

White Paper

Scramble TV: A Decentralized DeOOH Ecosystem

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Introduction

From restaurants and cafes to stores and shops, small business owners need help growing their communities. Larger businesses too could stand to improve communications.

At Vanten, **Better Human Communication** has been our mission since our establishment in 1998. Now, we're ready to take it to the next level. We plan to use Web3 technology to create the world's first Decentralized Out-of-Home (DeOOH) media.

Screens play in shops, and digital billboards play on buildings. This is digital signage (DS), or Digital Out-of-Home (DOOH) media when its content includes paid advertising, and it's becoming ubiquitous.

Technology has transformed the way we communicate, and the pace is accelerating. No one knows where that leads us, though. We believe digital signage will play an essential role in bridging the virtual and physical worlds as we move into the Web3 era.

In the best case, digital signage will bring more harmony to our lives as we struggle with the gap between two disparate worlds. Furthermore, this role is also a critical step to realizing the place where augmented, virtual, and extended realities, along with the many metaverse worlds will merge seamlessly with our real-world meatspace.

Best of all, we have a fun way for you to participate. In August 2021, we stealth released a Limited Edition of our NFT viewers called *ScrambleTV* as NFT bundles loaded with special perks and a lifetime subscription to ScrambleTV SaaS service. Attach your ScrambleTV player to any screen and display your NFTs, creating your very own private gallery, and your customizable viewport into the *metaverse*. At any time, owners of these NFTs can participate in the world's first DeOOH media, helping to shape the future of decentralized communication.

We're always looking to plant the seeds of our vision. Each person participating brings us closer to a decentralized world where communication works for people and makes lives better.

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1. The quick and dirty

Not an investment or securities offering

The purpose of this white paper is to outline our unique industry perspective and offer participation in a project through a one-time purchase of an NFT token that is itself a limited edition art piece and as well a coupon representing a bundled service package. It's not an investment or securities offering.

A note about POV

Much of this white paper relates to personal industry experience, primarily in Japan. Since the beginning, I've engaged with industry players from around the world. Japan's market dynamics often differ from others. However, certain tenets apply globally regardless of which market is ahead in AdTech, Programmatic DOOH, or any variety of new technologies or methods.

Still, no market has successfully embodied the aspirations of DOOH, let alone DeOOH.

2. Blockchain rewrites rules

Blockchain's effects on finance (DeFi) are nothing short of disruptive, and we're now witnessing its power on the art world through collectible NFTs, and in many other sectors as Web3 develop spreads. Expect it to continue, bringing blockchain advantages—decentralization, efficiency, accountability, immutability, security, and transparency—into all over-regulated and centralized areas of life. These areas have been controlled by a few powerful players and trapped in archaic value and supply-chain paradigms.

Decentralized computing returns control of transactions, data, privacy, and identity to people, improving life quality and freeing up time and energy. In particular, Web3 offers the promise of direct ownership of content and assets, and the many benefits that accompany that.

3. Media, ripe for disruption

Influential players and governments have historically controlled media, which changed substantially with the internet. Now, anybody can make a website, broadcast on YouTube, do podcasts, and enjoy social media choices from Twitter to TikTok. The landscape continues to evolve at such staggering speeds that it's hard to imagine what the future holds.

However, with the rise of a big tech, and the continued erosion of privacy, there's plenty of room for decentralization to improve the future. Brave, for example, is tackling the web and shaking the world up with its Brave browser and BAT tokens¹. We've made some progress, but there's still so much more to do.

The breadth of the term "media" is indicative of the problem. Between TV, cable TV, and current streaming networks, along with all the new and traditional media, there is so much to ground to cover - more than any one company or organization can tackle.

Our focus is on Out Of Home (OOH) media, specifically the digital variety (DOOH). I use the terms DOOH and digital signage almost interchangeably. I believe Web3 is the next step in the evolution of digital signage, which soon will differ drastically from the digital signage we know today. This new approach is Decentralized OOH (DeOOH), and it's the subject of this conversation.

¹ Brave's Basic Attention Token web site: <https://basicattentiontoken.org>

However, there is no clear-cut path to the future where our digital and real worlds seamlessly merge. AR and VR technologies continue to evolve, poised to permeate our lives, but we may be missing a fundamental step. I believe that digital signage can play an essential role in enabling the broader adoption of augmented and virtual realities.

4. The metaverse IRL

From Minecraft to Fortnite, millions immerse themselves in Web2 games and experiences, and more recently, Web3 Dapps such as Decentraland and Cryptovoxels are enticing attention spans. But is this enough to reach critical mass where our real and virtual worlds seamlessly merge? I would argue that there is a missing layer of digital infrastructure that won't just grow itself, it needs to be intentionally created. DeOOH would be an important step in filling that gap.

Ask yourself why we still visit restaurants, stores, offices, and factories similar to ones available 50 years ago.

Next time you eat at a restaurant, notice the lack of technology: paper menus, posters, and blackboards for daily specials. If you were to take a photo with a retro-filter, and as long as you don't capture people holding their devices, it might be possible to say that the picture is fifty years old or more.

Depending on where you live, nine out of ten brick-n-mortar cafés, restaurants, bars, and shops use no screens. Where there are screens, they're likely to serve only one purpose.

For Example:

- menu boards in QSRs (quick service restaurants)
- interior design (video loops of runway models in apparel stores)
- way-finding signage in shopping malls (an interactive map and list of tenant shops)
- sales promotion (dedicated screens for specific products near retail points of sale)

It's a little like using a smartphone for Facebook alone—and only having one friend. This communication is highly inefficient.

Worse, most digital signage is stand-alone, not connected to the internet. Somebody physically switches out a DVD, BluRay, USB media, or SD card to change content.

More waste.

Digital signage was supposed to extend the internet into real locations. It was supposed to provide up-to-date information and enable small businesses to advertise in their communities—all while allowing anyone to deliver the right content to the right screen at the right time.

For nearly twenty years, I've been working to make this a reality.

We should be working to achieve:

- Even distribution of network-connected digital signs for communicating throughout communities.
- Better messaging time on fairly distributed media for all stakeholders.
- Fairly distributed advertising time between national, regional, and community advertisers.
- Flexible and scalable platforms that encourage new usage paradigms.
- Playtime reserved for art and fairly distributed among big names and local artists.

We'll look at this in detail later, but for now, allow me to tell you how I imagined a future that led to my life's mission.

5. Two Visions: Cacophony and Endless Story

By spring 2003, I had already spent eight years developing internet service infrastructure, starting at one of Japan's first ISPs then five years at Vanten. This time includes an 18-month hiatus between 2000 and 2001 as CTO of Neoteny, a Japanese startup incubator founded by Joi Ito².

It didn't take long to realize that developing an internet service infrastructure with a real-world component (modems, STB, signage) differed from straight web services. Also, established companies dominated this space, not startups.

Service infrastructure focuses on CAPEX, OPEX, and ROI from the start, leading to more conservative approaches than traditional players. Progress is incremental, and ambitious startups struggle to acquire financing to scale.

We were busy creating seamless service platform solutions providing better UX for both the companies offering services and the customers using them. However, we didn't know how to leverage this skill set to create a service we could own, instead of always being the hired guns.

One of our customers, the first MVNO in Japan, had asked us to find a business use for mobile data (this was way too early to equip sales people with devices in the field), so I looked at emerging technology putting Ads on screens.

Then, coincidentally, I saw the movie *Minority Report*.

So it was that *Minority Report* and digital signage came into my world around the same time. The movie launched the digital signage industry in many ways, which still didn't even have a name at that time. The use of signage in the film inspired the industry with a concept of speaking directly to people via signage — a marketing holy grail.

The privacy implications concerned some, but web tracking technology was already exploding. These days, web, mobile, and security networks track us more than ever, and very little of it has anything to do with digital signage networks.

Public screens don't offer one-on-one communication, but now mobile has made that a moot point, with our devices tracking our every move. However, while many concentrated on individual consumer interaction, I found a different challenge: How do we build an infrastructure to engage with digital signage?

I imagined two futures: *Cacophony* and *Endless Story*³, and in both, screens are ubiquitous, but that's the only similarity.

Cacophony

A swarm of disparate messages blasts from all directions, each vying for attention. A mishmash of systems runs a jumble of screens with no coordination. This scenario is exhausting and unpleasant, and most of all, inefficient.

Endless Story

This direction leverages human wiring. Screens are still everywhere, but the content and placement are strategic and coordinated to attract and engage. Content shifts as people move, drawing people in with the power of story. Storytelling unites with game theory. The sledgehammer of traditional advertising moves aside, and a friendly, inviting face takes its place.

² Neoteny launches: <https://joi.ito.com/weblog/2000/03/01/neoteny-the-vcs.html>

Coincidentally, one of our entrepreneurs in residence went on to invent hashing timestamps and found one of the first blockchain companies to go public.

³ Wireless Japan 2009 conference presentation (July 27, 2009)

Cacophony vs Endless Story vision of future at 6:02 in video. (Japanese)
<https://youtu.be/HVuaCAjh8gY>

The choice was simple. Making it happen wasn't.

No one offered a platform allowing for endless stories. Soon I had a design for a cloud-based service allowing customers to add or change content easily from their phones. It used rule-based scheduling for placing the right content in the right places. Also, it included a point-based ecosystem rewarding viewers for engagement and rewarding locations for publishing content — and in turn, publishing content within the local community.

By 2005, a Shibuya (Tokyo) sports bar was using our platform—a single-source, multi-tenant SaaS. All the technology was new. Scheduling was rule-based, well before the neural network boom. Content could be changed using imode—a feature to access the internet long before smartphones when Japan ruled the mobile world. QR codes encouraged customers to interact and take the conversation to their phones. Also, our platform could integrate with sensors and data long before anyone was talking about IoT or smart cities. With blockchain and tokens not yet on the horizon, the point system was problematic, so we set it aside for later.

The sports bar offered us a glimpse at the possibilities of digital signage, but made clear the difficulties of supporting and educating smaller customers, so we spent most of the next ten years delivering digital signage to large companies.

We never stopped believing in or investing in the dream of Endless Story signage though, and it's now within our reach. However, it exists side by side with Cacophony.

6. Endless Story: Bob and Alice

Bob's Place is a small restaurant. Bob is known for his cooking and welcoming demeanor by both newcomers and regulars. He's not a marketer, graphic designer, or social media whizz, but he has a couple of screens that are part of his media.

Alice freelances as a graphic designer specializing in web marketing. She lives near Bob's restaurant and joined Adopt-A-Shop—a community-based service connecting local shops with marketing professionals who support local businesses as a side gig. The currency is community-based crypto-tokens.

Bob posts on Instagram reasonably consistently. His screens automatically display his ten most recent Instagram posts formatted for the signage and mixed with other content. Compared to when he had a tattered "Follow Me On Instagram" note taped to the register, his customers are more likely to follow and experience his store on his Instagram.

Bob also receives a trickle of tokens from advertisers when he runs local, regional, or national ads. The town offers him tokens for displaying community content, including news, announcements, and local school art.

He also earns other tokens for unrelated content. For example, he subscribes to art channels that match his taste and his restaurant—retro-punk art. These subscriptions are free and offer NFT collectibles to purchase on the spot, from which Bob receives a sales commission. He serves dishes made from locally sourced ingredients, which the screens also introduce.

His customers enjoy a new interactive game that rotates onto the screens for a couple of minutes a few times an hour. This DeOOH based social game encourages customers to play. Customers perk up, grabbing their phones every time it comes around. Everyone laughs, and customers interact with each other, then go back to what they were doing. Gaming is taking on a new and real social life.

Alice designs Bob's menus and event announcements for tokens and a free meal once or twice a week. They have become friends, so Alice feels invested in Bob's success. When she visits the restaurant, they discuss new ways to improve content or fun new event ideas.

She's become a star at Bob's, and she's developing her portfolio. Her NFT work regularly shows on Bob's screens. It's one of her best sales locations, and her fans often meet at Bob's, who also feels invested in Alice's art career. He even owns a few of her collectible NFTs.

Alice has recently been helping with Bob's web and social media, too, tying everything in with the restaurant screens—the window into an online world. The regulars all follow the content changes.

Most important, it's the gateway for new customers to enter the community built around *Bob's Place*. It's push media but non-obtrusive. Watch it or ignore it.

How do you become a member of this community? Watch the screens.

7. The market and hurdles to progress

Digital signage markets have enjoyed continued growth over the last 20-years and are now multibillion-dollar industries. I tend to use the expression "digital signage" for both DS and DOOH. The digital signage industry brought in US\$ 21.49B and advertising DOOH US\$ 41.06B in 2020⁴. All indicators point to further growth, too.

Web and mobile advertising have eclipsed digital signage growth, and DeFi Web3 Dapps are moving more money despite arriving later and only now edging into the mainstream.

Digital signage is everywhere, but it's underutilized. Most digital signs use external media such as DVD, BluRay, USB memory sticks, or SD cards—the digital versions of a VHS player. The resolution is excellent, but it's an old way of using new tools.

With digital signage, the possibilities are limitless: dynamic and updatable content, analytics, and efficient workflow. And that's just the beginning. One would expect these signs to be networked by the locations using them, but often an employee runs from screen to screen updating them.

Examining the software yields equally grim results. Originally, display makers intended to run loops of digital content on a few players. As the number of players increased with scheduling, effects, and transitions, the architecture remained the same. Today, a central server can control networks of screens, and it's impossible to delegate partial control to people within the network, let alone outside of it.

Heavily centralized control means arcane manual processes.

- *CAPEX requirements make it difficult for startups to enter markets and succeed.* As mentioned earlier, this is a significant barrier. A solid business plan has provided for all possible contingencies: Ad prices, the number of ad slots, content, number of viewers. This model allows for little flexibility.
- *Established OOH companies took a conservative approach to DOOH, focusing heavily on analog until quite recently.* Companies have tried to move the OOH formula directly to DOOH, using digital content exactly as they used paper. Even when these companies use video, they use it the same way they have used paper instead of rethinking the media ecosystem.

⁴ Grandview Research: Digital signage global market was USD 21.49 billion in 2020, expected to grow at a compound annual growth rate (CAGR) of 7.5% from 2021 to 2028. <https://www.grandviewresearch.com/industry-analysis/digital-signage-market>

Research & Markets: DOOH global market was US\$ 41.06 Billion in 2020. Expected to reach a value of US\$ 50.42 Billion by 2026 (CAGR of 3.58% during 2021-2026). <https://www.prnewswire.com/news-releases/global-digital-oooh-advertising-market-2021-to-2026---industry-trends-share-size-growth-opportunity-and-forecasts-301268981.html>

- *Heavily regulated and controlled by a few big companies.* Governments regularly exercise control over media, and in deregulated markets, large companies influence media usage. Media works best at scale, and CAPEX locks out new ideas when regulation doesn't.
- *Barriers to innovation create de facto standards.* Combine CAPEX, conservative companies, and inertia to keep sales channels, catalogs, and pricing models the same, and it's no surprise that digital media apes analog. It's so prevalent that now it's even harder to change.
- *Inefficient deployment and operations drive up costs and pricing.* Big, conservative companies tend to overthink, over-engineer, and overstaff media deployments. If CAPEX and OPEX projections are high, ad prices are high, and they need more to break even. This model reduces the opportunity for community content along with other engaging possibilities.
- *A niche market for suppliers.* For OOH media, deploying at thousands of locations is sizable, but making thousands of units isn't attractive to hardware and software developers. The DOOH sector has been an afterthought for everything from professional displays to player hardware, forcing prices to remain high and limiting options. Innovation is often from graphics for gaming and cheap but powerful android devices for smartphones.
- *Poor metrics and analytics.* Unlike web and mobile, OOH has typically audited locations by counting people and cars to determine an average number of potential viewers. Web and mobile can track with precision worldwide where DOOH doesn't offer the same data.
- *Boring media.* Most OOH content is pure advertising, meaning to increase ROI, the owners must increase ad frequency. Engaging content is often left out and considered an expense.
- *Content death spiral.* High CAPEX and OPEX projections equal higher ad pricing. Add poor metrics to the mix, and media is hard to sell. It's a vicious cycle that leads to belt-tightening. Engaging content is the first to go because it's considered an expense. Less content means fewer viewers, and the process continues downward.
- *Convolutd AdTech value chain.* The smoke and mirrors of the ad industry drive customers to exercise caution. Even if they have great ideas, the opportunities to work with the right people to bring an innovative idea to life are slim to none.
- *Screens do NOT = signage.* End of Story. People put too much emphasis on screen hardware and not the software and its possibilities. Most people have higher priorities than better ways to fill their screens with content.

Many companies and agencies are still doing great work, and for each of these points, there are dozens of notable examples of innovation. However, my concern is that it's hard to change with the times, trends, and technology at the infrastructure level.

8. Our solution

Our team has been developing internet service infrastructure for over 25 years, and our expertise extends platforms beyond just being Web2 or Web3 applications. We've been in the trenches simplifying technology so your grandmother can use it—literally⁵.

⁵ Decentralized town media in Yamagata Prefecture village with population under 300. Vanten setup this media with partner domani in 2016 and it is still running. https://www.youtube.com/watch?v=4bZP0bFsG2k&cc_load_policy=1 (Japanese with English subtitles available)

We consider each moving piece and how to fit them all together in ways that shift communication via screens and global paradigms. Our goal is to inspire people to engage, enjoy, and benefit from the experience—regardless of whether or not they're into crypto.

It's complicated, but we make it simple.

When customers come to us looking for digital signage, they often zoom in on the number of signs to purchase without considering the software. We try to steer them toward considering the software without overcomplicating decentralized content distribution management, rule-based scheduling, and communications infrastructure.

We know customers are looking for “cheap and easy to use,” solutions, so we try not to overwhelm them. We show them the simplest solution first and unveil more only as needed. The great thing is that all of the extra power and capabilities are still there whenever the customer is ready for them. We don't want to sacrifice our long-term vision and the possibilities for our customers, and we've found that revealing the complexities of our offerings too soon leads to confusion and overload.

Therefore, we take a position of listening to customer needs to tailor solutions specific to their businesses. This approach has enabled us to win contracts with blue-chip companies and provide solutions efficiently and effectively.

After deploying a project, our customers' paradigms shift, and we maintain close contact to monitor what new features they may need. Early in the customer relationship, we often hold workshops, helping us understand their business and giving our customers some insight into our world.

As we work together, our customers see more possibilities and come to us for more features. A process we have been refining and nurturing. We are currently moving much of our onboarding and education to online modules.

Now is the time.

It's the perfect time to add Web3 capability to our product as an NFT Viewer as we integrate blockchain into our platform.

9. The Limited Edition NFT Bundle

Own the future with the NFT Viewer and a lifetime service subscription that includes ongoing perks and benefits. It puts you in an exclusive community to witness the dawn of DeOOH, and if you're not impressed, sell your NFT.

The package core is a professional digital signage player with a perpetual SaaS service license that includes Vanten's new NFT viewer module and its related features and content channels.

The perpetual service includes a hardware warranty, covering hardware replacement for as long as service continues. NFT ownership designates membership in an exclusive community charting the course of DeOOH through a DAO.

NFTs are transferable, but not intended as a speculative investment. The primary value of this package is the community membership, player, and service license.

If you participate in this project, you will receive an NFT token enabling the following:

- One Scramble TV NFT viewer to attach to any display for creating your own personal NFT gallery.

- a lifetime subscription and lifetime hardware warranty for the Scramble TV NFT viewer and SaaS service.
- Charter member status in the Scramble TV community and all associated perks.
- Inclusion on the Scramble TV Wall of Fame as a charter member of our community.
- Your viewer is automatically eligible to opt-in as a node in the first-ever worldwide Crypto DeOOH media.

The NFT viewer will arrive within two to four weeks and will be ready to use. Connect it to a TV, monitor, projector, or large format screen and instantly create your NFT Gallery.

Once we have shipped all players, we will launch the Crypto DeOOH media. There will be a discord discussion channel for feedback as we plot the course. Eventually, we hope to move this to a DAO run by community members.

We will only mint a maximum of 2,000 charter member NFT bundles. All NFT bundle owners will receive extra benefits for early purchasing plus additional stretch goal benefits as we reach specified milestones.

For complete offer details see <https://www.scramble.media/scrambletv/>

10. Future Roadmap

This project represents cutting-edge blockchain technology, rapidly developing a roadmap for new offerings and a better platform.

With this roadmap, we will launch two proof-of-concept DeOOH offerings, one very crypto and one less so.

All Limited Edition Scramble TV NFT Viewer bundle token holders can opt-in as a node in the world's first DeOOH media. We will poll token owners and discuss ideas on the community discord channel after the initial token sales to determine the best ways to move forward. We will have content available for this option as we deliver players and expand the content offerings with input from the community.

The second media will be a community DeOOH proof-of-concept similar to the Bob and Alice scenario above—scheduled to deploy over the next one to two years.

Some project goals as they apply to specific stakeholders:

For small businesses:

- Use digital media on location effectively with no tech experience.
- Find content creators who can help with quick, simple, and cheap content.
- Advertise locally in the community.
- Benefit from advertisements on location while maintaining control over displayed content.
- Build a community of fans to stabilize businesses even when external factors come in to play.

For creators:

- Use your craft to support your community and receive payment.
- Build a business around content, art, or both in or beyond your community.

For advertisers:

Access viewers and engage them in their community.
Support the community through advertising.

Finally, we will explore how to scale the project globally and to make it truly decentralized and sustainable. Charter token holders will be able to participate in that discussion.

Summary

Imagine small businesses applying DeOOH to their business and affecting their communities, exchanging services, content, and ads for tokens to build a loyal fan base. This world would reduce reliance on big tech and centralized ad schemes.

In 2003, I thought we were about five years away from large format e-ink displays, that would be cheap, power efficient and soon ubiquitous. We rushed to develop the first truly rule-based SaaS digital signage platform to stay ahead of the curve.

Today, we're amazed to see most of our competitors still selling dumb signage with archaic centralized content management. The industry has grown and continues to grow, and decentralized finance and smart cities wait on the horizon. Soon all these new developments will converge, and a need for more sophisticated communications will take on new urgency. We need to move past displaying a simple loop of ads to providing a window to Web3 that benefits all the stakeholders of the community - locals, creators, business owners, collectors.

For nearly a decade, I've been telling my customers that a decentralized digital signage network will change everything, ridding the world of centralized bottlenecks, lowering overhead by pushing content management to stakeholders, and enabling innovative new business models.

We're brimming with excitement as we usher in a crazy new world where small businesses apply DeOOH in their communities, exchanging content and ads for tokens to build fan bases. This model reduces the reliance on big tech and centralized ad schemes that suck away profits.

DeOOH hands the control panel over to individuals, providing opportunities for direct compensation where they bring value. It empowers and allows people to build their communities.

At Vanten, we've played our part in enabling progress and a better future. Now we look toward an even more ambitious goal as we bring Web3 to communities of like-minded people eager to work together to benefit society.