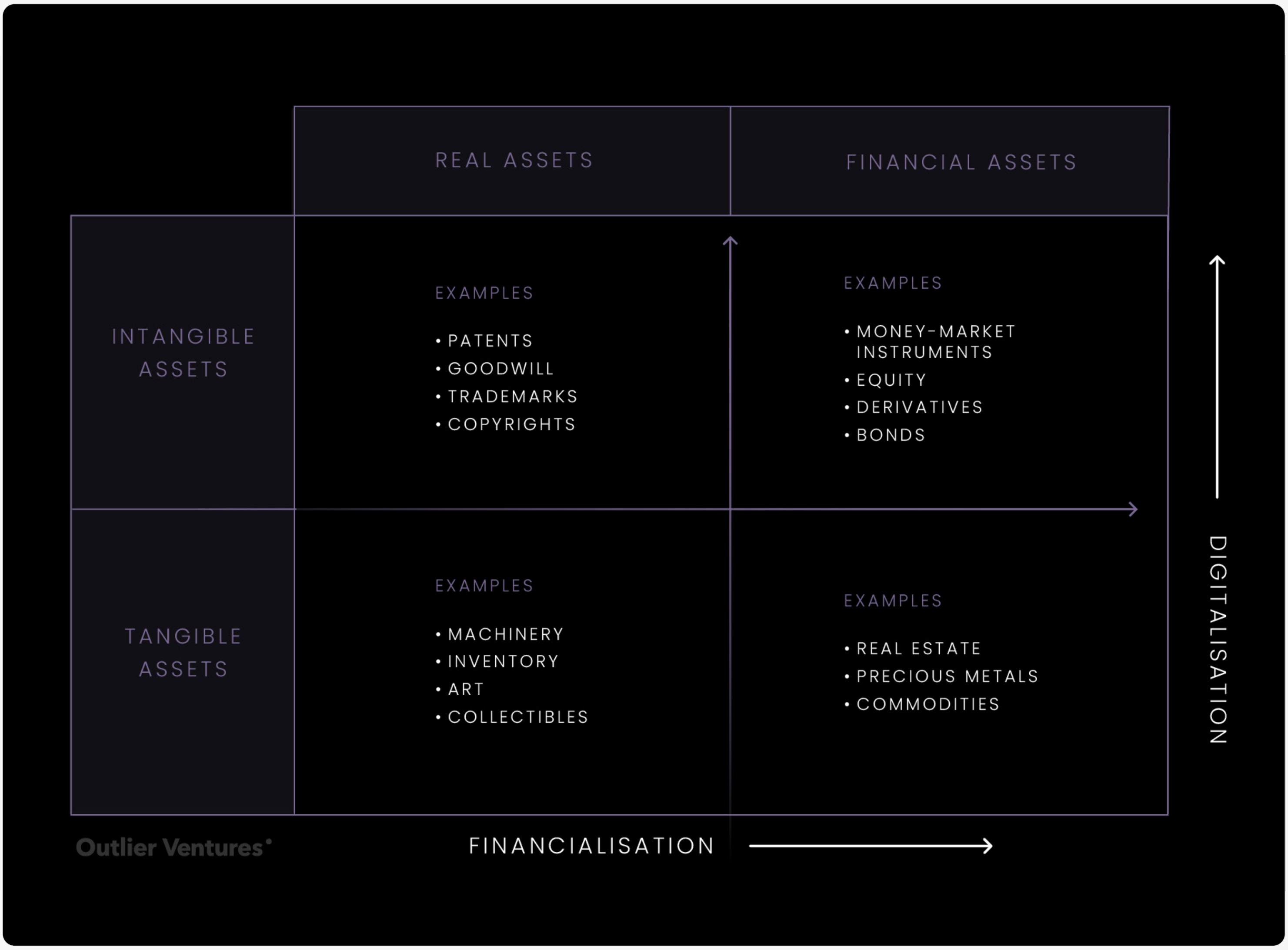


EXHIBIT 22:

Financialisation & Digitalisation Driving RWA Tokenisation

Source: Outlier Ventures



RWA tokenisation is a cornerstone of The Post Web. Bridging real-world assets to on-chain ecosystems makes them highly programmable, unlocking efficiency and potential liquidity. While challenges like the ‘oracle problem’, interoperability, and infrastructure standards remain, the combined forces of digitalisation and financialisation are accelerating adoption, making tokenisation a vital enabler for the computable economy.

Management and Custody of Assets

Asset management and custody, especially of physical assets, are still challenging. Challenges such as the aforementioned Oracle problem still make it difficult to have a real-time accurate representation of many assets that would benefit from leveraging DLT.

As the economic opportunity of representing these assets on-chain becomes more widely recognised and increases over time, we believe the right economic incentives will arise for founders to seek structural solutions to these long-standing issues when considering on-chain asset representation.

Interoperability & Programmability

While interoperability ensures assets can move and be recognised across platforms, programmability allows wallets to automate actions via smart contracts.

In The Post Web, wallets must handle increasingly complex interactions across a highly modular and diverse stack. As DLT infrastructure grows to host more economic activity, challenges in achieving seamless interoperability will intensify, with emerging technologies like DAGs (decentralised acyclical graphs) and other new consensus mechanisms, and even quantum computing adding to the complexity.

For wallets, seamless interoperability and advanced programmability will be critical to support the dynamic needs of both users and AI agents. Founders have significant opportunities to innovate, enabling wallets to integrate seamlessly across systems while automating asset management in a secure and efficient way.

Wallets enabling dynamic interoperability will serve as the backbone for seamless economic flows across different DLT systems. By facilitating reliable cross-chain communication and asset transfers, wallets abstract the underlying complexity of DLT infrastructure and allow users and agents to transact frictionlessly, trade assets, and interact with protocols.

In The Post Web, **wallets must also focus on security risks, such as the honeypot problem, by redesigning how they manage sensitive data, assets, and access control.** We believe wallets will continue to deploy advanced DLT security frameworks like zero-knowledge proofs, fully-homomorphic encryption, and decentralised key management to distribute control, reduce attack vectors, and ensure resilient interactions.

RWA Challenges

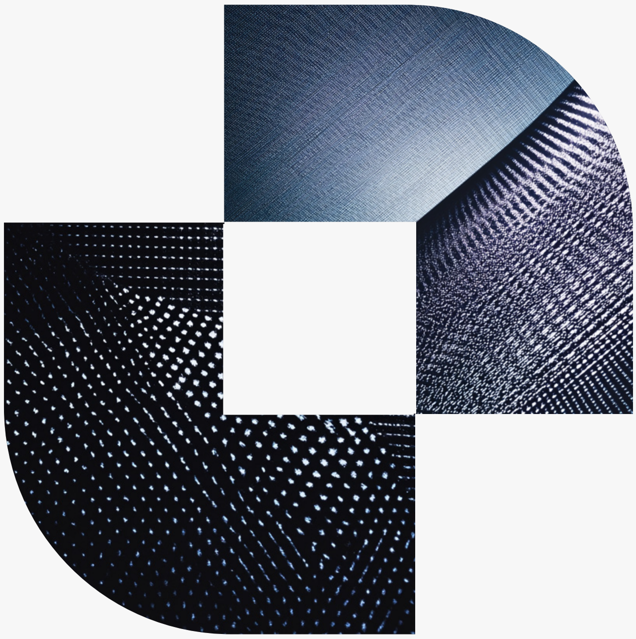
RWA Tokenisation is essential for bringing social and economic assets on-chain, enabling their integration into The Post Web. However, several structural challenges must be resolved to enable the large-scale, on-chain migration of RWA assets. Below are some of the most pressing:

→ **The Oracle Problem:** RWAs require reliable, trustless data feeds to represent real-world assets accurately on-chain, but current systems still face challenges with data integrity and centralised oracles. Addressing these issues through solutions like decentralised oracle networks and reputation systems demonstrates potential for ensuring secure and scalable integration of RWAs into The Post Web.

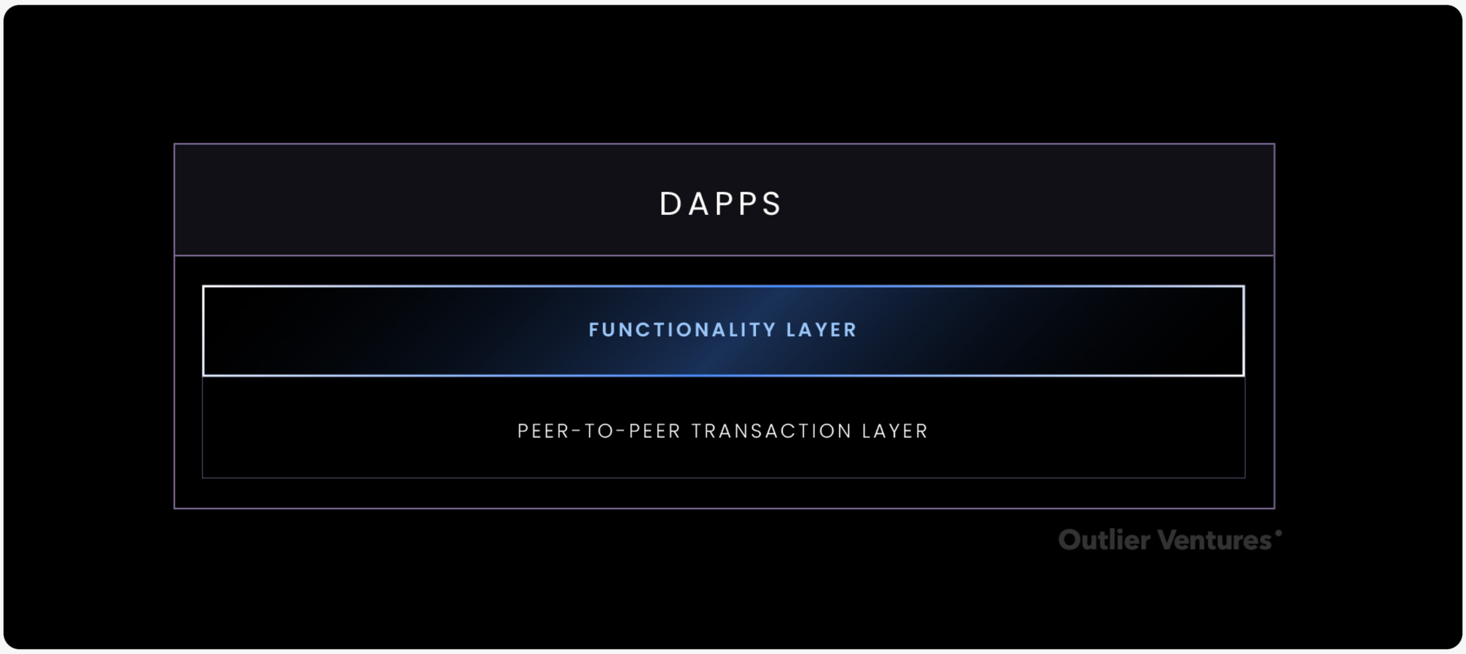
→ **Asset Standardisation & Interoperability:** The lack of universal standards and cross-chain compatibility still creates friction in the transference of economic value across DLT systems. Developing strongly established frameworks and standards is crucial to facilitating the seamless integration of RWAs into The Post Web.

→ **Liquidity Challenges:** While the RWA space has grown to encompass billions in market cap through stablecoins and tokenised treasuries, its continued development hinges on solving liquidity challenges. Deep, accessible liquidity is essential to support efficient markets and seamlessly integrate economic value into The Post Web.

Decentralised Applications (dApps)



dApps give purpose to the entire Post Web Technology Stack, allowing for the coordination of social and economic activity.



TL;DR

Two Layers of dApps:

↳ **Functionality Layer:** Coordinates goods and services using DLT and smart contracts, disintermediating orchestrators.

↳ **Peer-to-Peer Transaction Layer**: Orchestrates asset exchanges, serving as the foundation that enables the functionality layer to operate.

Evolution of the Functionality Layer

↳ **Web1:** Static and centralised, offering limited risk and functionality.

↳ **Web2**: Dynamic and distributed, but controlled by centralised platforms, causing friction and inefficiencies.

↳ **Web3**: Semi-decentralised, leveraging DLT but still dependent on centralised infrastructure like cloud providers.

The Post Web Shift: The functionality layer evolves into a Thin Web for higher, more immersive needs (hyper-contextual UX/UI) while agents handle basic needs autonomously, eliminating the reliance on traditional web layers and platforms.

The Peer-To-Peer Transaction Layer
Critical for coordinating decentralised exchanges of assets, enabling trustless transactions, and supporting functionality layers, especially as the economy becomes more transactional. Drivers of Transactional Growth:

1. **Greater Complexity:** More economic nodes and modular systems increase the need for precise coordination.
2. **Interconnectivity:** Globalisation and digital systems drive asset and information exchanges.
3. **Hyperfinancialisation:** Everyday objects and services are being increasingly tokenised and monetised.

Technological and Social Enablers: Advancements like democratised access, new financial products, and abstraction of complexity through technology are accelerating adoption and shaping The Post Web economy.

Similar to traditional applications, dApps give purpose to the entire technology stack. They allow for the coordination of social and economic activity, which is the ultimate goal of why we are building this entire thing in the first place.

At their core, in line with traditional applications, dApps, underpinned by DLT and smart contracts, serve as **the foundation for hosting and coordinating social and economic activities**, this time albeit in a decentralised way. They enable the coordination, exchange, and execution of services, goods, and information without the reliance on intermediaries.

dApps are seen as one of Web3's key innovations. However, **adoption beyond decentralised finance has been limited to serving speculative use cases.** As discussed in Chapter One of The Post Web thesis, we believe much of the low adoption rate has been due to technological complexity for individuals and the lack of a regulatory framework for corporations.

We have yet to see dApps rise to their true potential. **So far, we've beta tested them in a collective Web3 community driven by curiosity, passion, ideology, and in many times unsustainable financial incentives.** In The Post Web, all of this will change as dApps will be mainly used by an entirely new group of users, namely agents.

We distinguish between two types of dApps to unpack how the addition of an agentic layer will transform them and unlock their full potential.

→ Functionality Layer

Coordinates the exchange of goods and services between economic actors. Resembles traditional applications but removes the need for intermediaries thanks to the use of smart contracts and DLT. This layer depends on the underlying Peer-to-Peer Transaction Layer, which enables seamless value exchange to power activities and services.

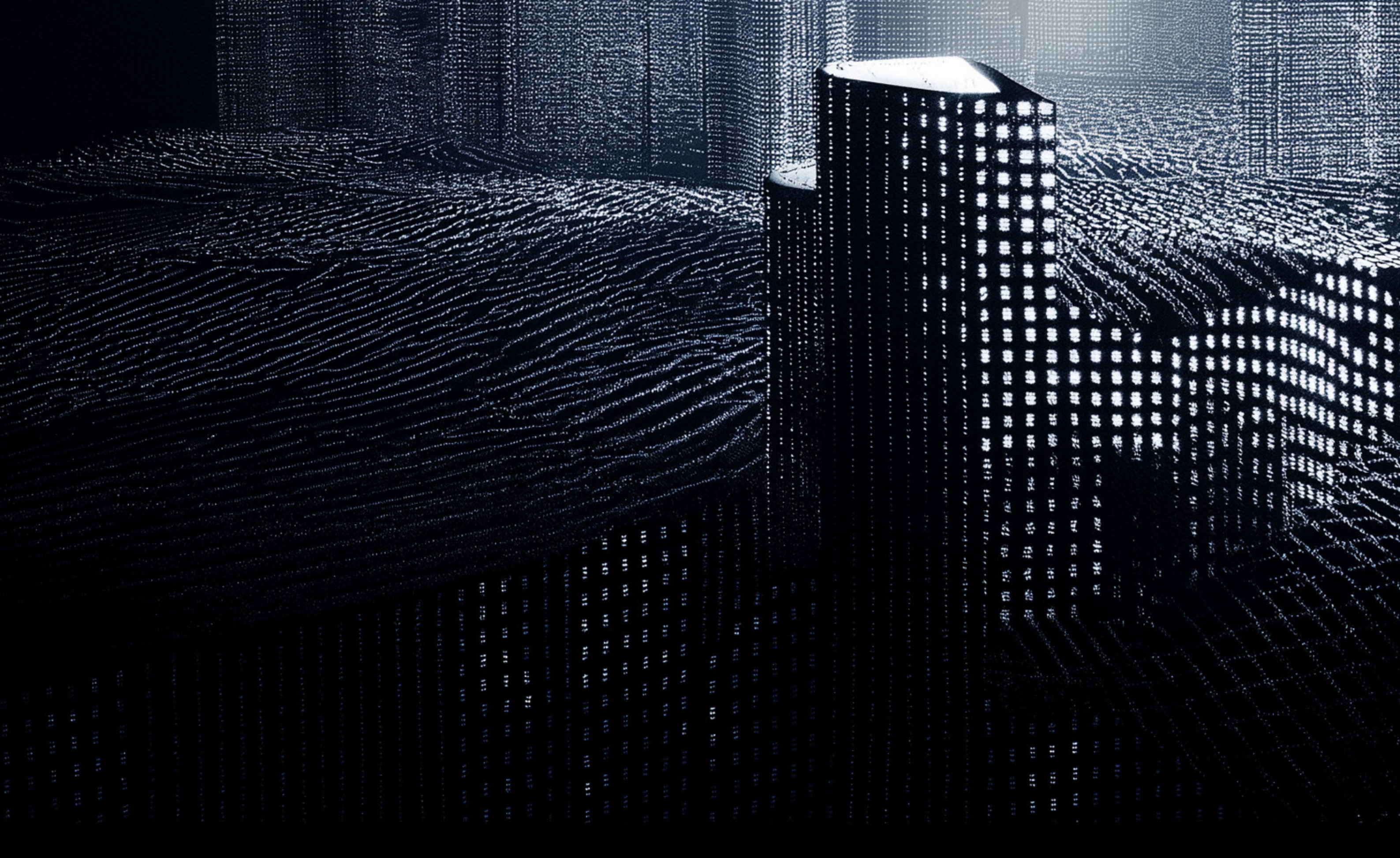
→ Peer-to-Peer Transaction Layer

Orchestrates the direct exchange of assets, such as financial assets and data, without the need for intermediaries, often referred to as DeFi. Acts as the backbone of the dApp ecosystem, facilitating the transactions necessary for the functionality layer to operate efficiently.

As economic and social activity becomes more transactional (as we discuss later), P2P transaction layers will become core to the functionality of applications. This specialisation means dApps will either (i) coordinate the exchange of goods and services (Functionality Layer) or (ii) orchestrate the direct exchange of assets (P2P Transaction Layer). **As a result, not every dApp will need to build its own P2P transaction layer, fostering modularity and scalability.**

“I think we will get to a point where our economy, goods, and services are so efficient because all the data, goods and services are available and communicated in real time. You’ll always be able to find what you need.”

Leonard Dorlöchter,
Co-Founder of Peaq



Functionality Layer

The functionality layer of dApps is the core component which orchestrates economic activity around the exchange of services and goods between users, similar to traditional applications. In line with what Web3 initially promised, DLT and smart contracts have the power to disintermediate, reduce costs and orchestrate more complex activity in a transparent and trustless way.

Web3's State

To better understand the evolution of the functionality layer, let's trace its development from the internet's inception. Exhibit 23 illustrates how human users interact with the functionality layer via UX/UI, hosted on top of platforms.

In the exhibit below, we refer to everything that supports the coordination and creation of dApps -specifically wallets, DLT, smart contracts and, in this case, the p2p transaction orchestration layer, which sits right below the functionality layer.

History Of The Functionality Layer

Across Web1, 2, and 3, human users have always accessed the functionality layer through a UX/UI layer with varying degrees of success.

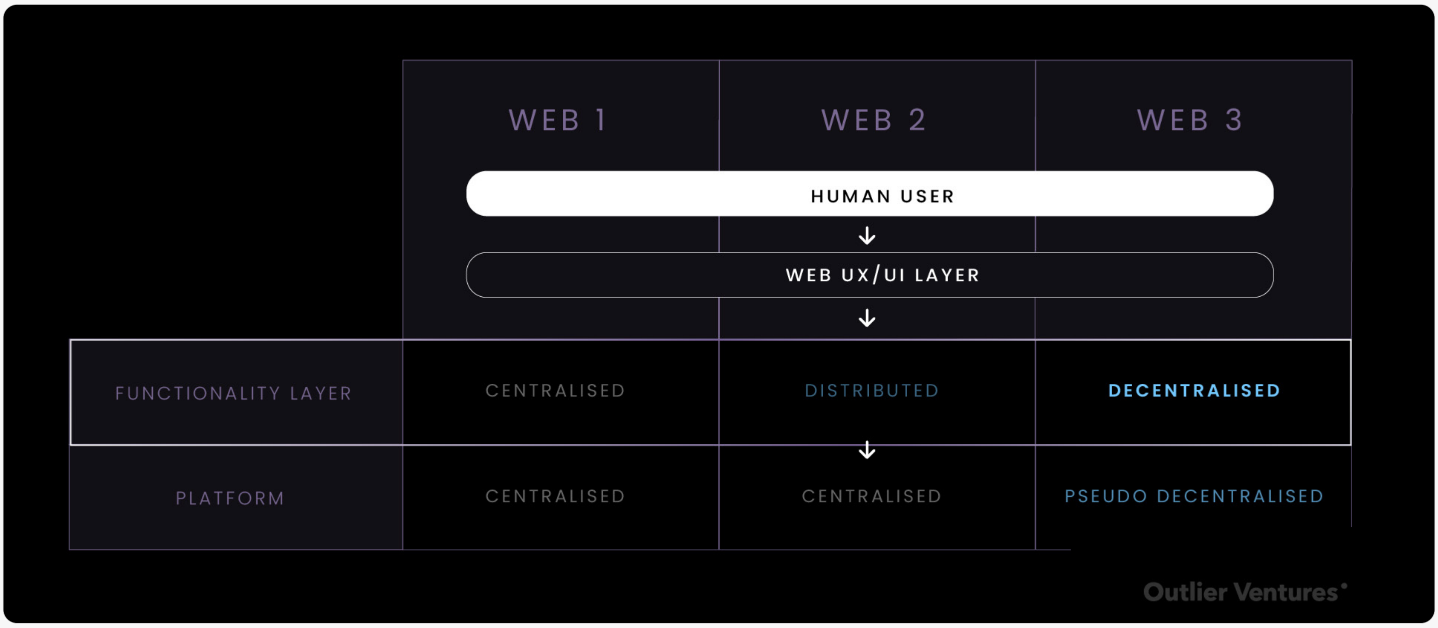
Let's do a quick recap of the evolution of the functionality layer and platform across stages:

→ **Web1 (Centralised):** The **FL** is static and controlled by single entities, offering basic, read-only interactions. The **platform** is centralised and orchestrated by a single entity. Given the limited functionality in this paradigm, there's less risk for the users.

EXHIBIT 23:

Transition of functionality layer between Web1, 2 and 3

Source: Outlier Ventures



Having a centralised platform to coordinate distributed services causes friction in incentives and unnecessary value extraction, leaving the distributed service providers at the mercy of a centralised entity in light of the growing economic importance of these structures.

→ **Web3 (Decentralised):** The **FL** is decentralised, using DLT and smart contracts. While the functionality layers appear somewhat decentralised, the platform is not. As we'll discuss extensively in the section on DLT, today's Web3 platform, while relatively more decentralised than before, is still hosted on centralised cloud providers, with governance remaining centralised due to the lack of engagement and the slow, gradual distribution of governance (utility) tokens across different stakeholder groups.

→ **The pseudo-decentralised nature of platforms today is a bottleneck**, preventing more meaningful economic activity from being hosted on top of the stack. At the same time, it also limits the creation of truly revolutionary dApps that leverage trustlessness and decentralised governance to their full potential.

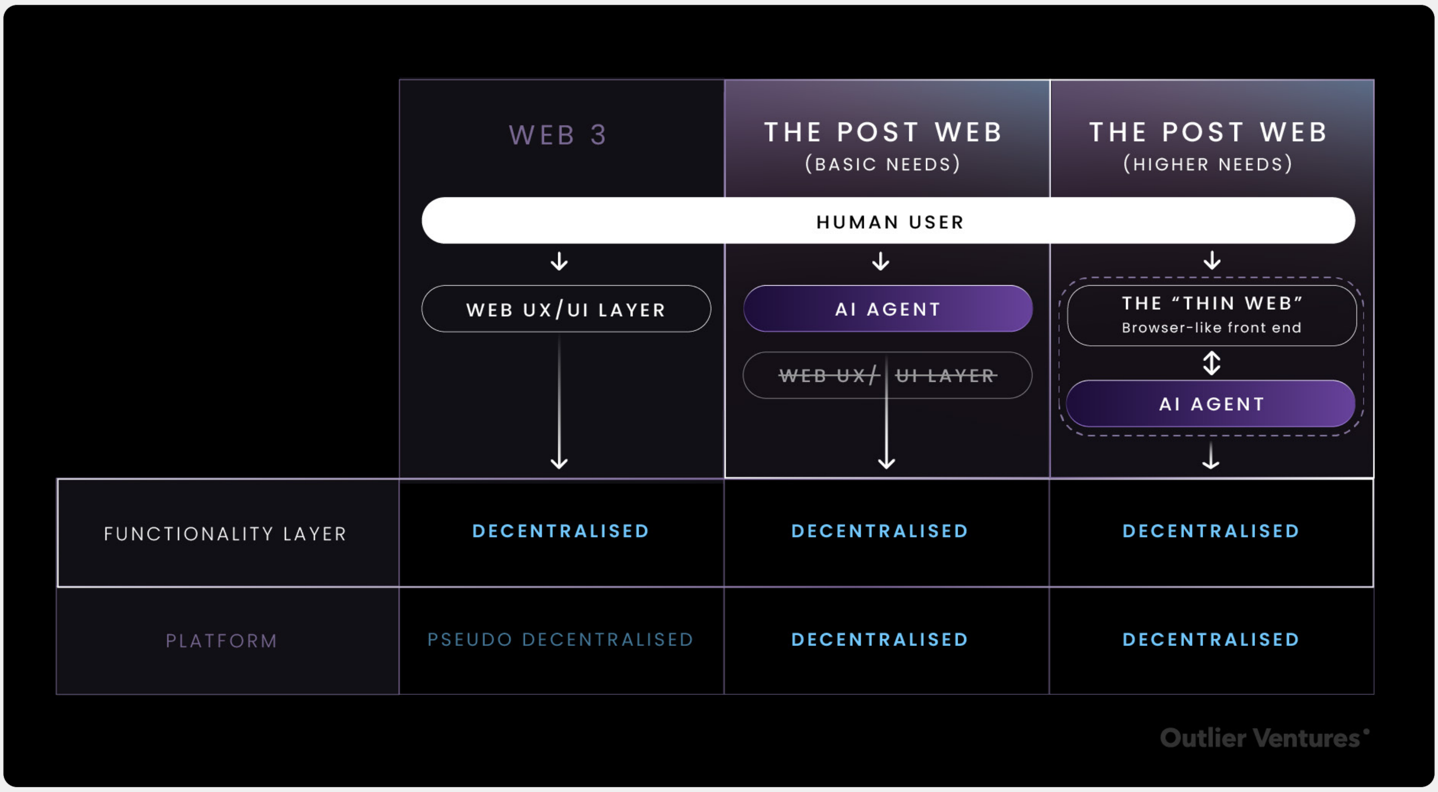
The Post Web

Moving from Web3 to The Post Web, structural changes occur again to the functionality layer and the platform. **Exhibit 24** illustrates these changes.

EXHIBIT 24:

The Functionality Layer in The Post Web

Source: Outlier Ventures



As discussed in Chapter One of The Post Web thesis, whether or not humans interact with a web layer depends on their needs according to Maslow's hierarchical needs. A recap shown in Exhibit 25. **Higher needs will still interact with a web layer, the "Thin Web", while the lower, more transactional needs will be delegated to agents that take care of it autonomously.**

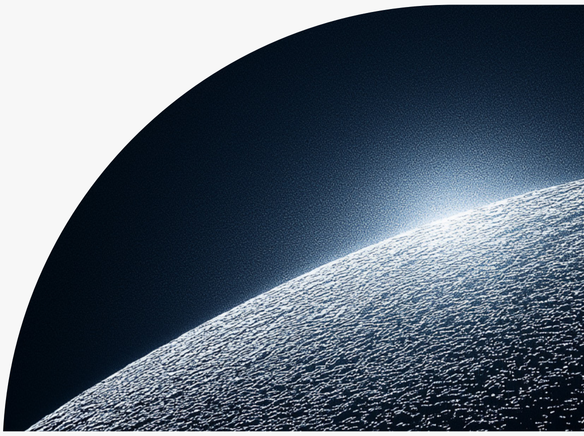
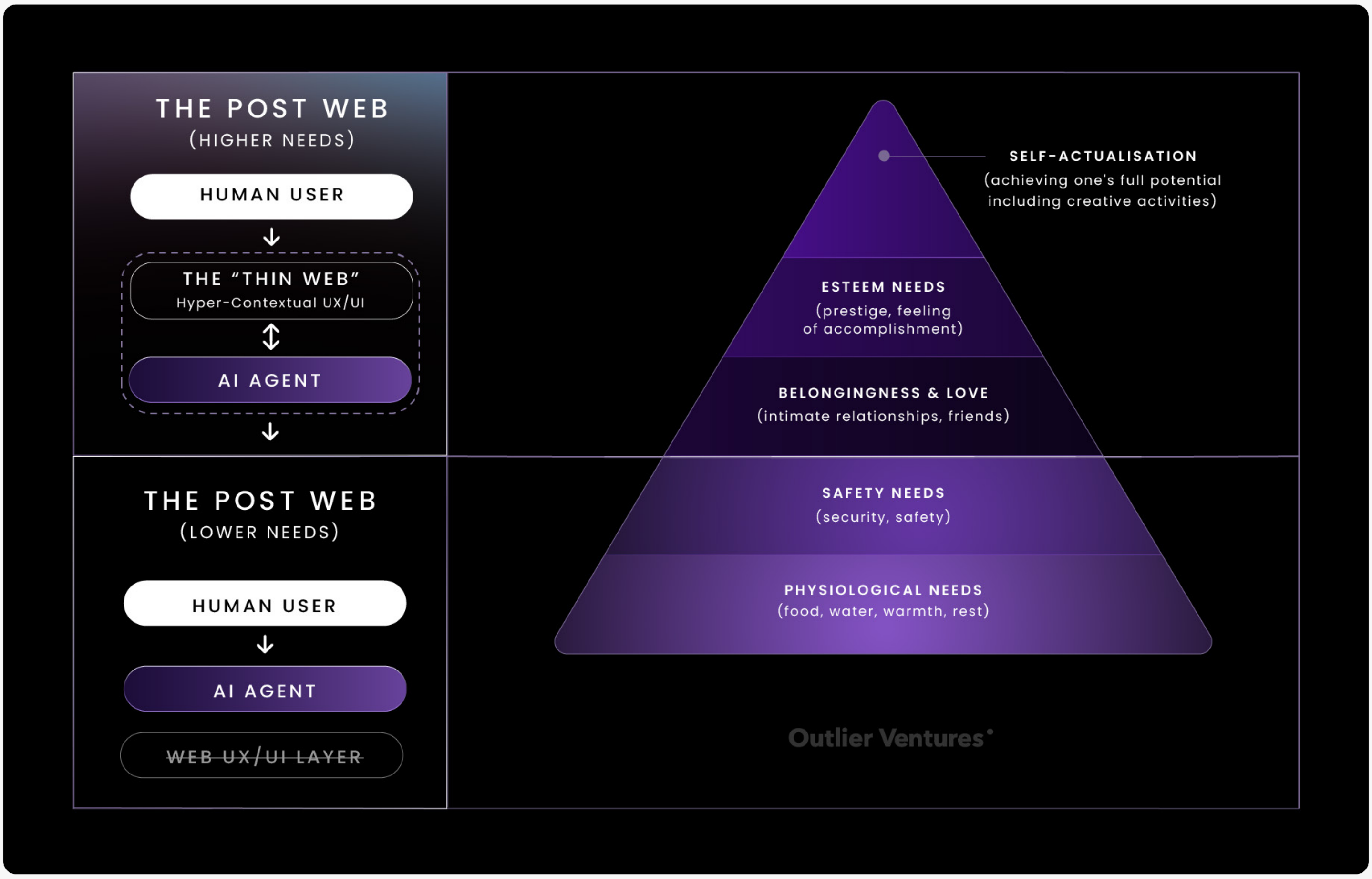


EXHIBIT 25:

Functionality Layer Based on Maslow's Hierarchy Of Needs

Source: Outlier Ventures



Let's break down how this translates into user interaction with the functionality layer.

"You'll have intelligent agents that are able to satisfy intent or provide context.

The front end itself is going to be generated on the fly on your phone."

Illia Polosukhin,
Co-Founder of NEAR

The Post Web Functionality Layer - Higher Needs

In The Post Web, the functionality layer allows the creation of meaningful experiences for human users, satisfying their higher needs. This will be done through accessing the Thin Web, a hyper-contextual but relatively small residual layer of the web that serves as a portal to access the functionality layer.

The Thin Web itself will be supported and generated by Agents 'on the fly' in a hyper-contextual way based on the environment (social vs. individual) and the preferences of the user (maximalist vs. minimalist). Through their fundamental reliance on AI, agents will use a combination of image, text, video, and code generation to create a tailored environment for the user, creating the ultimate endgame for UX/UI.

Agents will generate code, text, image, and video by leveraging generative AI to create a tailored and immersive interface. This will be presented in a browser-like format that is highly intuitive and portable across different devices. Similar to how it was impossible to predict the iPhone in 2005, it is impossible to say what hardware or form factor we'll be accessing the Thin Web on. But we believe that it will reduce the dependency on the local hardware capabilities of the average user due to the streaming of experiences through the browser and edge services - that is unless the user wishes to push the limits of the experience requiring more innovative specialised hardware for greater levels of inference, immersion or intelligence.

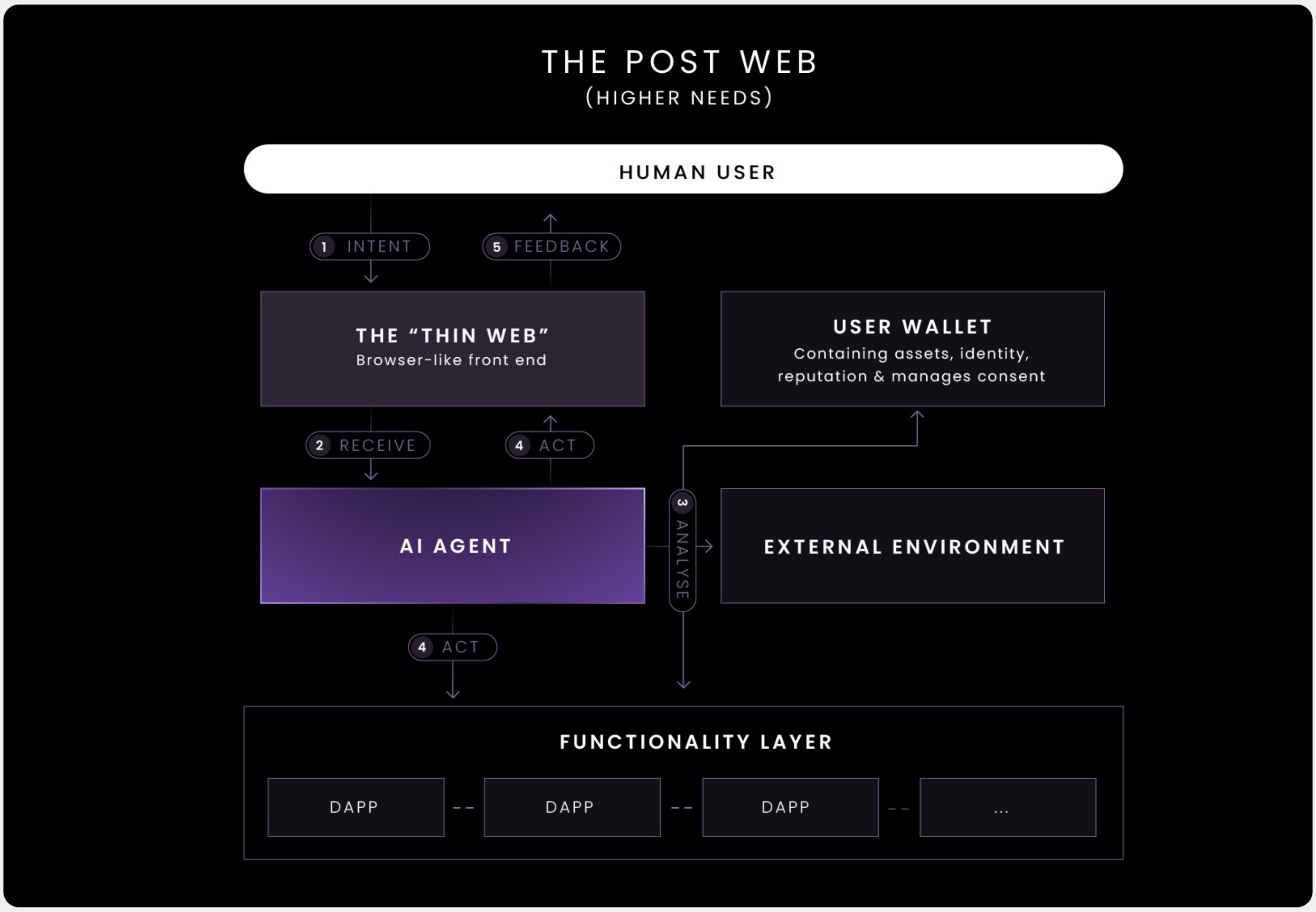
We believe in most cases it will likely be largely voice-driven rather than 'digital' (interfaces using our digits, fingers, to interact), which requires the creation of semantic maps between agents and humans alongside a whole range of other technologies which we'll get into details on in Chapter Three of The Post Web thesis. Over time, this will evolve into brain human interfaces where thoughts and their respective neural patterns both drive interactions but potentially visualise the interface itself.

Exhibit 26 illustrates the more granular flow of activity. For simplicity's sake, we illustrate how the interaction for higher needs will happen based on the previously discussed. AI agent workflow of Receive, Analyse & Act.

EXHIBIT 26:

Higher Needs Fulfilled by The Functionality Layer In The Post Web

Source: Outlier Ventures



Let's break this down further step by step:

(1) Intent: The user expresses their intent through a browser-like interface of the Thin Web.

(2) Receive: The agent captures the intent and initiates the process.

(3) Observe: The agent gathers context from three key sources:

→ **User Wallet:** Accesses user data, assets, and verifies permissions to know what /how to execute for the user.
→ **External Environment:** Observes external factors and collects real-time data to contextualise user intent and enhance the creation of a tailored, immersive UX/UI.
→ **Functionality Layer:** Identifies (solves) the appropriate combination of dApps to fulfil the intent.

(4) Act: The agent leverages functionality from dApps, enriching it with dynamic content (video, image, text, audio) via transformer models, and, if needed, generates code to deliver a hyper-personalised experience through the Thin Web.

(5) Feedback: The user receives the tailored outcome seamlessly via the Thin Web to optimally fit the purpose of the activity.

Example

Higher Needs

Bob wants to create a personalised fitness and diet plan for the next three months. Through the Thin Web, he specifies his fitness goals and dietary preferences. His agent analyses his health data, accesses real-time fitness trends, and generates an immersive video preview of his plan, including workout routines and meal prep ideas. The agent syncs with local gyms and grocery stores, booking classes and arranging ingredient deliveries seamlessly through a simple yes / no interface allowing for natural language conversational refinement.

The Post Web Functionality Layer - Basic Needs

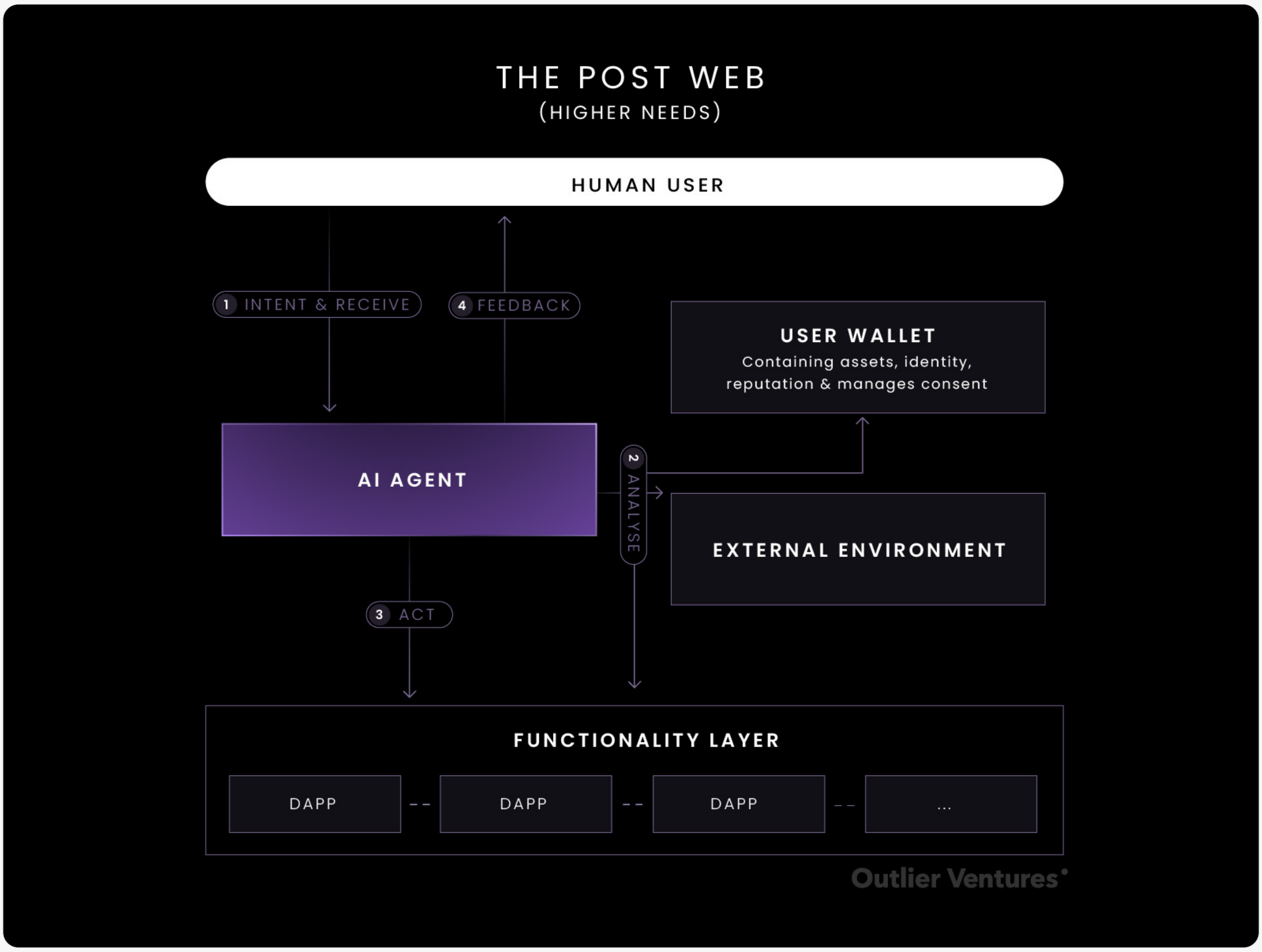
When it comes to fulfilling basic needs in The Post Web, human users will delegate this activity largely to their personal AI agents which will execute on behalf of the user directly onto the functionality layer through a combination of other agents, smart contracts and APIs.

This approach renders any type of Web UX/UI layer complexity obsolete. This new paradigm of the flow of activity in the digital realm is also why we believe this era should be called The Post Web, as users no longer rely on various Web layers created by third parties to access any type of online functionality. **Exhibit 27** illustrates how the basic needs are fulfilled.

EXHIBIT 27:

Higher Needs Fulfilled By The Functionality Layer In The Post Web

Source: Outlier Ventures



Let's break this down further step by step:

(1) Intent & Receive: The intent is directly expressed by the user and received by the agent.

(2) Observe: The agent gathers context from three key sources:

→ **User Wallet:** Accesses user data, assets, and verifies permissions to know what/how to execute for the user.

→ **External Environment:** Observes external factors and collects real-time data to contextualise user intent.

→ **Functionality Layer:** Identifies (solves) the appropriate combination of dApps to fulfil the intent.

(4) Act: The agent executed the intent across dApps on the functionality layer.

(5) Feedback: The agent provides feedback, potentially enriched with the context of the external environment, directly to the user. (It's done vs immersive in the Thin Web.)

Example

Basic Needs

After Alice pays for dinner and drinks with Bob, she asks her agent to settle the costs. Her agent calculates the split, communicates with Bob's agent, and autonomously settles the transaction using smart contracts and dApps. Neither Alice nor Bob needs to engage directly, as their agents handle the process seamlessly, showcasing how lower needs are fulfilled without traditional web interfaces or manual input.

From UX/UI to Product Functionality

When satisfying basic or higher needs and outsourcing activity to agents, **the functionality layer will no longer be responsible for generating the UX/UI layer** that allows users to access their core service. Instead, **agents access the core service directly** through a host of APIs, other agents, and the user's smart contracts using the Thin Web, which will be spun up on the fly by agents.

This new approach not only benefits the users as the experience is more tailored, but at the same time it benefits brands and merchants alike. Rather than trying to crack the code on UX/UI, companies will now be able to spend more resources on building the core functionality of their product. As a result, the economic moat of many applications will also change. Where usability and intuitive interface were previously a core focus through abstraction and orchestration layers, the core differentiator between projects will now be mainly driven by their core functionality.

As we'll discuss **later**, network effects will play a large part in the economic moat, albeit slightly different than in the existing Web2 paradigm.

The Post Web Platform

Looking at the platform that hosts the functionality layer, **we strongly believe the shift from a pseudo- to a fully decentralised scenario is necessary - not for ethical reasons, but performance, efficiency and more effective outcomes.** As the platform hosts more social and economic activity, it will become critical infrastructure for the global economy, so it **is essential to prevent the risks of single points of failure**. Resilience being critical to protect the platform from exploitation, outages, censorship, and other vulnerabilities. Beyond mitigating risks, decentralisation also empowers founders to build more innovative solutions within the Functionality Layer by removing third party value extraction, enabling a broader range of dApps to become economically viable layers created by third parties to access any type of online functionality. **Exhibit 27** illustrates how the basic needs are fulfilled.

P2P Transaction Layers

Blockchain technology and DLT were never intended to function as traditional databases but as ledgers that track state changes in assets or activities. Here, “assets” refers to a broad spectrum, including tokens, data, or onchain representations of physical goods.

State changes occur in two ways: first, when the state of an asset changes without transferring ownership, and **second**, during transactions when the asset changes hands, either temporarily (e.g. borrowing) or permanently. For the latter, effective orchestration of liquid or minimally viable markets is essential, enabling buyers and sellers to transact in a structured way. **This is where peer-to-peer transaction layers play a critical role, facilitating seamless, decentralised exchanges.**

Today, in Web3, these P2P transaction layers are known as decentralised finance dApps and protocols and involve some of the most successful projects built on top of DLT to date. While perceived as dApps today, we believe it’s worth highlighting them separately outside of functionality layers because of their ever increasing importance. We believe in The Post Web, these DeFi projects will serve a critical role in coordinating transactions between users of all sorts of functionality layers. Looking at the Web2 platform economy, many of the most successful apps are market places, focused on orchestrating economic activity around services and goods.

The orchestration of transactions in the decentralised realm is a critical component of overall dApp functionality. This importance grows not only as more of today’s Web2 platform activity transitions to decentralised systems, but also because the economy and society are becoming increasingly transactional. We identify three key factors driving this shift:

Three Drivers of a Transactional Society

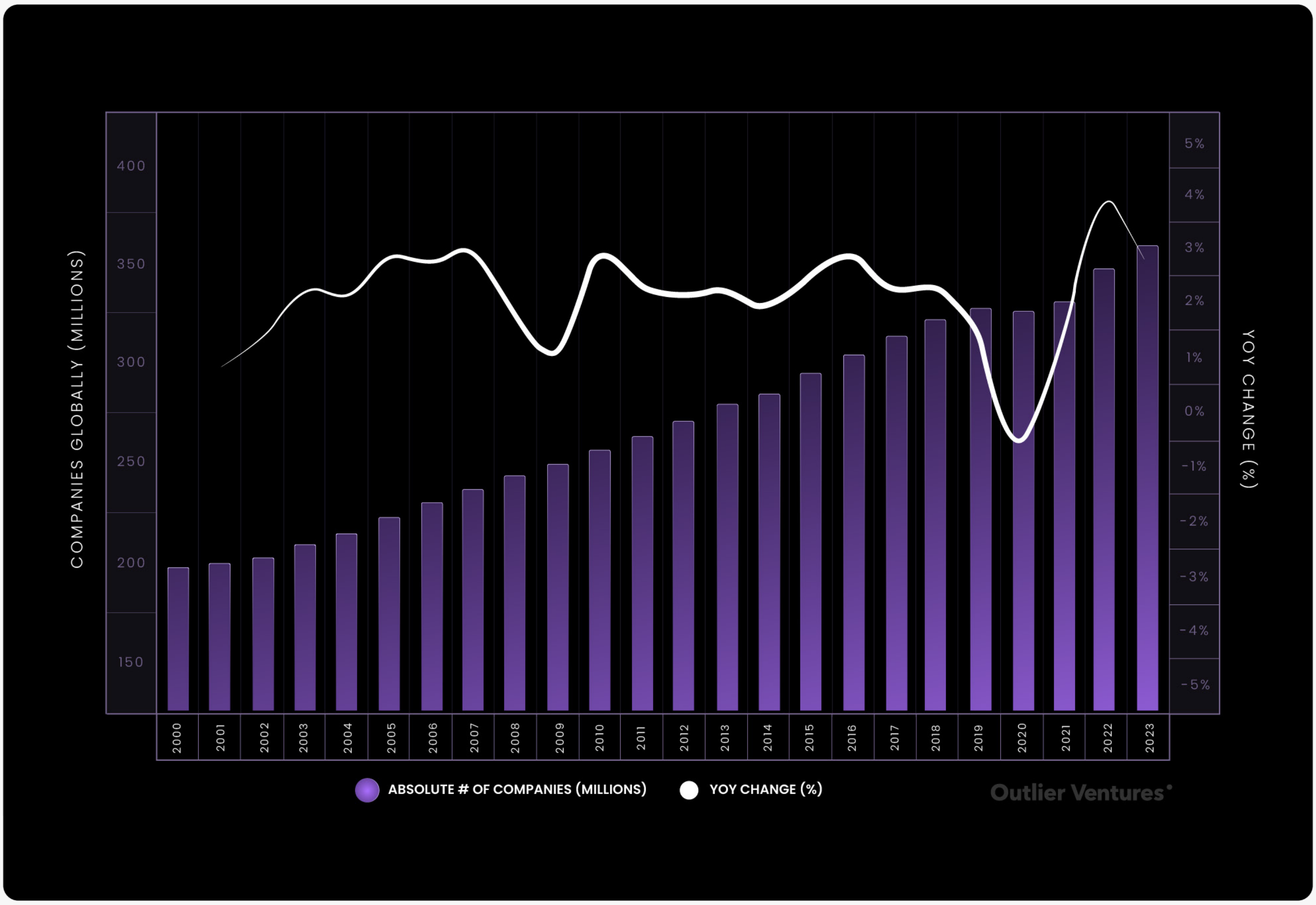
(1) Greater Complexity

Economic activity is becoming more complex and fragmented as industries and individuals increasingly rely on modular systems and specialised services. Technology has empowered not only corporations but also individuals to participate as economic actors, each with unique incentives and behaviours. This diversity adds to the complexity, creating a greater need for precise coordination and driving **a rise in the number of transactions required to keep economies running efficiently**. **Exhibit 28** shows the number of companies over time, which is a proxy for the number of economic nodes. This strong rise is evidence of increased splintering into smaller, specialised entities adding to greater economic complexity. Increasing market consolidation in certain industries through M&A by large conglomerates might seem to contradict this however that assumes this equates to technical compatibility which it doesn’t. **Complexity of a system is a function of the exponential number of nodes in the system.**

EXHIBIT 28:

Total Number of Companies Globally and YoY Change Between 2000 and 2023

Source: Einar H. Dyvik, Outlier Ventures



(2) More Interconnected

Globalisation and technological advancement are creating a large web of interdependent actors, including individuals, organisations and nations. **All these actors communicate and exchange assets with one another, creating a need for a seamless, trust-based transaction layer** to support the intricate exchange that shapes the modern, online-first economy. **Exhibit 29** shows evidence of the increasing interconnectedness of the economy across trade, intangible assets such as IP & Data and Capital.

EXHIBIT 29:

Trade, Intangibles and Capital growth in the global economy between 1995 and 2022

Source: McKinsey, Outlier Ventures

(3) Hyperfinancialisation

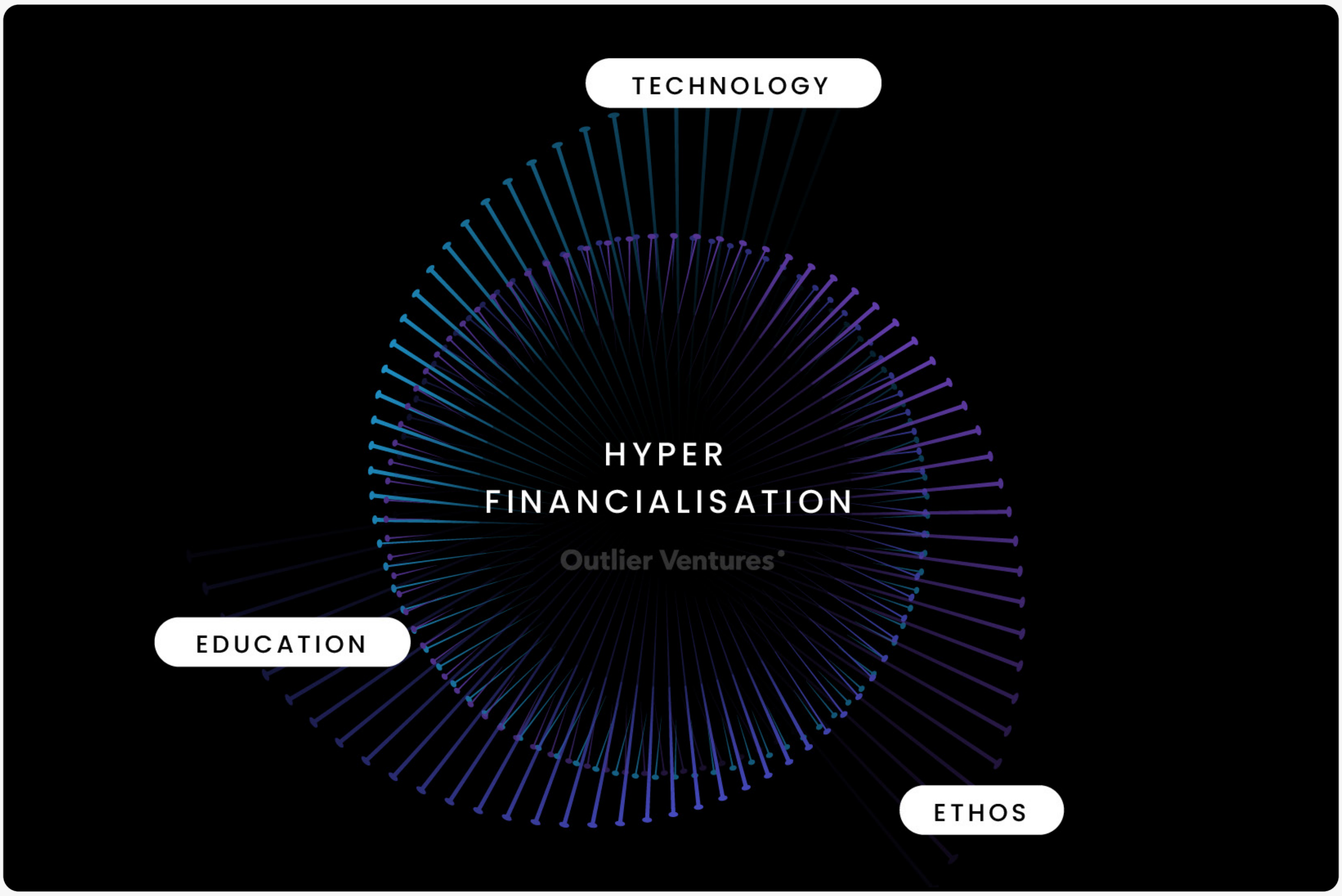
There is a growing trend of financialisation in everyday objects, a phenomenon we call "Hyperfinancialisation." **This sociocultural shift sees assets not traditionally viewed as financial, especially intangible assets, being quantified in monetary terms and leveraged for maximum financial gains.** This push toward monetising everyday assets will drive the adoption of blockchain technology. Through tokenisation, these assets become more financially productive, offering attractive investment returns.

We see three key drivers behind today's hyperfinancialisation namely (i) Education (ii) Ethos and (iii) Technology. As illustrated below.

EXHIBIT 30:

The Three Drivers Behind The Hyperfinancialisation Of Society

Source: Outlier Ventures



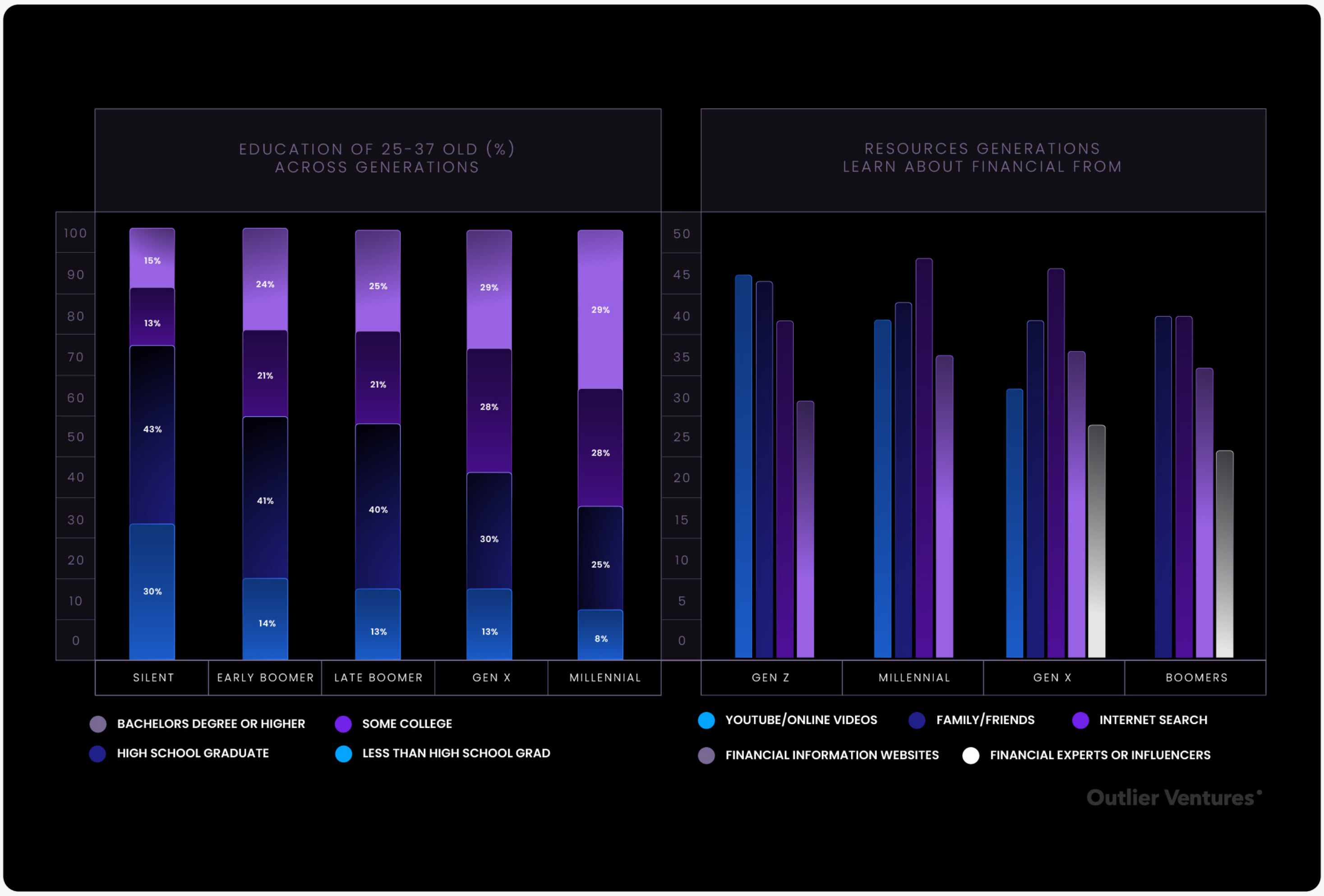
(1) Education

Education gives individuals the knowledge to understand financial markets and their importance. Today's younger generations, especially Gen Z and Alpha, are the most financially literate in history, thanks to their early exposure to digital technology and 'do it yourself' online resources. **LLMs and agents further bridge the financial literacy gap, empowering individuals globally, now in any language**, to educate themselves to make informed decisions about savings, investing, and managing debt or assets which we believe paves the way **for the rise of the "100x individual" and civilisation upskilling of the global population.**

EXHIBIT 31:

Left - Contrasting Education Levels Across Generations. Right - Source of Education Across Generations

Source: Pew Research Centre, Outlier Ventures



(2) Ethos

Ethos, or the collective values of a generation, shapes the desire to participate in financial markets. In the current zeitgeist, financial success is strongly tied to personal and professional achievement. The societal valuation of financial success drives the desire to explore and participate in financial opportunities. The ethos of striving for financial success encourages financialisation of owned assets, maximising the financial potential of an individual's assets. **We are entering a time of extreme capitalism in which financialisation will find its way into many more aspects of our lives than previously was the case.**

(3) Technology

Technology acts as the critical tool, bridging the gap between financial knowledge, the desire to participate and actionable financial opportunities. The digital revolution has made financial markets and assets more accessible than ever before, empowering individuals to freely participate. Financial applications are not only democratising access to financial markets, the underlying technology is also changing the types of financial products we are offered and abstracting the complexity of financial products away. **Technology is changing financial markets in three interconnected ways:**

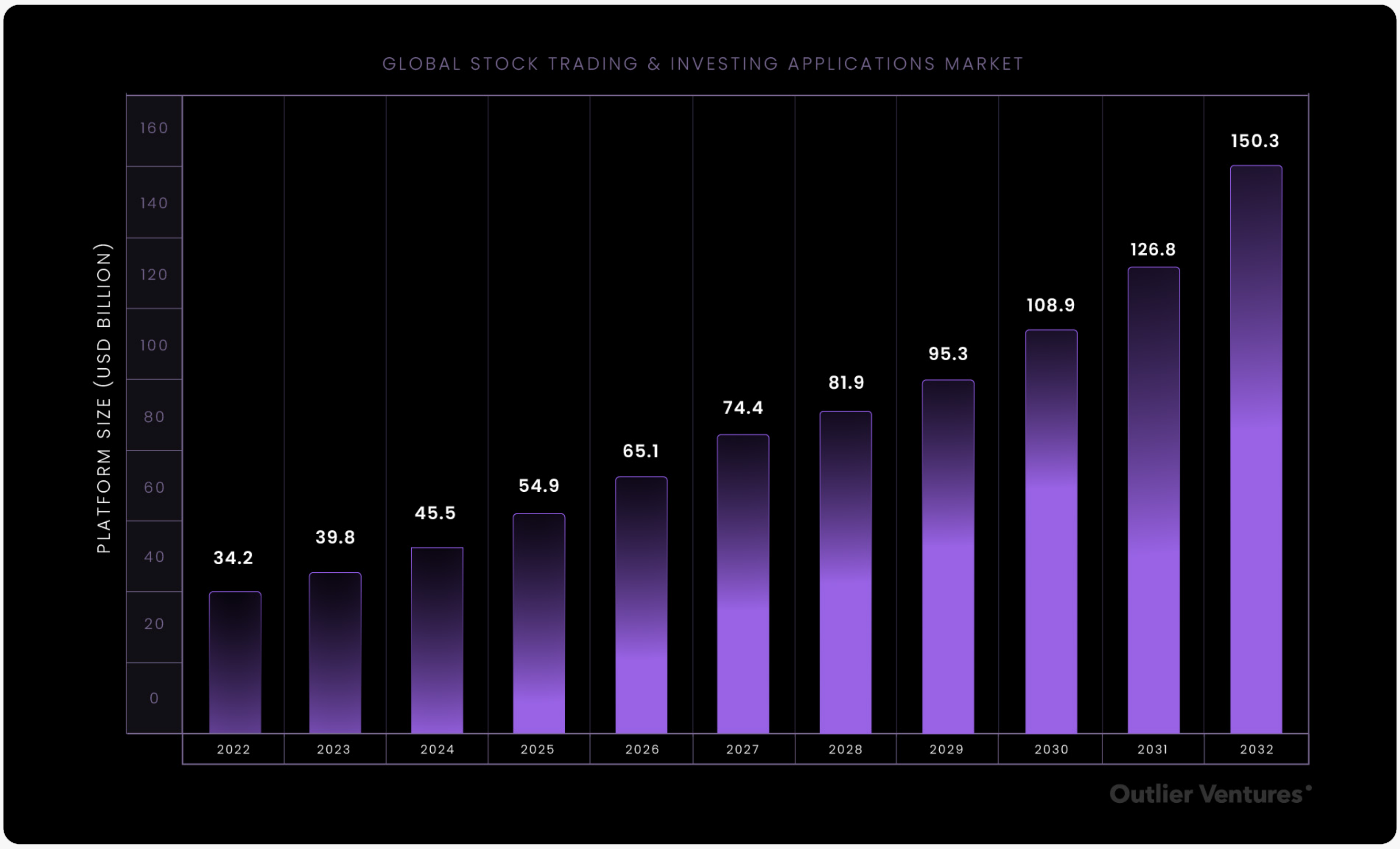
→ Democratising Access

The democratisation of financial services has transformed the landscape, making financial tools and platforms widely accessible and lowering barriers for individual and non-accredited investors. This trend promotes financial inclusion, expanding market participation and rapidly increasing the addressable market for financial products.

EXHIBIT 32:

TAM for Stock Trading & Investing. A growing TAM implies increase in both activity and # of users of the service

Source: Vision, Outlier Ventures



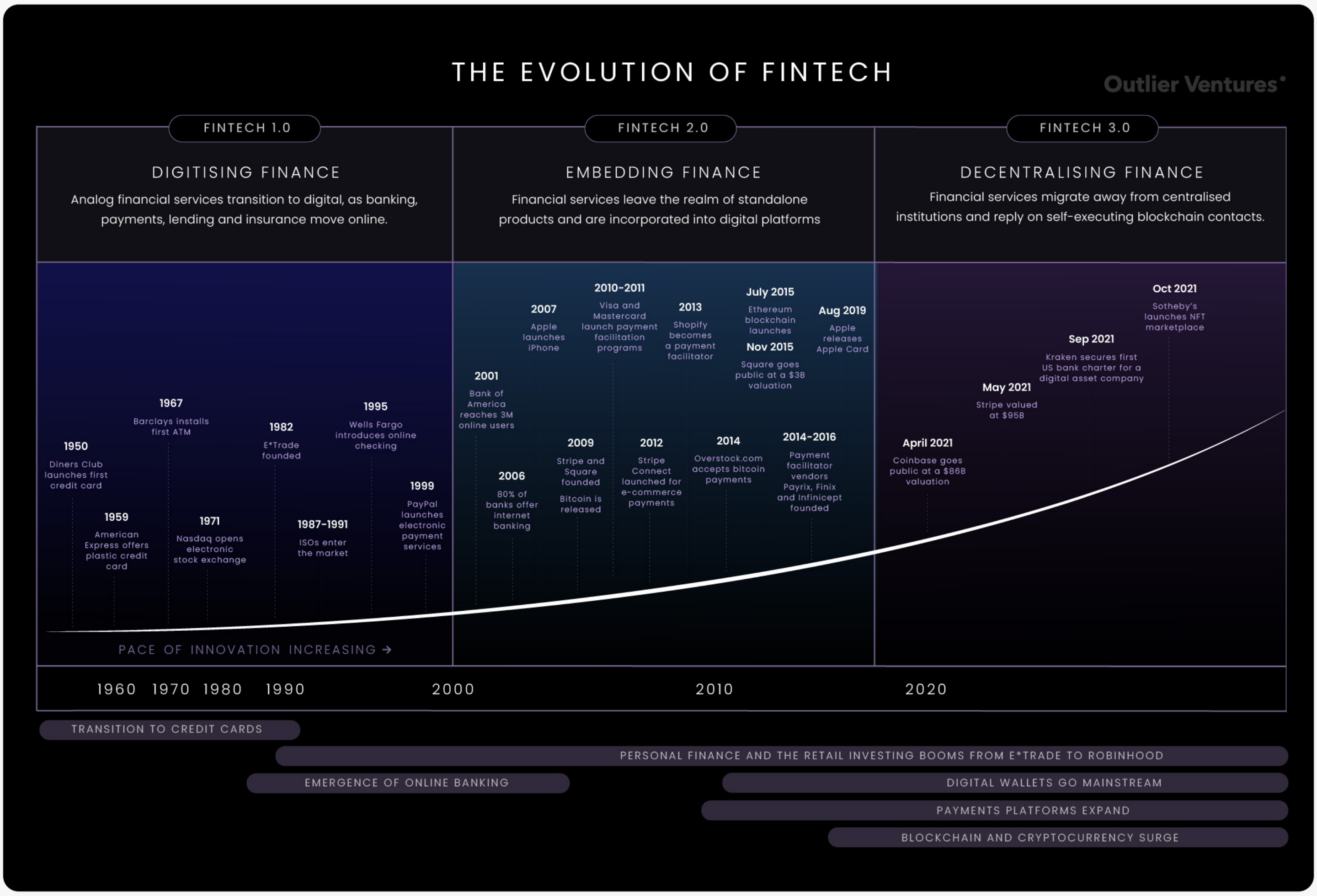
→ New Financial Products

Technology allows more complex services and markets to be offered to investors. A prime example is how blockchain based systems unlock decentralised finance and tokenised assets, revolutionising the way individuals handle financial assets. The intersection of technology and finance is driving innovation in consumer finance and investment products.

EXHIBIT 33:

Timeline of the fintech landscape over the past 60 years showing the exponential increase in financial services and products as a result of technology

Source: SVB, Outlier Ventures



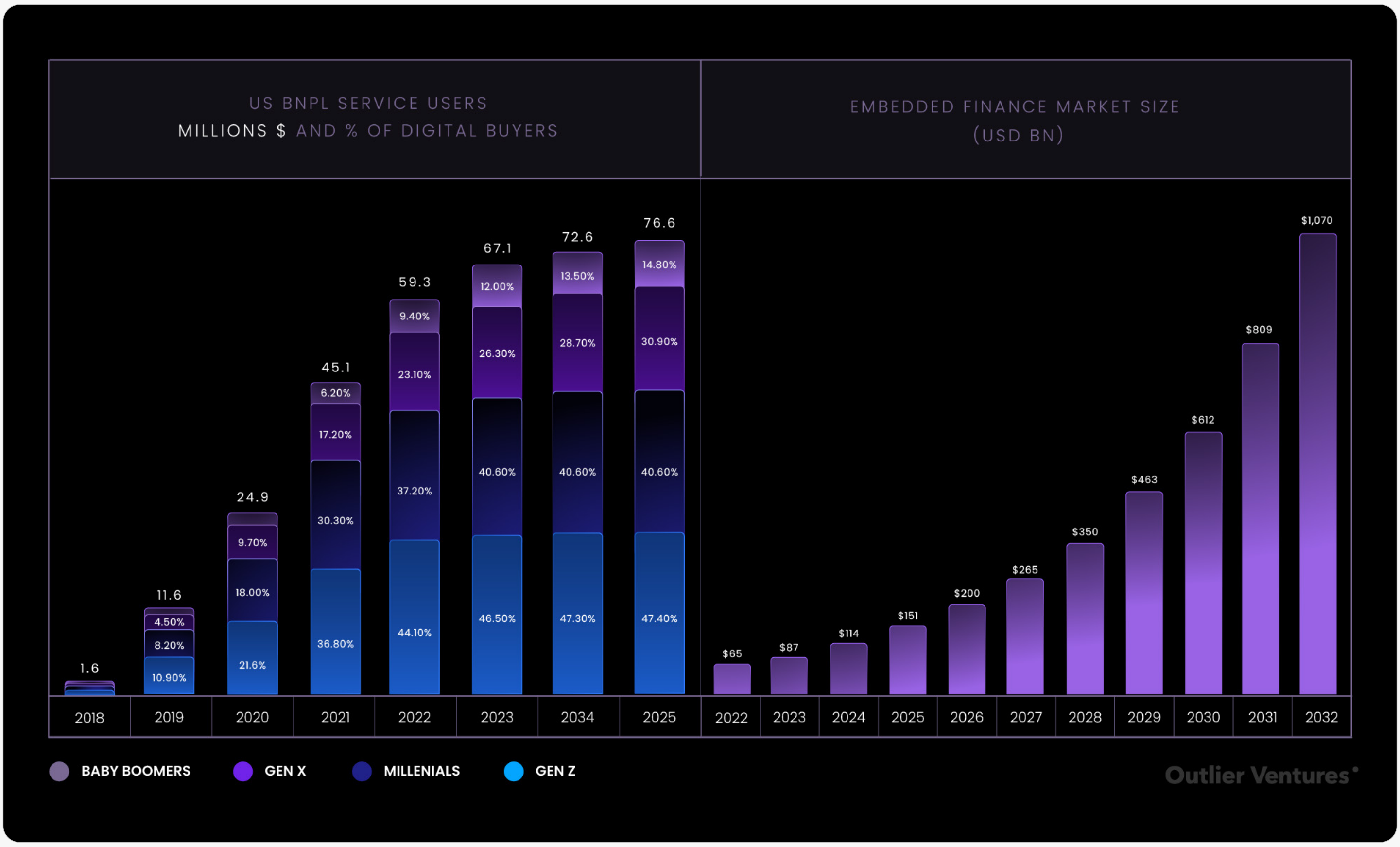
→ Abstracting Complexity

Abstraction is driving the accessibility of new financial products, making consumer finance and investments more intuitive for the average user through technology such as sophisticated algorithms, robo-advisors, and AI-driven platforms. This simplification is fueling rapid growth in the adoption of financial services and investment opportunities, exemplified by trends like embedded finance and buy-now-pay-later. **Exhibit 34** shows that more complex products, like BNPL, are gaining adoption primarily among younger, tech-savvy generations.

EXHIBIT 34:

Adoption of BNPL and Embedded Finance showing rapid adoption

Source: Insider Intelligence, Outlier Ventures



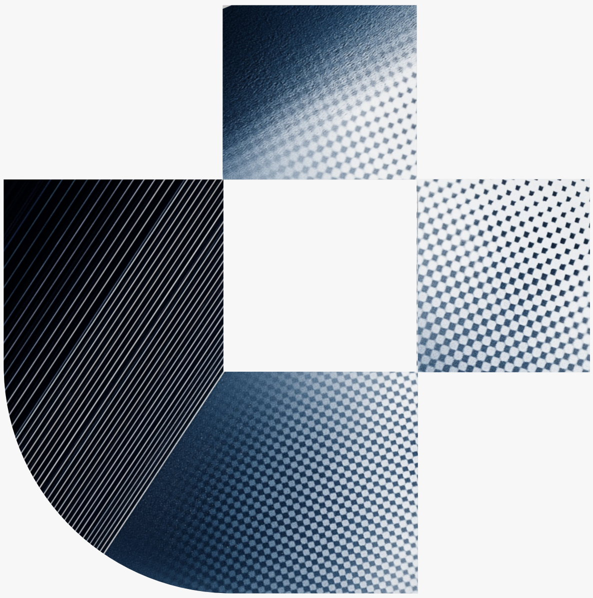
As a result, **transaction volumes in the modern economy are rapidly evolving.** Beyond hyperfinancialisation, society is becoming increasingly transactional. Digitalisation allows more granular transactions, transforming how we pay for services. Software, for example, evolved from an upfront purchase to a subscription model as digital platforms improved payment tracking.

Hyperfinancialisation In The Post Web

As hyperfinancialisation is accelerated by The Post Web, addressing gaps in financial literacy and execution becomes critical. Those equipped with both skills will not only participate in the economic cycle, but also **compound their wealth and actively engage as shareholders in the tokenised economy. With the mass tokenisation of assets, Post Web LLMs and agents play a transformative role, leveling the playing field by enabling basic financial literacy and participation for everyone.** These tools empower individuals to manage and leverage their tangible and intangible assets, ensuring broader access to economic opportunities and mitigating disparities in wealth and knowledge.

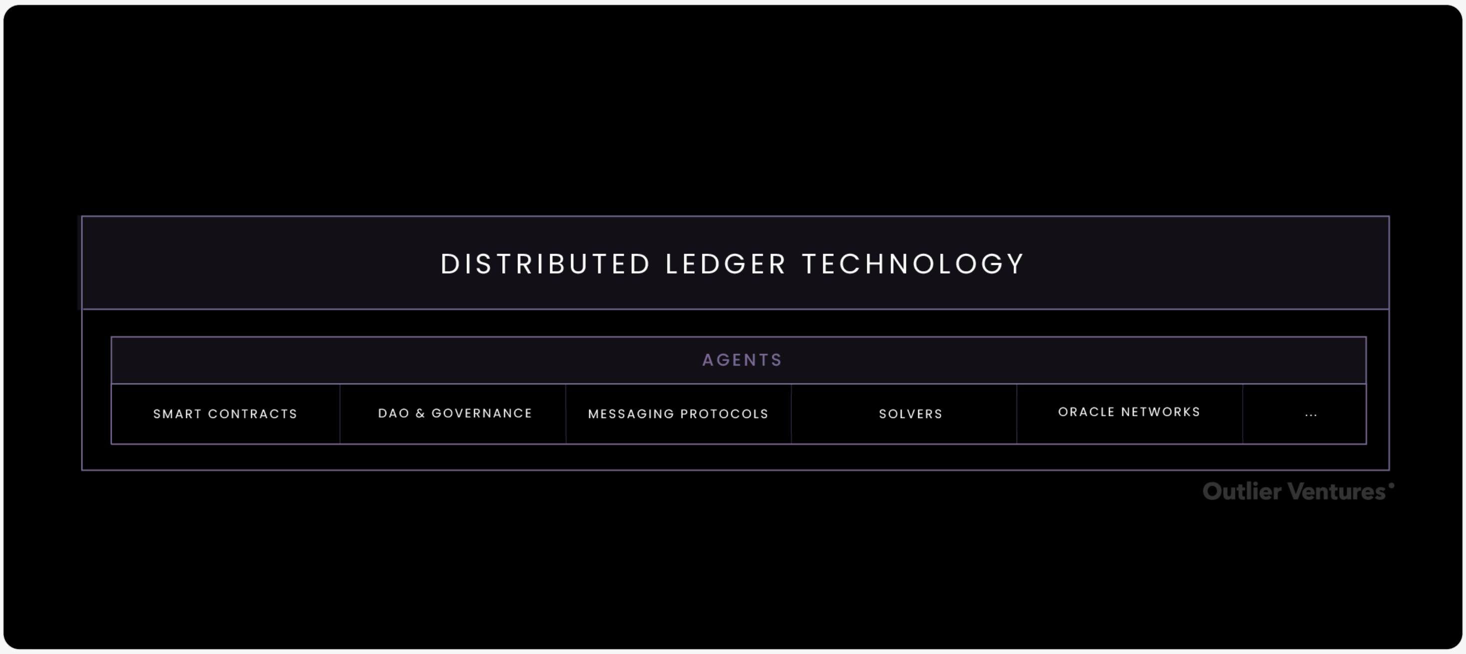
Conclusion on Peer-To-Peer Transaction Layer

The Peer-to-Peer Transaction Layer is pivotal in reshaping how transactions are orchestrated, enabling more granular and dynamic models, such as pay-as-you-go and pay-with-anything (compute, data, etc), moving beyond traditional subscription-based systems. By leveraging DLT, it facilitates trustless, decentralised exchanges, reducing reliance on intermediaries and fostering greater economic efficiency. As the economy becomes increasingly modular and transactional, this layer will underpin the seamless coordination and execution of decentralised activities in The Post Web.



Distributed Ledger Technology

"Distributed Ledger Technology (DLT), the backbone of Web3, remains integral to The Post Web, verifying and specifying both AI agent and human activity on-chain."



TL;DR

Distributed Ledger Technology (DLT):

Foundation of Trust: DLT serves as the backbone for decentralisation, enabling transparency, scalability, and interoperability in The Post Web.

Modular Stack: Increases modularity, optimises specific functions, allowing independent evolution and improved composability.

Economic Value: As trillions in assets move on-chain, DLT must balance performance, security, and interoperability while mitigating ossification risks.

Privacy and Scaling: Advances in PETs, DePIN, and scalability are essential as DLT hosts critical economic activity.

Tokens:

Economic and Governance Primitives: Tokens drive alignment, decentralisation, and seamless interactions in The Post Web.

Five Roles in The Post Web:

- **Network Effects:** Incentivise participation and compounding value.
- **Governance:** Enable decentralised decision-making and stakeholder alignment.
- **Medium of Exchange:** Facilitate efficient transactions in the agent-driven economy.
- **Ownership of Agents:** Distribute control and prevent monopolisation.
- **Incentive Design:** Use staking/slashing to ensure agent accountability and performance.

DLT, the technological innovation underpinning the Web3 movement is another deep technology. In the interest of brevity, we won't spend time explaining the fundamentals of the technology as we assume many of the founders, investors and enthusiasts reading this already have more than a basic understanding.

Instead, we will focus on the transition from today's stack to The Post Web, explore potential weaknesses and outline their role in The Post Web. This section is divided into two parts:

→ **DLT**
→ **Tokens**

Distributed Ledger Technology

As it's extensively covered by us and the broader industry already, we won't go into technological detail here. Instead, we'll focus on observations about the direction of DLT as it moves to The Post Web.

In The Post Web, Distributed Ledger Technology (DLT) evolves to become the foundational infrastructure for decentralisation, acting as the trust layer that underpins the modularity, interoperability, and scalability of the stack. As The Post Web transitions to a world dominated by autonomous agents, machine-to-machine interactions, and tokenised economies, DLT provides the deterministic backbone necessary to ensure transparency, verifiability, and accountability across systems.

A Modular Stack

Looking ahead, we believe the DLT stack will become more modular over time. Driven by:

→ **Specialisation**: Optimising layers within the stack for specific functions.

→ **Rising economic importance:** increasing value is managed on decentralised systems.

A modular architecture will optimise specific functions, creating a more **resilient infrastructure where components can evolve independently**. However, seamless interoperability between layers will be critical to ensuring these systems work cohesively as they specialise. As a result, economic moats will also shift. **Vertical integration is giving way to modular ecosystems, with some layers ossifying and becoming commoditised more quickly than others**, depending on the value they provide. This modularity also opens new opportunities for composability, enabling developers to integrate components easily and adapt to evolving use cases.

As trillions of dollars in economic value and assets migrate to DLT through trends like RWA, DLT must balance performance, security, and interoperability. Advances in privacy-enhancing technologies, DePIN and scaling solutions will be critical as DLT becomes central to The Post Web. Preventing technological stagnation in the commoditised layers will be essential to sustaining innovation and adaptability within the decentralised ecosystem.

Now let's look at the role of tokens in The Post Web.

Tokens

In The Post Web, tokens play a pivotal role in enabling decentralised systems to function effectively. Acting as the economic and governance primitives of an agent-driven ecosystem, tokens are the backbone for aligning incentives, distributing ownership, and facilitating seamless interactions across increasingly complex networks. Unlike today, tokens will no longer be merely speculative assets but critical commodities and the fundamental mechanisms for orchestrating value, governance, and agency in the machine-to-machine economy.

In this section, we explore five roles of tokens in The Post Web:

(1) Network Effects:
Tokens incentivise participation and create compounding value as networks grow.

(2) Governance: Tokens empower decentralised decision-making, ensuring equitable control and stakeholder alignment.

(3) Medium Of Exchange For Agents: Tokens enable efficient transactions in the machine-driven economy, bypassing traditional financial bottlenecks.

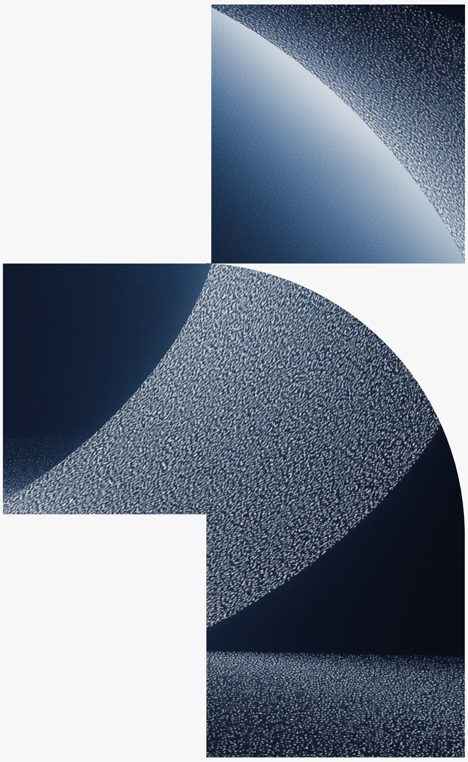
(4) Decentralised Ownership And Control Over Agents: Tokens distribute ownership of agents and systems, preventing centralisation and fostering transparency.

(5) Incentive Design For Agents: Tokens provide a crypto-economic framework to create game theory for agent behaviour, using staking to ensure commitment and slashing to penalise incorrect or harmful

Network Effects

Network effects have been crucial in explaining the economic success of internet infrastructure and apps. We believe this will continue. However, in The Post Web we anticipate a fundamental change in the dynamic, a reshaping of the way flywheels across the infrastructure and application stack flow are powered.

If you are familiar, feel free to **skip** these core concepts of the Network Effect.



Getting Up To Speed

For this section we assume the basics of the network effects are understood. For those who are unsure or haven't looked into them in detail, here's a quick overview.

Network effects (Nfx) are the most powerful economic mode of the 21st century, first coined by Metcalfe in Metcalfe's law.

"A network effect occurs when the value or utility a user derives from a product, service, or platform increases with the number of users. As more people join, the collective value for each user rises, creating a powerful economic moat. This effect generates exponential value with relatively linear costs, offering strong leverage for the company."

Demand & Supply Side

Most activities offered by projects and companies leverage network effects based on the types of activities they facilitate, with distinction primarily between social and economic activities.

→ **Social Activity:**
Primarily orchestrates single-sided network effects, where all users belong to one pool and interact within a unified community. The Nfx grows in value with each additional user joining the same network.

→ **Economic Activity:**
Orchestrates economic activity, such as marketplaces built on two or multi-sided network effects. These networks always consist of one or more:

- Supply sides: Providers of goods or services
- Demand sides: Consumers seeking goods or services

The platform's value grows as it balances and attracts activity on both sides, matching demand with supply.

As society becomes more transaction-oriented due to hyperfinancialisation, social activity is increasingly intertwined with economic activity - as seen in the integration of marketplaces within today's social networks. Consequently, we will refer to economic activity when discussing network effects in the next section and flywheels throughout this work.

Network Effects (nfx) Up Until Today

While the above sounds trivial, it's not often understood what all this means in the context of Web2. In today's Web2 landscape, strong network effects emerge both within companies (intra) and between companies (inter).

→ **Intra** - Product Value: On the supply side, network effects create an economic moat.

- This Nfx is positive for end-users - strong Nfx make the service more valuable.

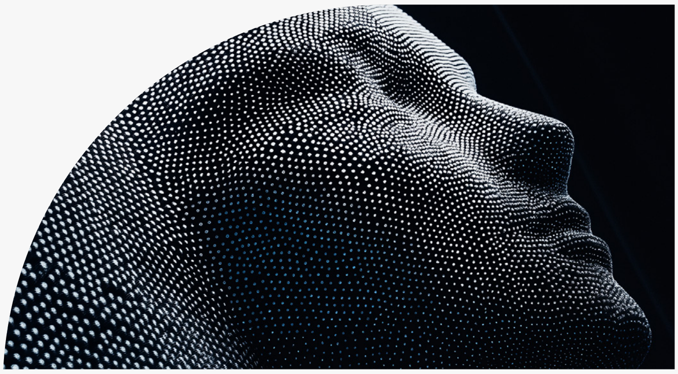
→ **Inter** - Competitive Advantage: Across the platform, network effects raise the barrier to entry, making it harder for competitors to capture users, as switching costs and user retention breed (artificial) platform loyalty. Inter Nfx are the main reason behind the rise of the centralised platforms of Web2.

- This Nfx is negative for users - strong Nfx (i) suppress competition, limiting innovation and (ii) create high switching costs, making it costly for users to consider a more efficient alternative service.

Post Web & The Disappearance of Inter Nfx

Until now, networks have primarily benefited platforms, boosting service quality and user experience, but this has come at the cost of competition. This lack of competition often results in high user switching costs and platform-driven payoffs.

In The Post Web, **we expect the core advantages of network effects, enhanced service value and connectivity, to remain.** However, due to modular services, interoperable AI-driven agents, decentralised infrastructure, and user ownership of data, the restrictive inter-network effects will diminish. This shift preserves the benefits of network effects while removing the negative externalities, fostering a more user-centric and open digital ecosystem.



Governance

As already discussed extensively **earlier in this chapter**, decentralised governance over economically important infrastructure, protocols, and dApps has been one of the core promises of Web3. **Tokens have played a central role in this vision, acting as the primary mechanism for voting, incentivising participation, and distributing power among stakeholders.** A decade later, however, there are still structural issues with governance, including low participation, centralisation of token ownership, and inefficiencies in decision-making. While it's intuitive that AI could address some of these challenges by enhancing decision-making and engagement, integration between AI and blockchain-based governance remains limited.

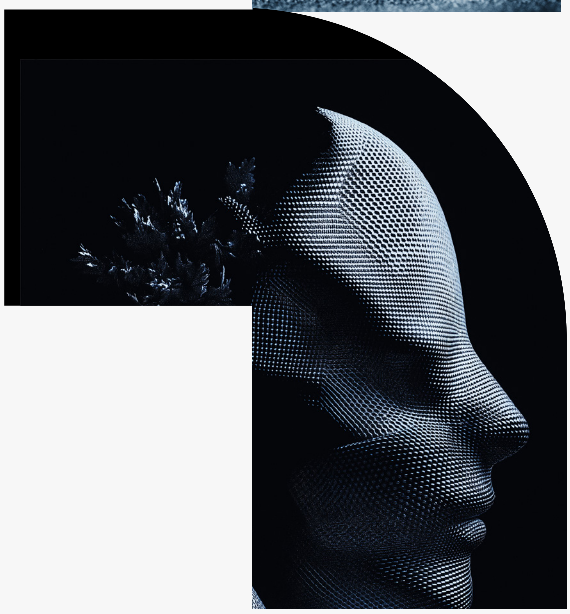
Tokens and Agents

We see **three key reasons how agents are impacted and could benefit from token integration** across its value chain.

(1) Tokens are used as mechanism or **medium of exchange.**

(2) Tokens are used to coordinate **ownership** of the agent.

(3) Tokens are used to create **game theory design** through for example staking and slashing mechanisms.



We'll unpack more below.

"Crypto can play a really important role helping AI agents transact."

Dominic Williams,
Founder of DFINITY

Mechanism of Exchange

Enabling seamless financial transactions is crucial for agents to operate autonomously and efficiently in The Post Web. **The medium of exchange agents use will define their ability to execute tasks, align incentives, and interact within ecosystems.** This is also why DLT plays a critical role in The Post Web, as it tracks state changes and transactions to verify agent activity.

The programmable nature of tokens makes it possible to create various types of mediums of exchange for agents to operate across the stack, each offering different degrees of freedom or restriction. While token programmability will eventually create a full spectrum of mediums of exchange, three prominent categories currently stand out, illustrated in **Exhibit 35**. On the political spectrum of programmable money, Central Bank Digital Currencies (CBDCs) represent another key medium of exchange, offering programmability while often prioritising central control. The biggest **trade-off is between tailorability, liquidity, and interoperability**. The more tailored, the lower the interoperability and liquidity will be for the medium of exchange.

Central Bank Digital Currencies (CBDCs) also add a vector of politics to the spectrum of programmable money. As state-backed, centrally controlled mediums of exchange, CBDCs offer programmability within tightly regulated frameworks. **While their design prioritises control and compliance, their programmability and adoption could have a significant impact on agent-driven ecosystems**, especially in contexts where state-regulated financial systems interact with decentralised infrastructures. Given the complexity and uncertainty of CBDCs and policy around them, we won't include it in our framework for now.

EXHIBIT 35:

Spectrum Of Different Types Of Medium Of Exchange Used By Agents

Source: Outlier Ventures

	GENERAL PURPOSE	HYBRID	PURPOSE-BUILT
DESCRIPTION	WIDELY USED CURRENCY	TRADITIONAL FIAT WITH PROGRAMMABLE FEATURES	CUSTOM TOKENS FOR AGENTIC WORKFLOWS
EXAMPLE	Stablecoins, Utility Tokens	Programmable Fiat, CBDCs	Agent-Specific Currency
PROS	→ **Globally available** with high liquidity. → **Simple to use** and integrate into systems.	→ **Easy adoption** with compatibility to existing systems. → Familiar infrastructure for businesses and consumers	→ Fully programmable for **performance-based triggers.** → Enables **staking, slashing, and reputation systems.**
CONS	→ **Limited programmability** for complex workflows. → Requires external mechanisms for **dispute resolution.**	→ **Limited cross-border functionality** and slow settlements. → **Lacks deep integration** with decentralized ecosystems.	→ **Higher complexity** for implementation and use. → **Limited liquidity** compared to stablecoins.

General Purpose Tokens

Stablecoins, like USDC or USDT, are widely adopted digital currencies offering global availability, high liquidity, and ease of integration. **Their simplicity makes them ideal for straightforward agentic transactions but lack programmability for performance-based workflows**. Dispute resolution and trust mechanisms must be managed externally, limiting their functionality in complex scenarios.

Example

General Purpose Tokens

An AI agent facilitating cross-border payments for freelancers relies on stablecoins like USDC to ensure fast, low-cost, and widely accepted transactions. For example, a freelancer in the Philippines could receive their payment instantly in USDC from a client in the US, bypassing delays and high fees associated with traditional banking systems. Since no complex task-specific triggers or dispute mechanisms are required, the simplicity and liquidity of stablecoins make them ideal for this use case.

Programmable Fiat

Programmable fiat platforms, such as neobanks, leverage traditional banking systems with added programmability to facilitate financial transactions. These systems are easy to adopt and integrate seamlessly with existing financial infrastructure, making them accessible for early use cases. However, **they can face limitations with functionality and lower integration with decentralised ecosystems**, making them a transitional rather than a long-term solution.

Purpose-Built Tokens

Purpose-built tokens are designed specifically for agentic workflows, incorporating features like incentive design, staking, slashing, and reputation systems for performance accountability. **They are fully programmable and deeply integrated with decentralised ecosystems but face challenges in adoption due to higher complexity and limited liquidity.** Despite these hurdles, they are the most aligned with the long-term vision of the agentic economy.

Example

Purpose-Built Tokens

In a decentralised supply chain network, AI agents are tasked with quality control, inspecting goods and reporting compliance. Purpose-built tokens come into play as agents stake these tokens as collateral, ensuring accountability and incentivising high performance. If an agent fails to meet quality standards or delivers inaccurate reports, slashing mechanisms penalise them, while other agents or validators resolve disputes through on-chain validation. This setup ensures trust and incentivised alignment in high-stakes, performance-driven workflows.

Programmable Medium Of Exchange Is Necessary

While stablecoins provide liquidity and interoperability, they alone cannot meet the complex demands of an agentic economy. Programmable money will serve as a crucial backstop, enabling features like performance-based incentives, dispute resolution, and task-specific conditions. **By blending and balancing stablecoins' flexibility with purpose-built tokens' programmability, agents can operate autonomously and effectively, ensuring scalability and trust in decentralised ecosystems.**

Ownership of Agents

In The Post Web, AI agents will manage critical tasks and create significant value, making their governance and ownership essential considerations. **Tokens enable decentralised control and participation, mitigating the risk of monopolisation by central entities over the agentic layer.** This decentralised approach is crucial for ensuring that smaller countries, corporations, and individuals—the global long tail—are not forced into reliance on dominant centralised systems. **By preserving a neutral, permissionless system as an alternative, ownership distribution through tokens safeguards inclusivity and prevents undue coercion.**

(1) Distribution of Control

This is relatively straightforward: the fundamental rationale behind distributing governance over technology is economically significant to many stakeholders.

Similar to dApps and protocols, tokens enable the distribution of control over agents. This prevents a single entity from dominating or exploiting the agentic layer, thereby avoiding the introduction of biases and inefficiencies at will. In The Post Web, agents handle critical tasks such as managing data, making decisions, and executing economic activities. Distributed governance safeguards the integrity of these agents and ensures that their activities align with and are balanced across diverse interests of stakeholders with different economic incentives.

(2) Redistribution Of Value

The Total Addressable Market (TAM) for Artificial Intelligence is often mistaken as including solely the software industry. **However, rapid advances in AI are set to disrupt labour markets significantly. While AI can enhance productivity for some workers,** it will replace tasks performed by others and transform nearly all occupations to some degree. Extending far beyond traditional software, AI's impact spans routine tasks to complex decision-making, reshaping industries and fundamentally changing work.

At the same time, **AI will become the largest deflationary force since the Industrial Revolution.** By automating tasks, reducing costs, and driving efficiency, its benefits will eventually reach consumers through lower prices. However, it may take years before this value creation is fully passed down, as much of it will initially be extracted by those who own the models.

This is why the swift distribution of ownership over AI models is essential to democratise access and share the value generated more equitably rather than concentrating it among a few large platforms and their shareholders. While the true impact of agents on labour markets and the broader economy is hard to assess due to insufficient data, limited understanding of human-AI interactions, and the unpredictable nature of technological breakthroughs, the need to redistribute value and democratise access is clear as these technologies begin to transform society. This includes new mechanisms of value creation and distribution, such as enabling knowledge workers to contribute their expertise to foundational AI models that can evolve and generate shared benefits. These efforts offer the potential for long-term financial security, providing a safeguard against workforce displacement and ensuring broader participation in the value generated by these models.

Incentive Design For Agents

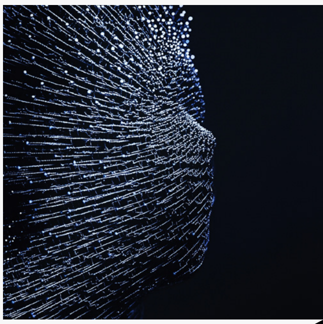
In The Post Web, staking and slashing mechanisms are fundamental for ensuring the reliability and accountability of agents. When agents are required to uphold a certain standard of performance, their hosts or the agent itself can be asked to stake tokens as collateral, creating a financial incentive for accurate and honest behaviour. If an agent produces incorrect outputs or acts maliciously, its stake can be slashed, enforcing economic penalties for misconduct and maintaining trust within the system.

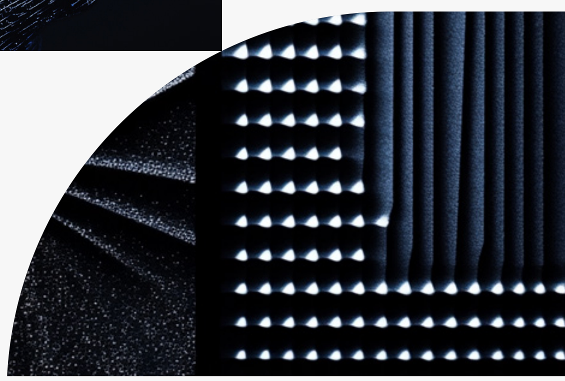
These mechanisms are further strengthened by systems designed to make agent outputs verifiable and accountable. Each output is digitally signed and recorded on-chain, creating an immutable and auditable trail of activity. To ensure correctness, two approaches are typically employed:

→ **Challenge Periods:**
Outputs are subject to a predefined window during which other participants can verify their accuracy and flag discrepancies before they are accepted. This slower method provides stronger guarantees of correctness.

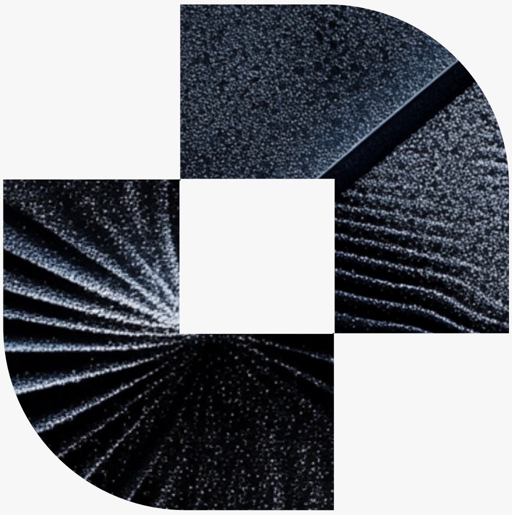
→ **Real-Time Validation:**
Outputs are immediately accepted based on the economic fidelity of the agent's staked collateral. While faster, this relies on the agent's crypto-economic incentives to act honestly, as any malicious behaviour would result in penalties.

We are still in the early days, but we soon expect to see projects specialising in agent incentive design as they handle increasingly important types of assets.





Resources & Infrastructure



"The Post Web maximises the utility of resources and infrastructure, unlocking a dynamic and self-optimising ecosystem."

TL;DR

Resources & Infrastructure (R&I) form the backbone of The Post Web stack.
They consist of:

- **Data:** The foundation for AI agents and decentralised applications.
- **Compute & Storage:** Processes and scales digital operations.
- **Connectivity & Latency:** Enables seamless real-time interactions.
- **Energy:** Powers the entire ecosystem.

Decentralisation introduces two critical shifts:

(1) Capital Formation: Tokens enable decentralised funding, lowering entry barriers and incentivising infrastructure development.
(2) Orchestration: Tokenised incentives and game theory drive efficient resource coordination across decentralised nodes.

Adoption of DePIN requires a balance of cost, efficiency, and risk, as they determine its practicality. While we do not advocate for all I&R to be decentralised, the increasing digitisation of economic activity and sensitive information makes risk mitigation a critical driver for DePIN adoption in The Post Web.

In this chapter, we explore the flywheel in more detail, including the supply and demand side drivers.

For a more detailed view on DePIN, click here to read our **thesis**.

Resources & Infrastructure (R&I) underpin The Post Web stack, **encompassing four key components:**

→ **Data:** The foundation of all Post Web activity, fueling AI agents and decentralised applications.

→ **Compute & Storage:** The processing and storage capacity required to handle increasing complexity and scale.

→ **Latency & Connectivity:** The networks enabling seamless, real-time interaction across agents, users, and systems.

→ **Energy:** The physical infrastructure that powers The Post Web in the most efficient and sustainable way possible.

These components are becoming increasingly granular, with both demand and supply sides driving innovation. We'll focus primarily on Decentralised Physical Infrastructure Networks (DePIN) in the sections that follow.

Historically, the **supply side** was dominated by centralised players with access to deep capital pools, essential for hosting infrastructure. **In Web3 and by extension The Post Web, this paradigm shifts in two fundamental ways** as barriers of entry to host infrastructure & resources go down drastically:

→ **Capital Formation:** Tokens enable decentralised capital formation, lowering barriers to entry and allowing communities to fund and build infrastructure collaboratively.

→ **Orchestration:** Through tokenisation and incentive mechanisms, game theory facilitates the coordination of individuals to host and maintain infrastructure efficiently.

On the demand side, the use of tokens addresses the 'cold start problem' faced by early-stage infrastructure and resource networks - which almost always rely on network effects - by incentivising early adoption through subsidised token distribution. These financial incentives attract new users to networks that are not yet large enough to sustain strong network effects, helping to bootstrap growth and strengthen the product in its early stages.

This decentralised approach to hosting infrastructure and resources builds on the principles of Web3, fostering a more resilient, scalable, and user-driven infrastructure for The Post Web era.

Balancing Cost, Efficiency And Risk

The adoption of DePIN in The Post Web requires careful balancing of three critical factors: cost, efficiency, and risk. Each plays a pivotal role in determining its viability over traditional infrastructure:

→ **Cost:** While DePIN reduces reliance on centralised capital, higher initial or operational costs can impact adoption.

→ **Efficiency:** Performance and scalability may lag behind traditional systems, requiring optimisation to remain competitive.

→ **Risk:** DePIN mitigates risks like single points of failure, but the trade-off must justify potential costs or efficiency losses.

These factors ultimately determine the practicality of DePIN implementation and will always require careful balancing. While we do not advocate for all I&R to be hosted in a decentralised way, as economic activity increasingly moves into The Post Web, including sensitive information and personhood, **we believe risks should become a more meaningful consideration than they are today, driving the adoption of DePIN as a solution in The Post Web.**

"For many DePIN projects, revenue is uncorrelated with the crypto market, which is unique in Web3. Unlike other Web3 verticals, whose fundamentals are tied to Bitcoin's price, DePIN fundamentals should provide a price floor. In the next bear market, these tokens may prove more resilient than the broader crypto market."

Álvaro Garcia,
Borderless Capital

Decentralised Physical Infrastructure Networks

Why Now?

We believe DePIN is on the cusp of finding a strong market fit, driven by supply and demand dynamics that reinforce its flywheels. **Until now, the demand side of DePIN has been subsidised by project treasuries and private capital, a strategy viable only until sustainable revenue streams emerge.** We believe two key factors are driving sustainable growth on the demand side, creating a sustainable flywheel effect that detaches DePIN from the broader crypto ecosystem:

(1) Usability:
Historically, complexity has hindered DePIN adoption, but **advancements in usability, regulatory clarity, and AI (for abstraction & coordination) are now reducing barriers to adoption.** By abstracting this complexity, DePIN becomes a more attractive alternative to centralised players.

(2) Pent-Up Demand:
The growing need for compute, storage and connectivity, coupled with the ability to tap into idle resources through decentralised coordination, is a game-changer. **With competitive pricing and decentralised supply that can absorb traditional bottlenecks, DePIN offers a compelling and scalable alternative** in an increasingly strained infrastructure landscape.

Decentralised Physical Infrastructure Networks (DePIN) revolutionise blockchain's real-world applications by creating **networks that deliver tangible services to everyday users.** These networks leverage decentralised coordination to deploy infrastructure at a fraction of the cost and time required by traditional methods, unlocking scalable and efficient solutions for global infrastructure needs.

Compute, Storage, Connectivity and Latency

Compute, storage, connectivity, and latency are critical in The Post Web, powering AI agents, decentralised applications, and real-time interactions. They ensure scalability, efficiency, and seamless delivery of digital experiences.

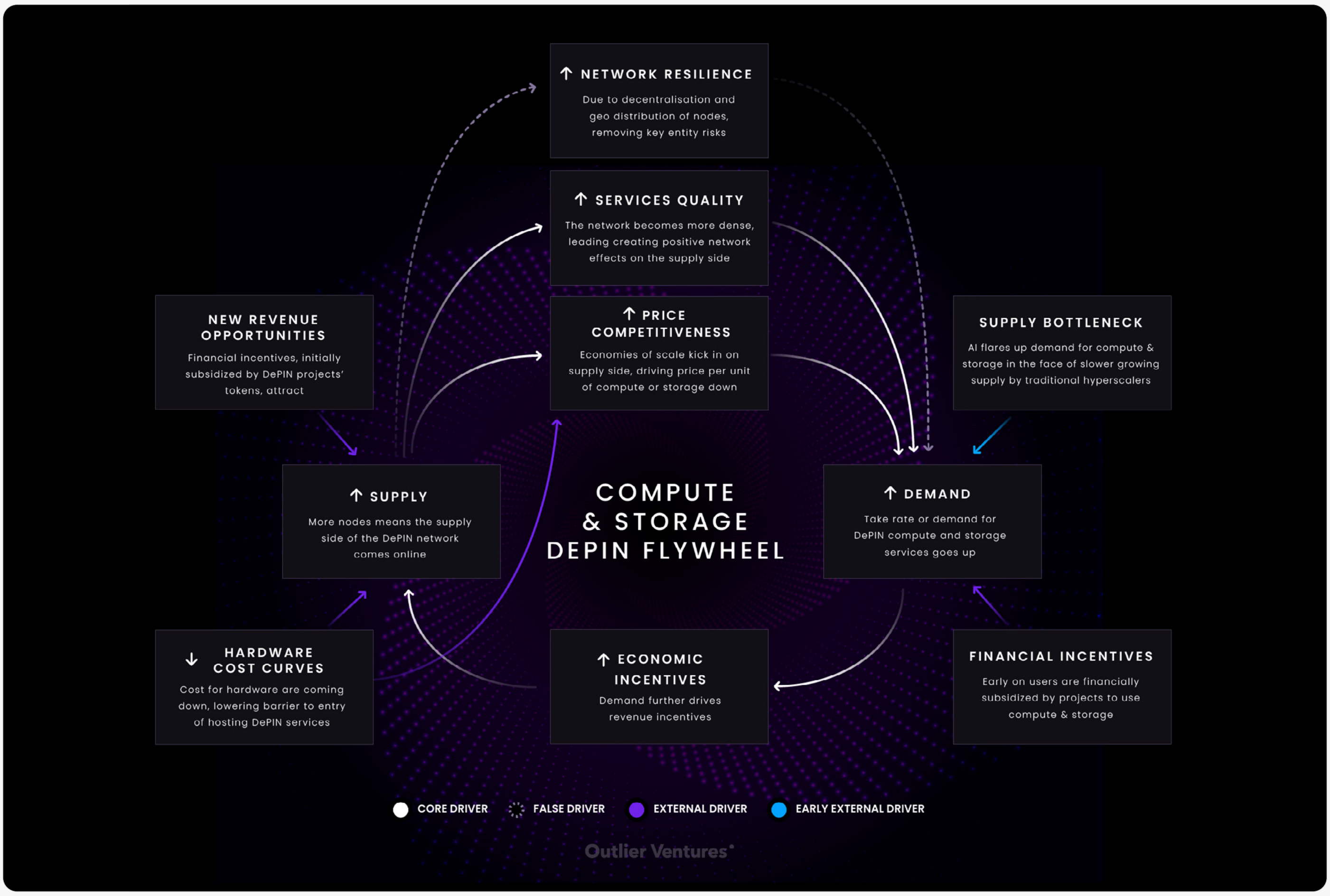
The Flywheel

The flywheel is a self-reinforcing system where each component's growth amplifies the others, creating momentum and scalability over time. When resources like compute, storage, connectivity, and latency are hosted in a decentralised way, they benefit from network effects, where increased participation strengthens the network, translating into flywheels that drive adoption, efficiency, and innovation.

EXHIBIT 36:

Compute & Storage DePIN Flywheel

Source: Outlier Ventures



Compute, storage, connectivity and latency DePIN networks function as two, or multi-sided marketplaces where resources are offered decentralised by a network of geographically distributed nodes operated by both providers and individuals. On the demand side, developers, businesses, and users can tap into these resources for scalable, cost-effective compute and storage solutions, leveraging the flexibility and redundancy of decentralised infrastructure.

Let's unpack both sides...

Drivers of Supply Side

External Drivers Of Supply

External drivers are crucial for kickstarting the supply side, which must reach a 'minimum viable service' to attract organic demand. In this flywheel, two primary external drivers incentivise resource contribution from both individual and institutional node operators, establishing the foundation for a sustainable DePIN network.

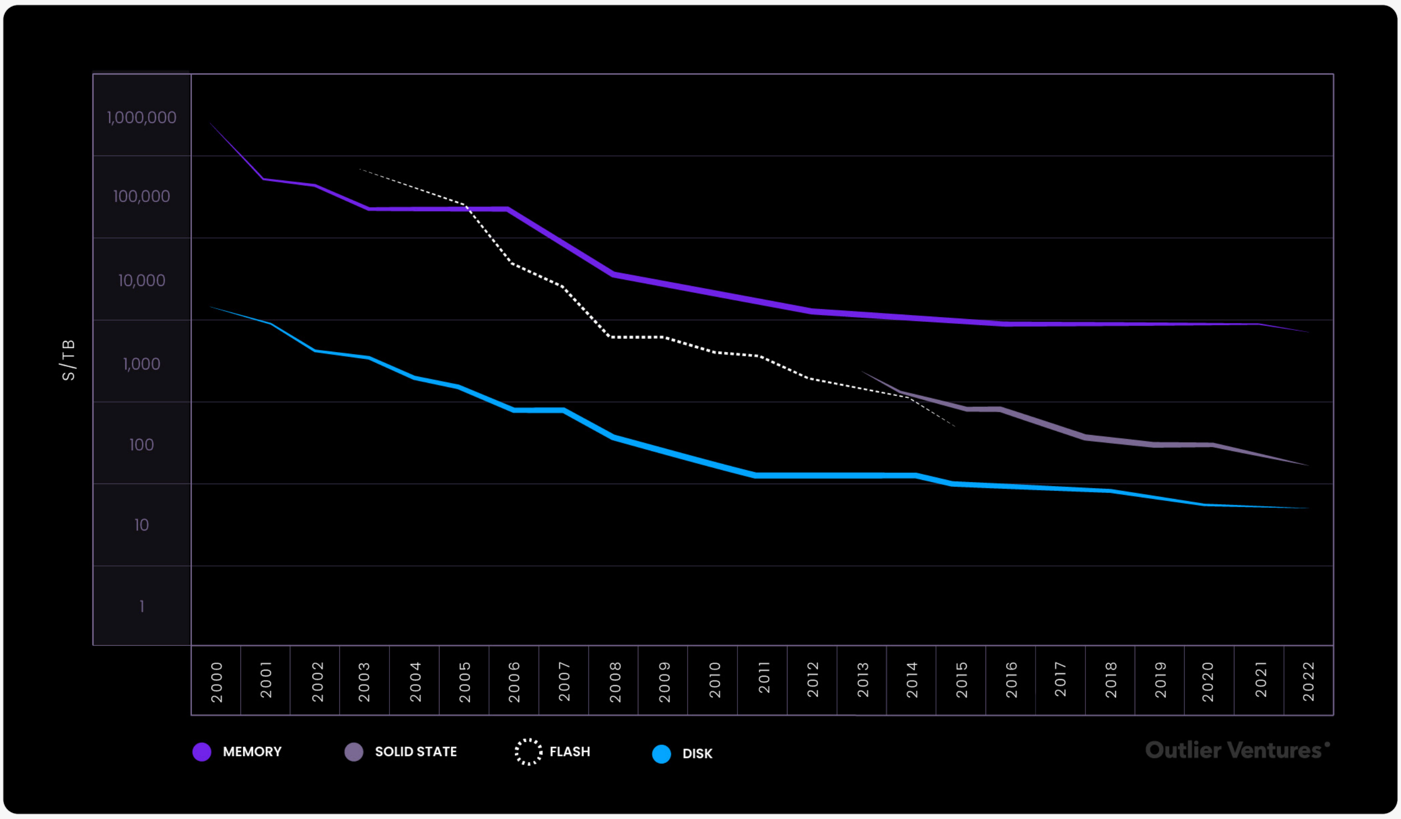
(1) Hardware Cost Curves

The steep decline in memory and storage costs over the past two decades has made it economically viable for individuals and small organisations to contribute to DePIN networks without large capital investments. **This shift reduces the economic advantage of centralised providers, enabling a more competitive and decentralised infrastructure landscape.**

EXHIBIT 37:

Historical cost ($/TB) of computer memory & storage since 2000

Source: Our World In Data, Outlier Ventures



(2) New Revenue Opportunities

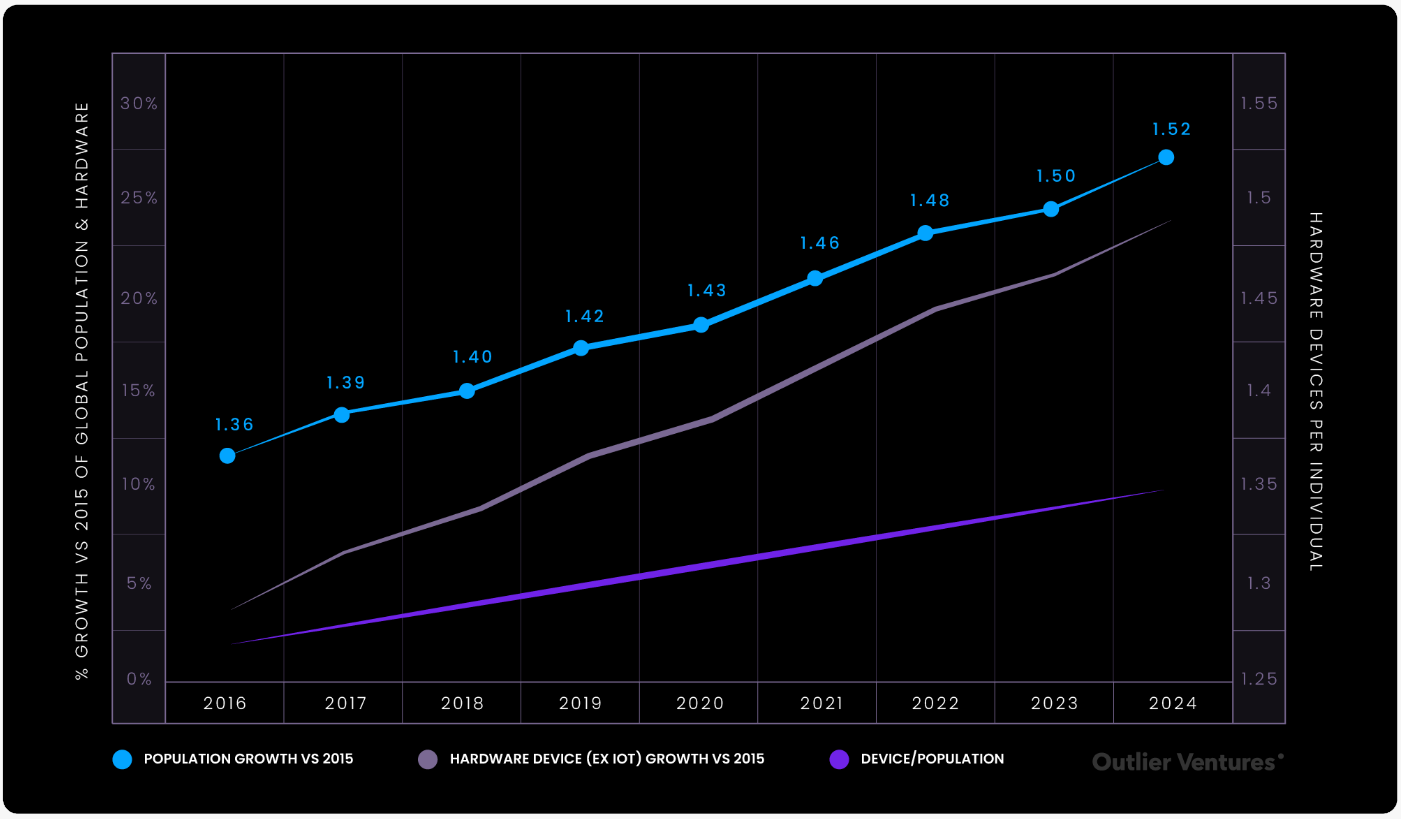
DePIN allows individuals and corporations to **generate new revenue streams** by enabling idle compute and storage resources to be monetised, rewarding contributors with utility tokens. As we've seen with early DePIN projects, adoption is often initially subsidised through community airdrops, however once connected, many users remain engaged with the project. **We believe monetising idle compute & storage is more important than ever for hardware owners.**

As economic and social activities increasingly move online, users now own more hardware than ever, as shown in Exhibit 38. Monetising this hardware is key to providing financial freedom at a time when owning such devices is mandatory for participation in modern life. **As hardware purchases continue to consume an increasing share of disposable income, we expect new DePIN revenue streams to be a compelling alternative to financing these personal hardware investments.**

EXHIBIT 38:

Growth In Number Of Hardware Devices Relative Global Population

Source: Source: Statista, Outlier Ventures



Core Supply Drivers

The supply side of the flywheel focuses on the decentralised infrastructure providers, nodes contributing compute, storage, and connectivity, whose participation drives economies of scale, network density, and overall system resilience. As shown in above, we see three drivers:

FALSE DRIVER

Network Resilience

Network resilience, driven by the decentralisation and geographic distribution of nodes, reduces key entity risks and mitigates single points of failure. While increased resilience strengthens the infrastructure as more supply-side resources come online, it is a **false driver** for adoption. **Similar to security and privacy, resilience alone does not directly attract users but enhances the product when paired with core value propositions like service quality or competitiveness.** It supports the ecosystem but is insufficient as a standalone feature to drive adoption, making it a complementary benefit rather than a primary factor in the context of The Post Web flywheel.

CORE DRIVER

Service Quality

Service quality is a core driver of adoption in the Post Web. **As the network becomes more dense**, positive network effects emerge on the supply side, **enhancing performance, reliability, and scalability**. This density allows decentralised infrastructure to rival or surpass centralised systems, directly addressing user demands for better experiences. Unlike resilience, improved service quality drives adoption by delivering tangible value, making it a foundational element of the flywheel for compute, storage, connectivity, and latency.

Competitiveness

Price competitiveness is a core driver of adoption, as economies of scale on the supply side reduce the price per unit of compute and storage. **As more nodes come online and infrastructure becomes more efficient, decentralised networks can offer cost-effective solutions that rival or surpass centralised cloud alternatives, with reports indicating savings of up to 33%.** This affordability attracts users and providers, reinforcing adoption and growth. Unlike resilience, price competitiveness has a direct impact on user decisions, making it essential for scaling decentralised infrastructure in The Post Web.

The Demand Side

The demand side of the flywheel centres on the users and applications leveraging the infrastructure, with adoption driven by factors like service quality, cost competitiveness, and the ability to meet evolving digital needs. As illustrated earlier, we see two external drivers and one driver.

External Drivers Of Demand

(1) Supply Bottleneck

Centralised services for storage and compute face bottlenecks due to limited capacity, rising costs, and reliance on a few providers, as seen in recent shortages. These constraints highlight the inefficiency of centralised systems and drive interest in **decentralised alternatives, where underutilised supply can be tapped into globally**. Decentralised systems offer a scalable solution by leveraging unused resources, reducing bottlenecks, and creating more efficient, cost-effective, and resilient infrastructure for The Post Web.

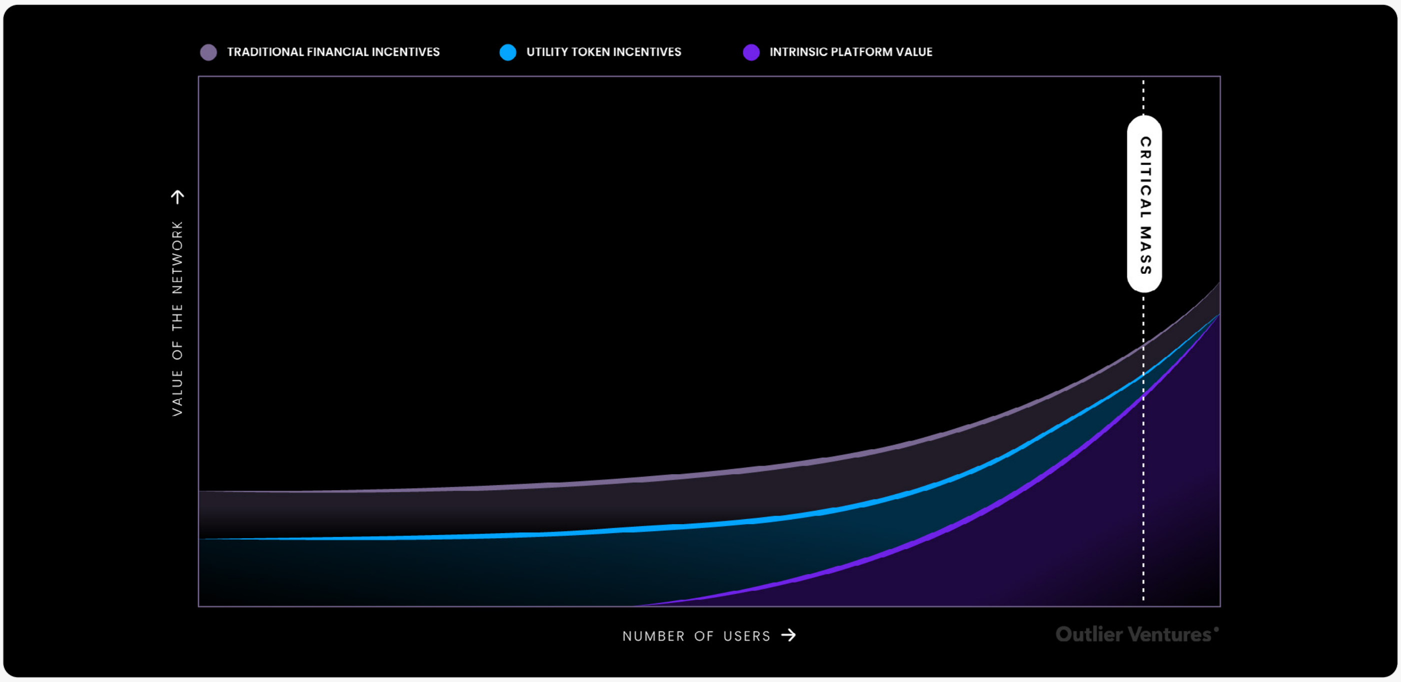
(2) Financial Incentives

DePIN provides financial incentives to kickstart demand. This happens through lower prices for services or additional token rewards for early adopters. The token rewards also reflect the value that early adopters bring to the network by initiating the growth flywheel. As network effects come online, these financial incentives will gradually phase out, making this an early-stage, unsustained, external driver. Traditional incentives will phase out entirely, leaving token incentives as the primary driver, though these will gradually become less inflated and more sustainably calibrated. **Exhibit 39** illustrates how **token and traditional financial incentives fade as the platform's intrinsic value goes up due to network effects coming online.**

EXHIBIT 39:

Decrease Of Financial Incentives As The Number Of Users Goes Up

Source: Source: Statista, Outlier Ventures



The Network Nuances

The previous section explored the theoretical foundations of DePIN, **but in practice, the nuances vary significantly depending on the type of resource being hosted. Each DePIN network is shaped by unique drivers of its flywheel, reflecting differences in orchestration, cost curves, and end markets.** These markets cater to diverse users with varying preferences across cost, security, scalability, and other priorities, resulting in distinct dynamics for each resource type. Understanding these nuances is essential to fully grasp the practical applications and growth potential of DePIN networks.

Below are examples of different network nuances.

Storage

Decentralised storage networks address the growing demand for resilient, secure, and globally distributed data solutions. **By leveraging tokenised coordination, these networks transform underutilised storage capacity into a shared resource**, offering users greater data sovereignty and censorship resistance. Unlike centralised providers, decentralised storage ensures that no single point of failure can compromise the system, creating a more robust infrastructure for an increasingly data-driven world.

Compute

There are currently projects in the market leveraging tokenised coordination for decentralised compute networks, demonstrating that cost competitiveness is a core driver of adoption for DePIN infrastructure. **These projects demonstrate how decentralised networks can attract clients by leveraging efficiency and affordability and offering GPU services at prices up to 72% lower than centralised providers.**

Alternatives

Decentralised infrastructure networks are also redefining how value is generated from idle resources. **Projects are creating entirely new revenue streams by enabling peer-to-peer markets for resources such as Bitcoin mining hash power.** These marketplaces provide hardware owners with direct monetisation opportunities and also encourage the growth of decentralised infrastructure by aligning economic incentives with participation and network expansion.

New Digital Commodities

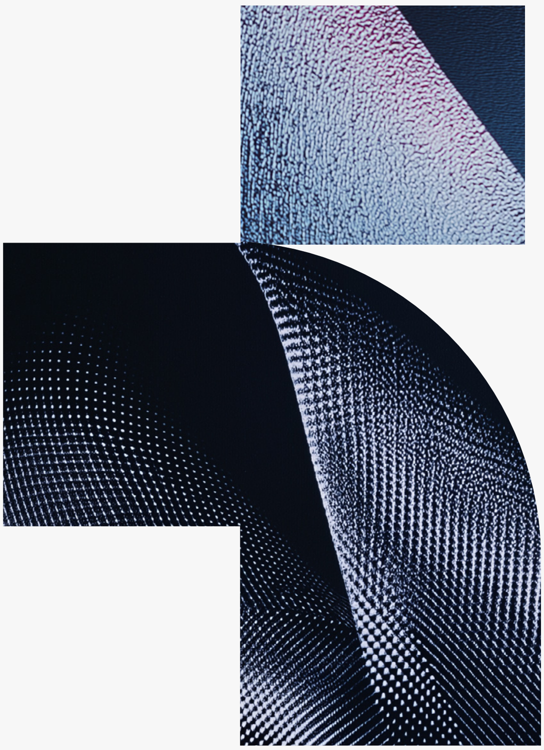
In The Post Web, decentralised resources orchestrated through DePIN networks, such as compute, memory, and connectivity, will emerge as new digital commodities. Similar to how traditional commodities fuel the physical world and the industrial sectors, these digital commodities will underpin The Post Web economy. **By leveraging DePIN, these resources will be liquid and fungibly traded, creating efficient markets that enable seamless access and scalability.** This transformation positions decentralised infrastructure as the backbone of the digital economy, providing the foundational resources necessary for AI agents, decentralised applications, and other Post Web technologies to thrive in an interconnected, highly automated, resilient ecosystem.

The Post Web Endgame

As we conclude this chapter on "The How" and the technology stack of The Post Web, it is clear that **the past decade's innovations have laid the groundwork for a transformative architecture.** The Post Web Technology Stack, spanning wallets, decentralised applications, distributed ledger technologies, personhood frameworks, asset representation, and DeAI, is converging to create a cohesive ecosystem where users, agents, and systems operate seamlessly. We hope it's clear by now that **The Post Web represents not just an evolution, but a paradigm shift that will redefine how we interact with data, systems, and the economy itself.**

In the next chapter, we examine the measurable impact of The Post Web on the digital and physical realms. **We analyse how the technologies discussed in Chapter 2 of The Post Web thesis will transform industries such as finance, healthcare, media, consumer markets, and more. Beyond technological shifts, we unpack The Post Web's New Data Economy and explore how agents orchestrate interactions between users, marketplaces, and even among themselves in dynamic swarm-like structures.**

Chapter 3 uncovers how these advancements will reshape not just the internet but the very fabric of our economy and society. Stay tuned to discover how this imminent reality will revolutionise innovation, commerce, and human experiences. The Post Web is no longer a distant vision; it is an imminent reality poised to reshape the internet and beyond.



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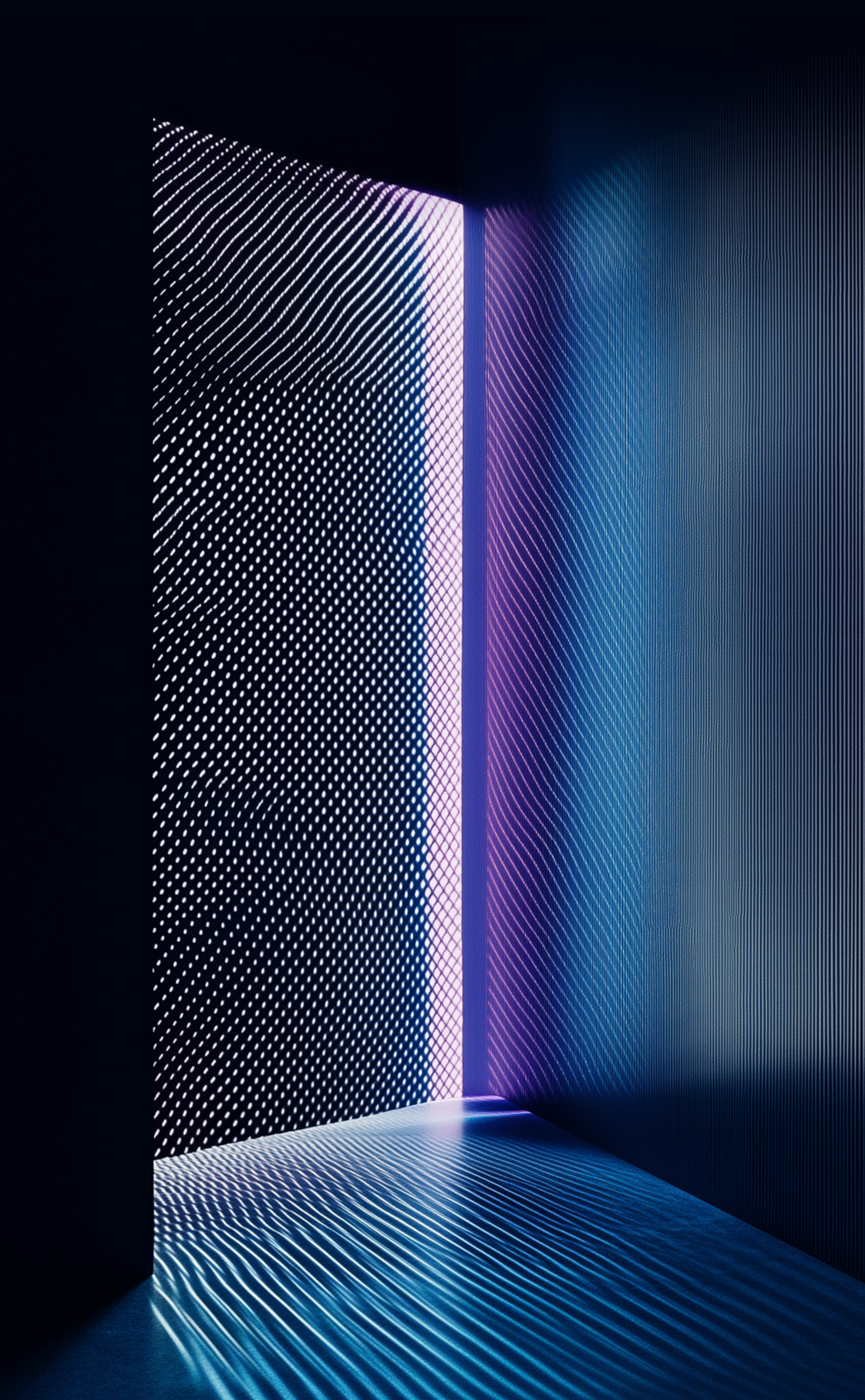

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