OVER DePIN Lightpaper: The OVER Business Layer and the DePIN Flywheel

Over the Reality

August 2025

Abstract

The rapid expansion of spatial computing, robotics, and augmented reality (AR) hinges on the availability of high-quality 3D maps, a critical yet underdeveloped asset in the industry. OVER has pioneered a decentralized approach to mapping relevant real-world locations through its **map2earn™** initiative, leveraging **Decentralized Physical Infrastructure Networks (DePIN)** to crowdsource and maintain an extensive geospatial dataset. This initiative forms the backbone of the **OVER DePIN Flywheel**, a self-reinforcing ecosystem where the growth of the 3D map database enhances platform utility, attracting more users and businesses while driving sustained token-based incentives.

To ensure long-term revenue stability beyond the volatility of crypto cycles, OVER introduces **OVER Business Layer**, a Web2-friendly revenue model that serves as an **additional revenue stream alongside the existing Web3 economy**. While OVRLand sales and Web3 token incentives remain at the core of OVER's decentralized ecosystem, OVER Business allows enterprises to adopt Physical AI services without blockchain complexities, expanding the platform's reach. By integrating AI Training Data Sales, XR Publishing & Browsing, and Visual Positioning System (VPS) capabilities, OVER Business unlocks new applications in robotics, AI training and XR. The strategic inclusion of Web2 enterprises ensures a steady cash flow, which is reinvested into Web3 mechanisms, such as **OVRLand rewards, token burns, and buybacks**, reinforcing the DePIN Flywheel without disrupting the Web3 ownership model.

Additionally, OVER's adoption of **Large Geo-Spatial Models (LGMs)** further enhances the platform's capability to generate, process, and monetize 3D spatial data beyond its own datasets. This synergy between AI-driven localization, immersive AR content, and decentralized mapping, positions OVER as a leader in the next era of **Spatial Computing and Physical AI**. By balancing Web3 decentralization with Web2 accessibility, OVER establishes a robust and scalable foundation for the future of decentralized spatial computing.

1 OVER's DePIN Flywheel

During the last year, OVER has continued expanding its capabilities as an end-to-end platform for publishing and browsing geo-localized AR content. However, our primary focus has been the map2earn™ DePIN program, an ambitious initiative aimed at creating the world's largest dataset of 3D maps of key locations.

This strategy is driven by a first-principles thesis: high-quality Datasets of 3D Maps are very scarce, but are the critical success factor for both the training of Foundation Vision Models and VPS-based XR services. Building such a dataset is no simple feat. It requires a global community, carefully designed incentive structures to coordinate a distributed workforce of mappers, robust hardware infrastructure, and cutting-edge AI algorithms. In the era of abundant intelligence, this asset is significantly harder to replicate than the algorithms to train AI and the tools used to publish and visualize AR content.

OVER's map2earn™ program is a groundbreaking application of the DePIN (Decentralized Physical Infrastructure Networks) model. By leveraging OVR Token incentives, we've bootstrapped and sustained a decentralized network of mappers who transform their smartphones into powerful 3D mapping sensors. Together, they are building a decentralized, high-resolution spatial dataset of the world's most important locations. But mapping is just one side of the equation. What truly makes the DePIN framework revolutionary is its ability to self-reinforce—a phenomenon known as the DePIN Flywheel.

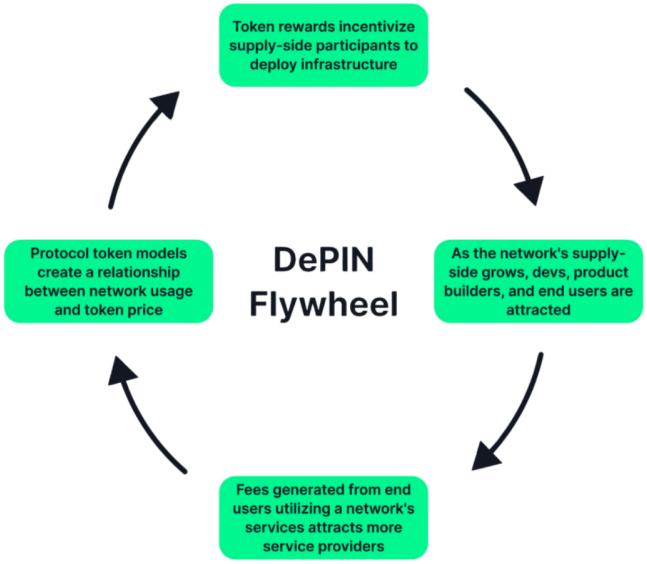

Figure 1: Canonical DePIN Flywheel

The 3D Maps generated by the OVER protocol directly enhance the platform's utility as a Foundation Physical AI training data provider, an end-to-end solution for publishing geo-localized AR content and enabling re-localization services. This, in turn, drives fee generation for the protocol.

Historically, OVER has generated revenue primarily through the sale of OVRLands — the publishing rights for specific geographic locations within the platform. This model has already proven to be highly profitable, with over 875,000 OVRLands sold at prices ranging from $10 to $100. Meanwhile, the average mapping reward per location stands at $1.50, with 140,000+ locations mapped at the time of writing. While some might argue that OVRLand sales represent a one-off revenue stream, it's important to consider the sheer size of the potential market. The total stock of valuable OVRLands—which can be estimated based on the number of Points of Interest (POIs) on Google Maps and OpenStreetMap—is in the range of 100 million. To date, less than 1% of these premium locations have been sold, leaving enormous untapped potential.

1.1 The Key Challenge: Crypto Market Cycles and Revenue Volatility

A key challenge, however, is that OVRLand sales volume is not purely driven by platform utility—measured in terms of available 3D Maps and technical capabilities. Instead, it is heavily influenced by the volatility of crypto market cycles and narratives. While bull markets can generate substantial reserves to weather downturns, long-term reliance on this dynamic is unsustainable. It risks disrupting the link between platform utility (the number of 3D Maps and features) and revenue generation, weakening the DePIN Flywheel.

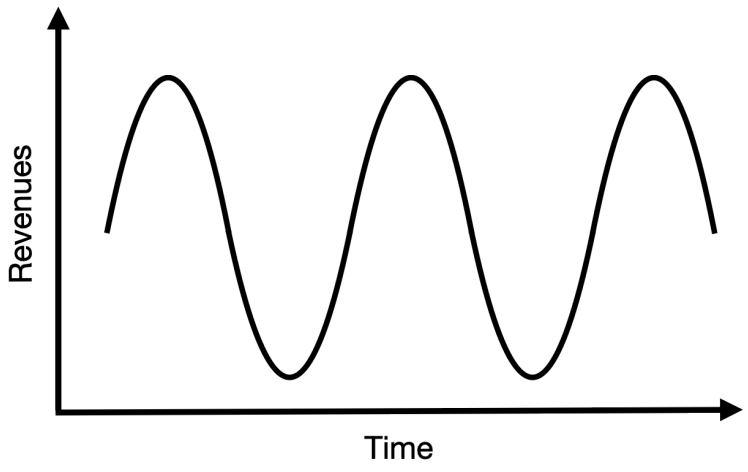

Figure 2: Web3 Revenues Archetype.

1.2 The Solution: OVER Business Layer – Web2 Revenue Streams

To mitigate this risk, OVER is introducing **OVER Business Layer**, a new set of revenue streams designed to serve Web2 companies and users while leveraging the powerful infrastructure built through DePIN incentives. This business line encompasses multiple value propositions:

- Physical AI Foundation Models Data Sales and Training: Leveraging its massive 3D Maps dataset to train Foundation Models and for data sales to robotic and AI companies.
- B2B Whitelabel AR services: A subscription-based model, similar to Web2 competitors like *8th Wall*, making it easy for traditional businesses to adopt whitelabel AR solutions without dealing with Web3 complexities.
- Providing API based Visual Positioning System (VPS) services, also leveraging it's patent pending TEE powered private re-localization service.

The goal is to onboard Web2 business clients, ensuring a stable cash flow that is independent of crypto market fluctuations. This steady revenue stream will be reinvested into the Web3 economy through:

- Rewards for OVRLand owners
- Token burns
- Token buybacks

Beyond smoothing revenue fluctuations, OVER Business will strengthen the connection between the platform's supply and demand. With a direct correlation between 3D Maps availability, platform features, and revenue generation, the **DePIN Flywheel** will become even more robust and self-sustaining.

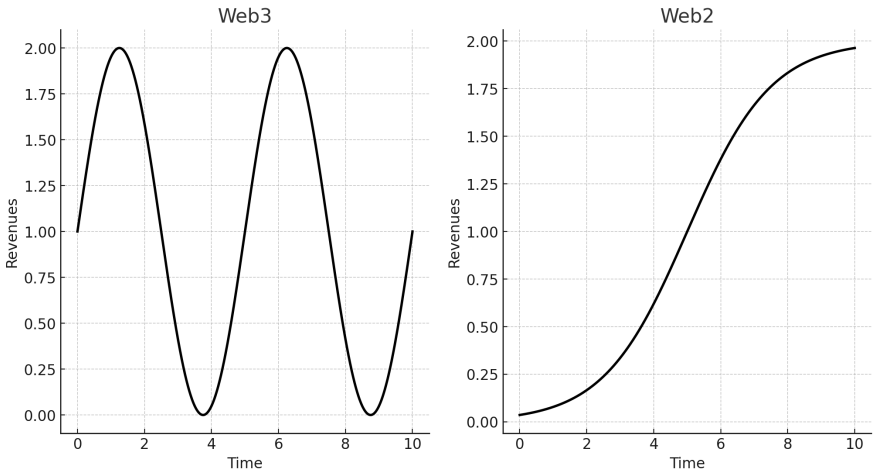

Figure 3: Web3 VS Web3 Revenues Archetypes.

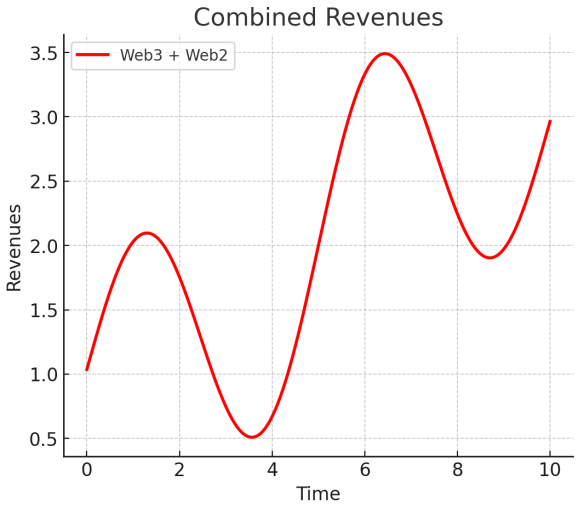

Figure 4: Combined Web2 + Web3 Revenues.

1.3 The OVER Business Value Proposition: Multiple Key Web2 Client Segments

The OVER Business offering is designed to serve multiple primary Web2 client segments, each benefiting from OVER's massive 3D Maps dataset, robust Visual Positioning System (VPS) and geo-localized AR capabilities:

- **Robotics Companies** – Robotic companies are served by two value propositions: 1) Training data provision from its 3D Maps Dataset 2) The combination of VPS and Large Geospatial Models (LGMs) allows autonomous robots to precisely orient themselves in physical space and understand spatial composition via 3D segmentation and metric scaling, improving navigation and interaction capabilities.
- **Foundation Vision Models Training Companies** - data provision to AI research labs to train SOTA Foundation Vision Models
- **Digital Marketing Agencies** – OVER provides a no-code platform that enables agencies to publish and browse white-label, geo-localized AR content effortlessly. This allows them to enhance their service offerings with immersive AR experiences, expanding their value proposition to brands and advertisers.

- **App Development Companies** – OVER offers an SDK that allows developers to seamlessly embed OVER's AR and VPS capabilities into third-party applications. This integration enables precise re-localization, improving navigation and interactive AR features within external apps.
- **Micro-Mobility & Ride-Sharing Companies** – OVER's VPS-powered asset re-localization services help mobility providers ensure accurate vehicle parking inside designated areas, solving GPS positioning related errors.
- **Industrial Facility & Real Estate Management** – OVER's AR-powered digital twins and VPS-driven indoor navigation offer businesses a powerful tool for maintenance, remote monitoring, and physical infrastructure management, enhancing operational efficiency.

Leveraging Proven Infrastructure for a Non-Crypto Business Audience

Each of these value propositions is built upon OVER's existing battle-tested infrastructure, which has already supports 1.2 Mln+ Users, the generation of 145k+ 3D Maps and the publishing of 22,000+ geo-localized AR experiences. In 2025, additional features will further expand the platform's capabilities, increasing its business appeal.

What sets OVER Business apart is its seamless Web2-friendly interface, which abstracts all blockchain interactions in the backend. This approach ensures that non-crypto-savvy enterprises can easily adopt OVER's solutions through a straightforward subscription model, without the need to navigate the complexities of Web3.

Moreover, the diverse range of client categories ensures that OVER can generate revenues from multiple, uncorrelated markets, reducing risk while maximizing long-term sustainability.

2 The OVER Spatial Computing Platform: A Bird's Eye View

OVER has evolved far beyond its initial role as a geo-localized AR content publishing and browsing platform (Metaverse). In 2025, it will further consolidate its capabilities as a **Spatial Computing platform**, with **3D Maps** at the core of its value propositions. The chart below offers a synoptical view of the value creation stack of the OVER platform.

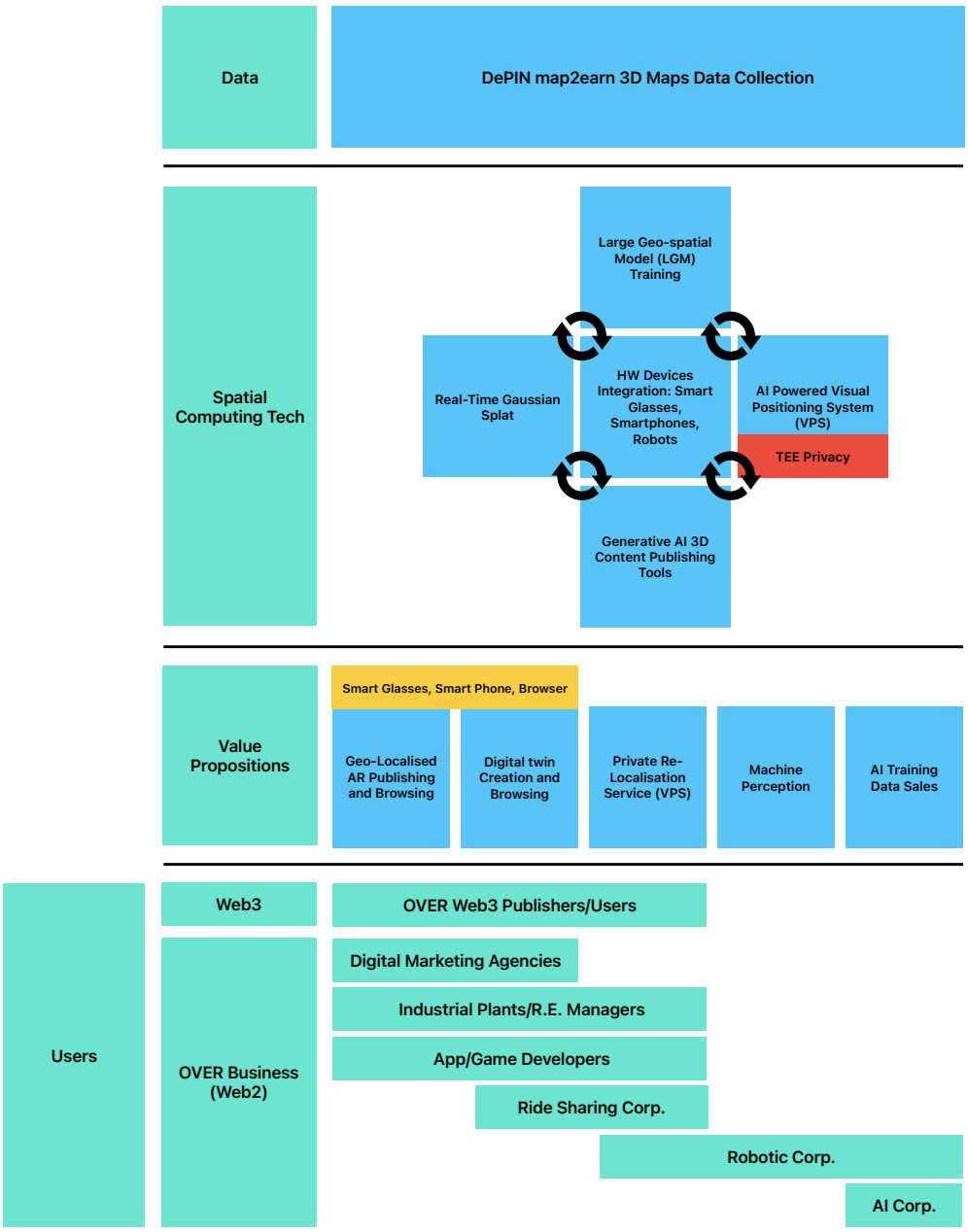

Figure 5: OVER's Value Generation Stack

The following section breaks down the key components of OVER's value creation stack.

2.1 Data: OVRMaps – The "Oil" That Powers OVER's Ecosystem

3D Map data is the foundation of OVER's technology stack, enabling high-value services across multiple industries. While the 3D maps data sale represents an important component of revenue streams, OVER does not relies on the OVRMaps dataset solely for raw data resale. Instead, its strategy is to also build and monetize high-value services that leverage these 3D datasets. Moreover, the infrastructure powering OVRMaps can also process external spatial datasets, both open-source (e.g., Mapillary) and proprietary (e.g., Natix). This capability extends the reach of OVER's solutions beyond its own mapping efforts, unlocking new revenue streams.

2.2 Spatial Computing Tech: Turning Data into High-Value Services

Data sales for Robotics and AI Companies is only part of the equation; OVER also refines and transforms 3D Maps data into high-value services. OVER's technology stack enables this transformation across five interconnected domains:

2.2.1 Large GeoSpatial Model (LGM) Training

Following the success of Large Language Models (LLMs), a new class of AI is emerging: Large GeoSpatial Models (LGMs). LGMs do not focus on language but on understanding the physical world, extracting priors on the structure of the physical world from large-scale 3D datasets. LGMs understand the structure of the 3D world around us just like our brain does. Downstream applications include:

- Visual Relocalization: Pinpointing a device or a robot's precise position and orientation (x,y,z,,,) within a known or even an unknown environment using only camera imagery. This is crucial for navigation when GPS is unavailable or inaccurate, like indoors.
- Depth Estimation (Metric Scaling): Accurately calculating the physical distance to objects from 2D images. This allows a robots and devices to understand the scale and dimensions of its surroundings, turning a flat image into a quantifiable 3D space. This application is also crucial for XR content anchoring.
- 3D Reconstruction: Generating detailed and geometrically accurate 3D models of objects, rooms, or outdoor scenes from one or more images (monocular or binocular views). This creates a digital representation the robot can use for path planning and interaction.
- Semantic 3D Visual Segmentation: Identifying, classifying, and segmenting different objects and structures within a 3D reconstruction. The model doesn't just see a "lump" of points; it understands "this is a chair," "this is a table," and "this is the floor," assigning meaning to the geometry.

Just like LLMs, LGMs' capabilities heavily depends on the size and quality of the dataset used for training. OVER can leverage its unique dataset of 3D Maps to generate a state-of-the-art LGM. LGMs have tremendous value for OVER as they enable the integration of sparse image datasets in the VPS pipeline, allowing for faster mapping and integration of open-source spatial datasets like Mapillary or proprietary ones like Natix. This expands OVER's VPS services beyond its own dataset of mapped locations.

Spatial segmentation and metric scaling fuels additional value propositions such as machine perception, enabling robots to understand where they are and how to interact with the space around them. Finally, LGMs allow the generation of 3D Maps from sparse datasets, enabling AI to fill gaps in data based on prior knowledge of the 3D space structure—similar to how our brain infers the back of an object from only seeing its front.

2.2.2 Real-Time Gaussian Splatting

Gaussian Splatting is a technology that enables the fast reconstruction and browsing of 3D spaces from dense datasets of pose-calibrated images. It also allows for the creation of a lightweight representation that can be rendered in real-time inside browsers. This technology enables OVER to create explorable digital twins of physical locations and support remote context-aware publishing of geo-localized AR content. LGMs enhance Gaussian splat reconstruction by synthesizing plausible missing data in the 3D space.

2.2.3 AI-Powered Visual Positioning System (VPS)

The VPS allows devices and robots to understand their position in space relative to a 3D Map of a location. It leverages a camera stream and AI algorithms to triangulate the observer's position in 3D space. Accuracy can reach centimeter-level precision depending on the density and quality of the target location's 3D Map. AI algorithms compensate for differences in lighting conditions and changes in the location between the 3D Map capture and the re-localization call.

LGMs play a crucial role in the re-localization process by using 3D space structure priors to determine relative localization from low-density points of view. OVER will also provide a patent-pending privacy-enhanced VPS version powered by Trusted Execution Environments (TEE), ensuring that the observer's camera stream and coordinates remain fully private during re-localization.

2.2.4 Generative AI Content Publishing Tools

One of the main bottlenecks in AR/VR development is 3D asset creation, which is time-consuming and costly. OVER leverages state-of-the-art text-to-mesh algorithms to streamline 3D asset generation from simple textual descriptions and 2D imagery, similar to how stable diffusion models generate images. This technology is fully integrated into the publishing pipeline, which includes:

- A Live Editor inside OVER's App
- A Web Builder
- A Unity SDK with Visual Scripting

2.2.5 Hardware Devices Integration

A true Spatial Computing ecosystem requires seamless hardware integration across different categories, including:

- **Smart Glasses, Smartphones, and Laptops:** Enabling AR content interaction and digital twin visualization.
- **Autonomous Robots:** Utilizing VPS and machine perception for navigation and real-world interaction.

OVER is integrated with major players in their respective hardware categories and is committed to expanding compatibility.

Conclusion

Each of these five pillars reinforces the others, creating a self-reinforcing technology flywheel:

More 3D Maps → Better LGMs → Improved VPS → Enhanced Machine Perception → More adoption → More 3D Maps.

With its expanding dataset, advanced AI models, and enterprise-ready solutions, OVER is positioned to become a leading force in the next era of Physical AI.

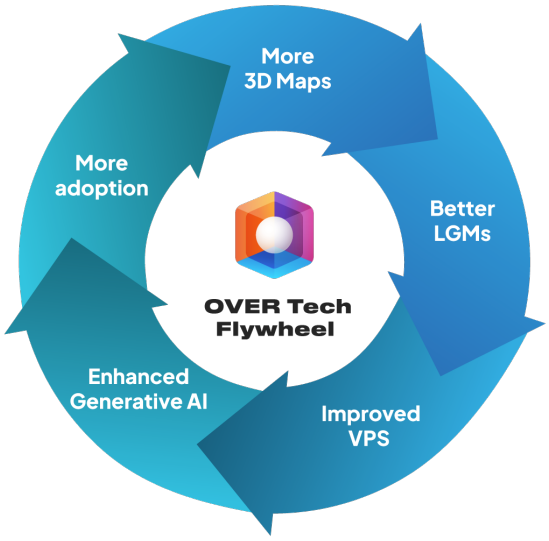

Figure 6: Tech Self-reinforcing Flywheel

2.3 Value Propositions: Transforming 3D Data and Technology into Real-World Applications

The technological capabilities and vast 3D data infrastructure of OVER translate into four main value propositions, each with multiple downstream applications across Web3 and Web2 industries.

2.3.1 Geo-Localized AR Publishing and Browsing

OVER provides an end2end solution for publishing and browsing AR content, ensuring accessibility across multiple platforms.

- **For publishing:** three tools empower users to create and deploy immersive experiences. The in-App Live Editor allows users to publish AR content directly from the OVER App, offering an intuitive and immediate way to create location-based experiences. The Web Builder is a no-code, browser-based tool that eliminates installation requirements, enabling seamless remote AR content publishing. For more advanced use cases, the Unity SDK with Visual Scripting provides game studios and indie developers with the flexibility to build complex AR interactions.
- **For Browsing:** geo-localized AR content and Digital Twins must be frictionless across all devices. Content published on the OVER platform is accessible through multiple endpoints, including the OVER App, desktop and mobile browsers via QR Code or URL activation, Smart Glasses, and VR Headsets. This multi-platform approach ensures that XR content is widely available and easy to engage with, regardless of the user's preferred device.

2.3.2 Digital Twin Creation and Browsing

OVER enables the creation of high-quality 3D Digital Twins of physical locations using only a smartphone, eliminating the need for LiDAR and overcoming hardware limitations. The generated Digital Twins are accessible in real time through any browser, both desktop and mobile, allowing seamless exploration without specialized equipment. Additionally, these 3D Maps can be embedded into third-party websites with a simple code snippet, further extending their usability across industries such as real estate, tourism, and industrial facility management.

2.3.3 Private Re-Localization Service (VPS)

OVER's Private VPS enables devices and robots to precisely re-locate in space using an encrypted image stream from the observer's device. Initially developed to anchor AR assets with 5 cm accuracy,

this feature has expanded its scope to include asset re-localization and machine perception. For example, it can be used to track and reposition ride-sharing scooters with precision, ensuring accurate placement and compliance with designated parking areas. The same re-localization technology is crucial for autonomous systems, allowing robots to determine their exact location in real-world environments. Beyond its accuracy, OVER's VPS is designed with privacy at its core. By leveraging patent pending technology, it guarantees that neither the image stream nor the observer's position is exposed, making the technology applicable in privacy-sensitive scenarios.

2.3.4 Machine Perception

For robots and autonomous systems to effectively interact with their environment, they must not only determine their position but also understand the structure of the space around them. OVER's VPS provides the ability to re-locate with high precision, but additional intelligence is required to interpret objects and their properties within a given space. OVER's LGM extends this capability by enabling spatial 3D object and environment segmentation, distance, and object dimension estimation. This contextual understanding is critical for autonomous navigation, object interaction, and task execution in dynamic real-world settings. By combining VPS-based re-localization with LGM-powered spatial understanding, OVER delivers a fully integrated solution for next-generation robotics, AI-driven navigation, and machine perception applications.

2.4 Users: Expanding Beyond Web3 to Web2 Adoption

Until now, OVER has primarily served Web3 users, who interact with the protocol through the OVR token, publishing AR content on their OVRLands—spatial domains inside the OVER platform. In 2025, OVER will expand its value propositions to Web2 companies, allowing them to interact with the protocol without dealing with blockchain complexities. This strategic expansion opens the door to a broader user base, unlocking new business opportunities across multiple industries.

2.4.1 Web3 – Geo-Localized AR Publishing

OVER's core Web3 value proposition will continue to thrive, enabling community members to publish and share AR content on their OVRLands and Digital Twins of the physical world. As outlined in the 2025 roadmap, this ecosystem will be further enhanced with new groundbreaking features, including the in-App Live Editor, AI Avatars publishing, Project Trinity, AR Markers, and more. These advancements will strengthen OVER's Web3-native publishing tools, ensuring continuous innovation for its growing creator economy.

2.4.2 Web2 – Digital Marketing Agencies

OVER offers digital marketing agencies a battle-tested, no-code platform to create and activate geo-localized AR experiences with minimal effort. Agencies can leverage frictionless QR codes to deploy marker-based AR campaigns, Digital Twins, and interactive spatial experiences, expanding their value propositions for brands and advertisers.

2.4.3 Web2 – Industrial Plants and Real Estate Management

OVER's Digital Twin creation and indoor VPS capabilities provide a powerful solution for industrial plants and real estate management. These technologies enable:

- Augmented industrial plants with precise AR overlays, integrating real-time machine and infrastructure data both locally and remotely.
- Remote maintenance, where local and remote operators can interact with a shared state on the Digital Twin and AR overlay at the physical location.
- Remote visualization for real estate and industrial facilities, enhancing site inspections and collaboration.
- VPS-powered indoor navigation, enabling precise guidance within complex environments.

2.4.4 Web2 – App & Game Developers

OVER provides its geo-localized AR publishing and browsing engine as an SDK for app and game developers. This allows them to seamlessly integrate AR capabilities into their applications, unlocking new interactive and location-based experiences.

2.4.5 Web2 – Ride Sharing VPS

Ride-sharing companies face challenges in verifying correct parking for their e-bikes and scooters, as GPS lacks the sub-meter accuracy required in urban environments. OVER offers a VPS-powered SDK that enables precise asset re-localization, ensuring compliance with designated parking areas and improving operational efficiency and compliance.

2.4.6 Web2 – Robotics Companies

The combination of VPS and Large Geo-Spatial Models (LGM) provided by OVER enables robots to:

- Precisely orient themselves in space with enhanced localization accuracy.
- Understand the composition of their environment using 3D segmentation, allowing them to recognize objects, navigate effectively, precisely estimate distances, object dimensions and interact intelligently with their surroundings.

2.4.7 Web2 – AI Training Companies

AI training companies, Robotic companies and research labs can leverage the massive 3D Maps dataset created by the OVER community to train state of the art Physical AI Models:

- Machine Perception Models (Large Geospatial Models, Vision/Geometric Models) enabling Machines and Robots to understand and interact with the 3D space around them
- World Models (E.g: VEO3 from Deepmind) capable of generating coherent and explorable 3D worlds. These models can be leveraged in robotics to create realistic simulation environments, but also in other areas such as gaming and entertainment
- Vision-Language-Action (VLA) models that bridge the gap between human instruction and robotic action. These models are trained to connect natural language commands with visual input from the robot's camera and translate that understanding into executable motor commands. Instead of needing complex code, a user can simply tell the robot what to do.

By expanding into Web2 industries, OVER bridges the gap between Spatial Computing, AR publishing, and AI-powered automation, reinforcing its DePIN Flywheel and positioning itself as a key player in the next evolution of Physical AI.

3 The OVRLand Ownership Social Contract

When designing the OVER Business Layer, we had to respect a fundamental covenant: the OVRLand ownership "Social Contract" that exists between OVER and its stakeholders. OVRLand represents the publishing rights within the OVER platform, and as such, OVRLand owners must retain full control over the AR content published on their properties. At the same time, requiring OVER Business clients to individually negotiate with OVRLand owners—or rely on the 36-hour automatic renting system—would create excessive friction, harming the usability and revenue potential of the OVER Business proposition. To balance these two conflicting interests, we have introduced an additional publishing layer: the OVER Business AR Layer, which will exist in parallel with the current Web3-controlled AR publishing layer that remains fully under the control of OVRLand owners.

Rules Governing the OVER Business Layer

- The OVER Business Layer will be enabled by default on all existing OVRLand. However, OVRLand owners have the right to opt out, making their land unavailable for OVER Business activities. If an owner opts out, no OVER Business client will be able to publish content on that location, and the OVRLand will not be eligible for revenue sharing.
- Content published on the OVER Business Layer will not be visible on the main Web3-controlled OVER AR publishing layer unless the OVRLand owner explicitly chooses to display it.
- OVRLand owners will receive 35% of all revenues generated through the OVER Business Layer on their OVRLand, ensuring a direct financial benefit from enterprise adoption.

We firmly believe that the OVER Business Layer is a net positive for OVRLand owners, as it unlocks a new revenue opportunity while maintaining their sovereignty over their digital properties. However, since this additional publishing layer was not part of the original OVRLand conceptualization, it is essential that owners who disagree with this expansion have the right to opt out.

4 OVRMaps Ownership and Protocol Value Accrual Thesis

OVRMaps can be divided into two main categories: those owned by users and those owned by OVER, acquired through the map2earn™ program. At the time of writing, thanks to the map2earn DePIN incentivization program, the majority of OVRMaps are owned by OVER. As discussed earlier, the key value driver for the OVER platform is its database of 3D Maps. These maps enhance the utility of OVER's services, directly impacting revenue generation and the overall value accrued to the protocol. However, a critical question arises: Who is the ultimate beneficial owner of the OVRMaps owned by OVER? The OVER Protocol or the OVER Company? Since OVER the Protocol is not a legal entity, it cannot legally "own" OVRMaps. As a result, the legal ownership of the 3D Maps belongs to OVER the Company—the corporate entity developing the protocol. This distinction creates a potential conflict of interest between OVER the Company and OVER the Protocol. Given the strategic value of the 3D Maps database, a scenario could emerge where a third party seeks to acquire it, benefiting OVER the Company while potentially harming the OVER Protocol by reducing the number of 3D Maps available for protocol-driven services.

Mitigating the Conflict: Ensuring Protocol Value Accrual

To address this potential misalignment, OVER the Company will implement a shareholder agreement that safeguards the interests of the Protocol in the event of an OVRMaps sale. The agreement has to ensure that if OVER the Company sells the OVRMaps database to a third party:

- OVER the Protocol will retain access to the affected 3D Maps for enough time to ensure continuity for the protocol's services.
- OVER the Company has to distribute to OVER the Protocol, an amount of OVR sufficient to cover the incentives expenses to recreate the alienated database. This ensures that the protocol has sufficient resources to rebuild a new 3D dataset through fresh incentivization.

This structured approach ensures that while OVER, the Company, has legal ownership of the 3D Maps, the Protocol's long-term sustainability and value accrual remain protected, maintaining the integrity of the OVER ecosystem.