Abstract

The Aura Network is the infrastructure for games of the future, powered by a peer-2-peer (P2P) block-chain protocol to scale highly interactive games, virtual worlds, and DApps.

This paper (1) makes the case for games and virtual world growth (2) details the history of virtual worlds (3) presents the problems posed by centralization for the games industry (4) the current state of blockchain games industry (5) and finally presents Aura’s technology and business solution to take advantage of the market opportunities at hand.

“Virtual worlds are computer-based simulated environments or entire worlds that are populated by users who can create a personal avatar who represents them. With this virtual identity, the user can explore the virtual world, participate in its activities, build relationships, and conduct commerce with the other users of the virtual world. In many ways most of us all already do this with our smartphones, this is only a natural evolution in the way we experience the virtualization of human life.”

Gabriel Schillinger, Sam Snyder, Zhi Huang
Founders of Aura
Virtual Worlds are Coming

For many, virtual worlds already are commonplace. Whether it be a gaming or a social environment, humans are now comfortable communicating and conducting commerce virtually.

People spend a good deal of their lives in virtual environments already, for example; Facebook, Instagram, Wechat, Telegram, Spotify, and YouTube, just to name a few. As the internet and hyperconnectivity continue to spread across the globe, humans will increasingly become more connected, and will connect to each other in every way possible.

With this connectivity, people will continue to do all the things that they do in the physical world in Aura’s virtual worlds. It is only natural that people want to connect and create together. Technologies like Aura make this possible on a global scale. In the not so distant future, spending money, creating goods, playing, and living in a virtual world will be commonplace.
History of Virtual Worlds

THE FIRST AGE (1978-1997)
RESEARCH & DEVELOPMENT
The first virtual worlds appeared in the late 1970s. The first one to prosper was called MUD. MUD was programmed on a mainframe computer and was a simple text-based virtual world.

MAKING MONEY
The second age of virtual worlds came about when the possibility of making money arose. Virtual worlds went from research to the real world. MUD1, Federation II, and Gods, all massive virtual worlds for their time, went on to achieve commercial success in the 80s.

Fast forward to the 90s and 2000s; Ultima Online set the standard for the success of a true virtual game world: 100,000 subscribers, paying $9.95 per month the first year it launched.

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EverQuest followed on with immersive game play and massive success of its own with almost 500,000 subscribers. The 90s and early 2000s paved the way for entrance of Second Life (“SL”) in 2013. SL was one of the most famous virtual worlds of all time with over 1,000,000 active users and billions of USD in transaction volume in the SL economy. It captured the imagination of Silicon Valley and beyond.

After SL, Minecraft and Roblox became the most successful virtual game worlds in history with hundreds of millions of users, combined. Minecraft was acquired by Microsoft for $2.5 billion and Roblox raised hundreds of millions of dollars. Both continue to exist, with profitable worlds and economies.

THE THIRD AGE (TODAY)
DECENTRALIZATION: AURA AND BEYOND

Every virtual world mentioned in the prior section was centralized. Meaning the worlds aren’t “free” from central control. That’s because decentralization was not possible before the advent of blockchain technologies.

Blockchains change the fundamentals of game worlds and virtual worlds. They allow for lasting ownership, trust, and fraud prevention in ways that simply aren’t possible on existing, centralized platforms.

Yet, there’s still a huge problem. Today’s blockchain protocols are too slow for game play.
Market Problem

CLASSIC BLOCKCHAINS DON’T SCALE
Classic blockchains aren’t fast enough for gameplay. Bitcoin processes four transactions per second (TPS), Ethereum does fifteen TPS, and EOS can process a thousand TPS. Running a game on these chains will produce gameplay lags and astronomical costs. Lags are a death spell for games. They hinder user growth and drive developers away from experimenting and building on technologies.

There is no blockchain in existence than can power even one of today’s popular multiplayer games. League of Legends, one of the most popular multiplayer online games in the world, runs between seven hundred thousand and a million TPS on central servers—a speed current Blockchain solutions can’t even come close to delivering.

CURRENT BLOCKCHAIN GAMES LACK ENGAGING GAMEPLAY
There has yet to be a truly engaging blockchain game. CryptoKitties has been the most successful blockchain game. There are two hundred daily active users and it captured the imagination of the press. In comparison to popular games, CryptoKitties is not very successful. It is hard to use and most players need a deep understanding of crypto to participate. This is the current trend for blockchain games.

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Blockchains games lack the most basic game mechanic: fun. They emphasize the collectible potential of in-game items, while neglecting gameplay mechanics. This turns away true game enthusiasts.

**THE GAMES INDUSTRY IS CENTRALIZED**

The game industry is massively centralized. It is controlled by big companies, leaving only a few outlets for developers to create engaging and financially rewarding games. Most never see their creations flourish because of the high costs to create, distribute, and maintain games. Centralization crushes developer creativity and keeps the keys of the industry in the hands of a few major developers, publishers, and platforms.

For players, at any point in time, the mechanics of a game can change, resulting in game assets becoming worthless, and, in the worst case scenario, games and their communities are phased out. Resulting in the death of the game and loss of all value created.
The Solution

Aura’s innovations solve the market problems by applying the concepts of decentralization and blockchain technology to the games industry.

For Developers

**USER SCALABILITY**
High transaction throughput and horizontal sharding to support hundreds of thousands of simultaneous players.

**EASY TO USE DEVELOPER TOOLS**
Aura catalyzes game developers by providing easy to use games-logic tools, which speed up development time and lower the costs of game deployment.

These include a built-in and fully scalable P2P networking scheme that dynamically adapts to gameplay demands, scaling game worlds and virtual worlds in real time.

For Players

**TRUSTED GAMEPLAY**
No cheating. Verifiably fair game play for all.

**PERSISTENT GAME WORLDS**
Games built and deployed on a decentralized network are, by their very nature, unstoppable. They cannot be sunset or censored and will exist indefinitely, as long as there are players playing them.

**TRUE DIGITAL OWNERSHIP**
Aura enables players to truly own their game assets. Virtual assets created and purchased are secured on the blockchain. They will be able to trade, sell and buy securely. Players no longer need to take a risk on centralized platforms, where so many users have lost money and have spent thousands of dollars building up a profile that they don’t even own and have no control over. Players control their own data, all verifiable on the blockchain.

These innovations will unleash developer creativity and give players the keys to their gameplay. Setting the stage for a healthy, sophisticated, and passionate decentralized games industry.
Aura’s Core Components

The Aura platform is made up of four key components:

**PEER-TO-PEER (P2P) NETWORK**
Aura maximizes scalability by pushing compute and storage off-chain to the client-side network while preserving integrity and trust. Computational integrity is maintained by requiring client-side processes to verify each other’s work. The Aura P2P verification protocol minimizes the chance of collusion, quickly identify bad actors, and eliminating them from the network. While some coordination work still needs to be done on-chain by the “World Ledger,” these actions are many orders of magnitude less than the computations needed to be performed by the client network.

**GAME WORLD LEDGERS**
Aura’s Game World Ledgers are blockchains built on a Byzantine Fault Tolerant (BFT) consensus engine. Unlike many blockchains intended as general purpose Virtual Machines, these ledgers are “Special Purpose” applications designed to coordinate the distributed client network. Game World Ledgers are sharded based on geographical locations, along the boundaries of the virtual worlds, distributed within zones, and broken down to areas, or even to buildings. This fractal sharding strategy can be carried out repeatedly based on in-world activity.

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GOVERNANCE
Aura’s core DPOS Blockchain is the administrative center of the platform that tracks the activities of block producers of the main net, world ledgers, and content publisher accounts, and is ultimately the governance of the platform.

THE AURA GAME ENGINE
The Aura Game Engine can be used to create both three-dimensional and two-dimensional games as well as simulations and AR/VR experiences for desktops, laptops, home consoles, smart TVs, and mobile devices. Aura’s engine will allow for both single and massive multiplayer experiences that scale to unlimited numbers of simultaneous users.
Aura’s Capabilities

Aura’s protocol is capable of speeds greater than 1,000,000 TPS. This is possible due to the combined effects of P2P scaling and blockchain sharding. Each shard on Aura is composed of a P2P network and Game World Ledger. User clients in the P2P network bundle player transactions of 100 or more, committing one entry to the Game World Ledger, reducing load on the ledger. Game World Ledgers are capable of committing more than one thousand transactions per second. Therefore, each of Aura’s blockchain shards can handle one hundred thousand player transactions per second. There is no limit to the amount of shards that can be deployed. With only ten shards powering an individual game and virtual worlds, multiplying P2P bundling, ledger commits per second, and small number of shards provides for an excess of 1,000,000 TPS.

With these speeds, gameplay, data hosting, and player actions can all be run on Aura’s decentralized platform. Aura’s protocol and infrastructure enables the following capabilities:

**DISTRIBUTED HOSTING & CONTENT DISTRIBUTION**
Game worlds are hosted and governed by the community.

**SAFEGUARDING DIGITAL ASSET OWNERSHIP**
Records of ownership are kept on a decentralized ledger powered by the community.

**OPEN MODEL FOR CONTENT CREATORS**
The key distinction between a game and a virtual world is one’s ability to affect the virtual environment. Aura combines the open data model of the blockchain and the open source software paradigm to let every player to be a content creator. From a small object to an entire city, it’s only a matter of imagination and commitment.

**FLEXIBLE LOCAL GOVERNANCE MODELS**
Despite the promises of decentralization, most blockchains impose a single global governance model where the majority dictates rules for all. Aura allows a degree of local governance through the use of syndicated and private ledgers.
Building On Aura

Developers can utilize Aura’s SDK or build games using their favorite engines to create rich, massive virtual worlds. Aura’s developer tools provide quick and seamless ways to build, deploy, debug, and monitor worlds. This can all be done at unlimited scale without worry, freeing up the developer’s timeline to launch by easily designing and operating what would otherwise be complex and custom server/network configurations.

Developers can increase their chances of creating a successful world and game economy by following the below suggested requirements:

**TRUST**

Users need to trust virtual worlds to spend time, money, and, energy in these worlds. In the same way that a poor legal structure prevents countries from developing and thriving, virtual worlds that do not instill trust through the stability of established rules, physics, and economics will discourage adoption. A framework for establishing governance and in-world rules and systems serves as the basic building blocks for spawning a virtual world.

**OWNERSHIP**

The immutable ownership of assets and value ensures trust. Blockchain technology is ideally positioned to provide a distributed ledger, giving users assurances that the value, assets, and environments they create are as irrevocable as in the real world.

**SELF-SUFFICIENCY**

Virtual worlds must be self-sufficient to create sustainability for their existence and for the assets that exist within them. If, as is the case with past and present centralized virtual worlds, a developer decides to sunset a server, the IP address is blocked by a government or ISP, or the development studio falls into insolvency, the world can be destroyed or inaccessible without recourse.

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To avoid this from happening, the users of the world must provide resources to maintain and operate the world. This can be in the form of economic and/or physical support. For Example - the user community could vote and agree to pay some form of a tax, or transaction fee to cover the costs to maintain, host, and or secure their world. Or, users of the world could be elected to fulfill infrastructure and civic roles themselves, possibly for economic compensation.

**SCALABILITY**
A key benefit of a self-sufficient hosting model for virtual worlds is that infrastructure grows hand-in-hand with usage. To scale to a massive global virtual world, self-sufficient hosting and operation is crucially important.

**FREEDOM**
Distributing the infrastructure of a virtual world enables its virtual citizens to be truly free. It prevents the world from being shut down or blocked from access--a key precondition for the free actions of users in the virtual world.
Two Pronged Marketing Campaign

First Prong: Developer Marketing

Game developers are easily reached through various marketing channels including, but not limited to the ones listed below.

**Developer Incentives:** Aura provides early developer incentives to build on the platform. These incentives are a combination of Aura tokens and cash to pay for fees on the platform, the development of games, and to cover player marketing incentives.

**Developer Conferences:** Aura will have presence at the top independent developer conferences and hackathons. DreamHack in Sweden and Unity Developer conferences are lined up for the end of 2018 and early 2019.

**Developer Accelerator:** Aura will offer an online indie games accelerator. This program will help developers fast track to build awesome and fun game experiences. Accelerators kickstart developers to build on newly launched platforms. Aura’s first accelerator class will begin in 2019.

Second Prong: Player Marketing

Aura will work with the top game developers on the platform to promote their games. This will give developers the financial help to incentivize players to start playing their games. There are three strong marketing methods to get players to play the first set of games on Aura.

**Forums/Blogs/Social Media Growth Hacking:** Forums and blogs provide a direct connection to players to post great content, answer questions, and embed Aura in the various gaming communities across the world.
**Influencers and Streamers:** Twitch, WeChat, and Youtube gaming are the largest streaming platforms for gamers in the world. Aura will partner with game influencers to bring their communities into the ecosystem. This will be in the form of video promotions, advertisements, and game reviews.

**Esports Teams and Events:** It’s estimated that over 385 Million people will attend Esports events globally by the end of 2017. Aura will partner with the largest Esports teams to promote Aura’s games within their communities.

**External Marketing Partners**

In addition to internal marketing, there are also two major external marketing partnerships that have been signed with iDreamSky and HKEsports. iDreamSky has over one hundred and twenty million users across their games and HKEsports has just under twenty million.

iDreamSky will co-develop games for Aura and market them to theirs player-base. HKEsports is promoting and integrating Aura to its online community blogs across Southeast Asia.
Seeding the Platform

Aura will be seeded with 5-7 game worlds. These games are being built in cooperation with iDreamSky, Giant Monkey Robot, and GrabGames.

iDreamSky is the largest mobile games publisher in China.

GrabGames is one of the most influential games studios in the US.

GMR is one of the premeiment game studios in Santiago, Chile. Their team has developed games like Fallout Shelter, Tokyo Drift, and Spongebob Squarepants.
Timeline

Q1 2018
Blockchain and virtual worlds research. Seed funding, partnership and marketing development.

Q2 2018
Protocol implementation. Testnet development.

Q3 2018

Q4 2018
Developer portal launch. Marketing and game development partnership activation.

Q1 2019
Aura SDK released with Unity and Unreal game engine plugins. Launch of second virtual game world: multiplayer capabilities, content generation tools, and asset trading.

Q2-Q4 2019
Developer accelerator launch and global marketing channel activations. User generated content engine, tools, and marketplace launch.

Q1 2020
Global reach of hundreds of thousands of content creators.
Team

GABRIEL SCHILLINGER
CEO AND CO-FOUNDER
Gabriel founded For Darfur and BIM Networks and has a deep background in entertainment, fintech and investing. At 19, he famously gathered over 15,000 people for Kanye West’s Glow in the Dark Tour in Miami and raised $1M+ for Doctors Without Borders. At BIM Networks he worked with CEOs and Board Members (Sears, Saks, Whole Foods, Regal, Ralph Lauren, Home Depot...) on a new mobile ACH platform. He successfully exited BIM in 2014 and has been advising and investing in startups in the aerospace, music, fintech and transportation space. Gabriel was featured in Time Magazine and The New York Times. He attended Babson College and NYU Gallatin School For Individualized Study.

SAM SNYDER
COO AND CO-FOUNDER
Sam is a creative with a focus in the product and industrial design spheres. After dropping out of Parsons, he founded an award-winning jewelry line, invested in a New York City based jewelry manufacturing facility utilizing the latest 3D printing technologies and CAD/CAM design software, and designed the look and feel of many everyday household objects. His designs have been featured in the New York Times, Vogue, New York Mag, and Architectural Digest. In his first foray into the fintech world, he brings his design perspective capable of bringing cryptocurrency to a broader user base.

ZHI HUANG,
CTO AND CO-FOUNDER
Frank has spent his whole career as a software engineer, first starting off at Goldman Sachs in London, to then getting the startup bug and working on various ventures in London and Australia. He most recently was the lead engineer at Weav Music, the founder of Google Maps’ new company.
Arix has worked as a product manager and product designer since graduating from Baylor University. His work has been featured across the country and was most recently the senior Product Designer at Lumenary, a leading design and development house in NYC, before joining Gamma.

Anshul spent 8 years at Zynga as a Lead Product Manager and Senior Engineer. He led the growth team to explore new emerging gaming platforms and worked on games like words with friends and poker teams while at Zynga.

Juan Pablo Lastra is a lead software engineer with 15 years of experience in more than 30 console, mobile and PC released video game projects. Has exercised the role of software engineer, lead developer, software architect and technical director and has successfully lead teams between 5 and 15 people.

Benjamin Prieto is a videogame developer with 15 years of professional experience, and over 30 published games. He comes from an engineering background, taking different key roles as programmer, technical director and studio senior producer. His experience includes developing for PC, gaming consoles, web, mobile devices and live teams. Benjamin holds a Bachelor’s Degree in Computer Engineering, and his skills includes graphics programming, physics simulation, AI, back end systems, project and studio management.

Maxim Kupriianov has more than 8 years of experience as a software developer. He has 3 years as a Go backend engineer. Max is passionate about creating and contributing to open-source projects. Max also has a patent for a Turing Machine Emulator.
ALEKSANDER DIDORENKO

Aleksander Didorenko has more than 12 years as a full stack web developer. He has practical software engineering experience, including database and applications architecture design and development.
Investors

DAVID HELGASON

David is a technologist and visionary, founder of Unity, non-executive director of Plain Vanilla, and a restless entrepreneur with a passion for creating feedback loops between innovation and teams and revenue streams, applying new and old business models to changing industries, and pushing people to do the very best they can do. David’s background is in software, an assortment universi- ty dabbling, creating companies, and helping entrepreneurs. He served as CEO of the game technology company Unity Technologies since co-founding it in 2003 and until October 2014, with the unflinching vision to democratize game development, and to develop technology and business models for the next genera- tion of the games industry.

SPARKLABS GLOBAL VENTURES

SparkLabs is a new type of seed-stage fund. They believe business is now truly global. Exceptional entrepreneurs, that are building strong, category defining companies at high- ly advantageous valuations – can be found anywhere. They are a team highly experienced in finding such talent and helping our entre- preneurs to develop, grow, network, and scale into other markets throughout the world.

GREYCROFT

GREYCROFT

GC Tracker Fund is a vertically focused investment fund dedicated to supporting seed stage companies across the VR, AR, video game and e-sports sectors. The fund is managed by Jon Goldman, a Greycroft Venture Partner, and leverages his network and Greycroft’s early-stage investment expertise and infrastructure to offer value to early-stage companies innovating in these spaces. Tracker is independent of Greycroft’s family of core funds but counts Greycroft, a leading venture capital firm focused on investments in the Internet and mobile markets, as an LP and close busi- ness partner.

AKATSUKI INC

Akatsuki was founded in 2010 in Japan, and has since developed and distributed variety of mobile and social games. In 2017, it co-devel-
oped and distributed “Dragon Ball Z Dokkan Battle,” which has been published by Bandai Namco Entertainment. The company is publicly listed on the Tokyo Stock Exchange.

GREE

GREE is a global mobile social company with businesses that include gaming, media, advertising, and investment.

BILL TAI

Bill is one of Silicon Valley’s most well known venture capitalists and ran Charles River Ventures West Coast office. He has been a past board member of 7 publicly listed companies, which he funded as startups, including one he founded as CEO. He’s an investor in another dozen that grew to become publicly listed companies. He is also an expert on blockchain deals and founded the Blockchain Summit on Necker Island with the Bitfury Group.

MARK PINCUS

Mr. Mark Pincus serves as a Founder of Zynga, Inc. in 2007 and has been its Executive Chairman since March 7, 2016. He serves as a Co-Founder of Tribe Networks, Inc. Mr. Pincus served as its Chief Executive Officer from April 8, 2015 to March 7, 2016. Mr. Pincus served as the Chief Executive Officer of Zynga Inc. from April 2007 to July 8, 2013 and also served as its Chief Product Officer from April 2007 to April 2014. He served as the Chief Executive Officer and President of Support.com from December 1997 July 1999. Mr. Pincus was a part-time employee of Support.com. From 1995 to 1997, Mr. Pincus was a Co-founder and served as the Chief Executive Officer of FreeLoader, Inc. From 1994 to 1995, he served as Vice President with Columbia Capital. From 1993 to 1994, he served as Manager at Tele-Communications, Inc. (now AT&T Cable). Mr. Pincus co-founded Tribe Networks, Inc. in 2003 and serves as its Chairman. Mr. Pincus co-founded Support.com in December in 1997 and served as its Chairman since December 1997. He serves as a Chairman of Tribe Networks, Inc. He has been a Director of Presidio Trust since January 2017. He served as Chairman of the Board of Zynga, Inc. from April 2007 to March 7, 2016. He serves as a Member of Advisory Board at Spride, Inc. Mr. Pincus holds a B.S. in Economics from Wharton,
University of Pennsylvania and an MBA from Harvard Business School.

**KAI HUANG**

Mr. Kai Huang has been Chief Executive Officer of Hengshi Mining Investments Limited since March 30, 2016. Mr. Huang has been a Standing Deputy General Manager of Aowei Mining since March 2012. He has approximately 10 years of management experience. From March 2004 to February 2012, he served as Head of corporate governance department, the assistant general manager and a Deputy General Manager of Aoyu Steel. He joined Aoyu Steel in March 2010 as Vice Chief of the preparatory group responsible for establishing Aowei Mining. Mr. Huang gained substantial management experience during his employment with Aoyu Steel and Aowei Mining. He has been an Executive Director at Hengshi Mining Investments Limited since July 30, 2013. He serves as an Executive Director of Aowei Mining at Hengshi Mining Investments Limited. He is responsible for the general management of production and the environment, health and safety matters. He was named the Outstanding Individual of Hebei Province Metallurgy Industry of Hebei Province Metallurgical Industry Association in April 2009 in recognition of his contribution to the mining industry. Mr. Huang attended the continuing education course of iron and steel at Tsinghua University from July 2004 to October 2005. He obtained a bachelor’s degree in Business Management from Renmin University of China in June 2013 by correspondence.

**JIMMY KIM**

Jimmy Kim is Co-founder & Partner at SparkLabs Global Ventures. He is also a co-founder & Partner at SparkLabs, a startup accelerator in Korea. Previously, Jimmy was CEO of Nexonova, a game development studio of Nexon Corp that specializes in Social Network Games. Prior to Nexonova, Jimmy served Executive Vice President of Nexon Corp, and Head of Nexon’s Portal (www.nexon.com, market cap: $5 billion) and Web Services. Nexon is one of the most successful online gaming providers, with games such as Maple Story, Dungeon and Fighter, Combat Arms, and Kart Rider. Nexon services over 20 games across 60 countries to an audience of 300 million. Jimmy was the founding investor and active deal adviser of Studio Ex, an online gaming studio that was acquired by Disney in 2012. Jimmy received his B.S. in Engineering from Northwestern University, and also a M.S. in Engineering from Korea Advanced Institute of Science and Technology (KAIST). Jimmy also completed the Stanford University’s Graduate School of Business’s Executive Management Program.
LARS RASMUSSEN
Lars Rasmussen is a co-founder and ‘Chief Espresso Officer’ at Weav Music, Inc in Brooklyn, New York. Formerly, he was a director of engineer at Facebook London where he headed up the Facebook Workplace team. Formerly, he was a member of Google's technical staff, based in the Sydney office, and with his brother Jens is co-founder of the Google Wave effort. In early 2003, the brothers co-founded a mapping start-up, Where 2 Technologies, which was acquired by Google in October of 2004. Lars joined Google and worked as one of the lead engineers in the Steam that turned this acquisition into Google Maps, now used by more than a billion people around the world. Lars holds a Ph.D. in theoretical computer science from the University of California at Berkeley. He has possibly the world’s least developed sense of direction, and consistently types faster than he can spell.

DAVID SIEMER
Dave founded Siemer & Associates, LLC in 2007 to fulfill his vision of a true boutique merchant bank that works with technology, software and digital media companies throughout their complete life cycle. In addition to investment banking, he concurrently founded Siemer Ventures to assist early growth technology companies to achieve their full potential. One of the most active investment firms in Southern California, Siemer Ventures claims more than 40 current portfolio companies and makes about 12 new investments per year.

DNA FUND
Founders Brock Pierce and Scott Walker were early bitcoin miners, creators of the world’s first ICO and first security token, large investors in the Ethereum crowd sale, and investors or advisors for more than 100 decentralized ecosystem launches. They launched DNA in 2017, which has quickly become a major nexus of talent and capital working to accelerate the growth of the burgeoning crypto industry. DNA is headquartered in Santa Monica, California, with offices in New York City and San Juan, Puerto Rico.

SONG LI
Song Li is an investment banker-turned serial internet entrepreneur. Song is the founder
and chairman of Zhenai.com, the largest online matchmaking site in China with 28 million registered members as of May 2011. Prior to founding Zhenai.com, Song was the chairman and co-founder of MemeStar, once China’s largest mobile SMS-based dating service provider with 2.2 million paying members. The company was later acquired by the NASDAQ-listed Sina Corporation in January 2003. Before becoming an internet entrepreneur, Song was a professional investment banker, working as a Vice President of debt derivative products at Bear Stearns, New York; and as an executive director of equity derivative products at Morgan Stanley - Hong Kong. Song has a doctorate in finance from Columbia University, United States.

JEHAN CHU
Jehan is a former front-end developer with ten years’ experience in web and enterprise application development. Jehan has been a cryptocurrency investor since 2013, with successful investments including Bitcoin, Ether, Litecoin, Melonport and acts as Advisor to the Melonport, QTUM and OpenANX. He founded the Ethereum HK community (2014), co-Founded the Bitcoin Association of Hong Kong (2014) and founded the Hyperledger HK community (2016). He was a partner with the HKMA on the Blockchain: Surge event, and a Gerson Lehrman Group (GLG) Council Member. Jehan is a graduate of Johns Hopkins University and a Masters degree candidate at Hong Kong University (2017).

ANTOINE BLONDEAU
Antoine is a technology entrepreneur and an investor in technology companies in California and China. He has 20 years of leadership experience in technology marketing worldwide, as CEO, senior officer and director/advisor in listed companies, start-ups, turnarounds and midsize-to-large companies. Antoine has traded in the currency and stock markets for 10 years. Antoine’s career highlights include working with the Tokyo representation of the French Prime Minister’s DATAR unit to negotiate the setup of Mitsubishi Electric, Canon, Toshiba and Sony’s industrial facilities in France, and a 4-year stint at Nortel Networks where he headed the OEM and Asia/Pacific unit of the company’s digital wireless terminals business. Antoine was also president & COO of Zi Corporation, a developer of intelligent user interface software listed on the NASDAQ Main Board, and CEO of Dejima, Inc., a developer of distributed artificial intelligence software, which he sold to Sybase, Inc. In addition, Antoine worked at salesforce.com, the leader
in on-demand enterprise applications, as vice-president, and at Good Technology, the last independent challenger to RIM BlackBerry, as senior vice president. He is an investor, board member and advisor in a number of companies in California, Greater China and Japan. He is the author or co-author of 5 patents. Antoine holds a MBA from the Paris Graduate School of Management (ESCP) and has studied at the faculties of Economics and Commerce of Chuo University in Tokyo.

JEFF LYNDON

Jeff Lyndon is the President and Co-founder of iDreamsky, the largest independent mobile game publishing platform in China by active user. He is currently also Advisor of Hong Kong Esports one the top brand name in the Esports space. On top of his role in iDreamsky ad Hong Kong Esports, Jeff was the co-president of international cooperation and founding executive committee member of Global Mobile Confederation. Jeff is a game developer at heart, a business developer in his head and a speaker on the cover. He has served in the game and tech related industry since 2000, mastering his skill in creative directing, strategic development, investment, publishing, product development and game company operation along the way. He started his career as a waiter in a Cyber Cafe and has since then been in many senior executive roles in many high profile companies. At 2010 he won the 30 under 30 developer award. He is the first Hong Kong game developer who won the award and has had the most nomination ever till this very day.

DENNIS FONG

Dennis also known as Thresh, serves as an Advisor at Booyah, Inc. Mr. Fong serves as an Advisor at WeGame.com, Inc. He co-founded Lithium Technologies, Inc. in 2001. Mr. Fong founded Raptr, Inc. and serves as its Chief Executive Officer. He Co-founded Xfire, Inc. in 2002 and also serves as its Chief Gaming Officer. Mr. Fong serves as an Advisor of m, Inc. At Xfire, he is involved in business development, marketing, and product development, lending his unique experience in the gaming industry to build partnerships and help shape the direction of the product. Prior to Xfire, Mr. Fong co-founded Gamers.com and served as its Chief Gaming Officer. He serves as the Chief Gaming Officer of Ultimate Arena. Mr. Fong is also the World Champion of Doom, Quake, and Quake 2.
ANTHONY BORQUEZ
Dr. Anthony Borquez is an expert at building and scaling creative tech businesses. He is Founder and CEO of Grab, a leader in augmented and virtual reality. He also founded Blue Label Games, an early leader in mobile game development, later acquired by Konami. Prior to Blue Label, Anthony co-founded Spacient Technologies, a location-based mobile startup acquired by Trimble. Anthony has been teaching at USC for 20+ years. He currently teaches BAEP 465 Digital Playbook for Entrepreneurs: Creating a Tech Startup. Anthony holds a Doctorate, MA, MS and BS all from the University of Southern California.
Advisors

MARCUS SIEGEL
FORMER SVP & COO OF ZYNGA GAMES
Marcus Segal is a General Partner at Upshift Capital, a seed stage investment fund. Marcus has 17 years of experience working as strategist and operations executive in Silicon Valley. Segal spent over 7 years in total with Zynga serving in a number of roles including the SVP Global Operations, Chief Operating Officer [COO] of Game Studios, and COO of Business Operations. Segal was responsible for managing the day-to-day operations of the game studios, CIO and CTO functions as well as the development of the International Production, Community, QA, and Central Art teams.

MIKE VORHAUS
FOUNDER OF MAGID
Mike Vorhaus, President, Magid Advisors founded the Magid Internet and New Media research and consultation practice in 1995, with AOL and Excite as his first two clients. Mike's team has completed over 2,500 engagements with over 100 Internet clients. Mike began the Magid Gaming Practice in 2001 with EA and Sony Online as his first two clients. The Magid Game Practice now works with most of the major game publishers.

GREG ESSIG
FORMER HEAD OF GAMES, APP STORE
Mr. Greg Essig serves as Head of Business and Product Strategy and Advisor at BITKRAFT Esports Ventures GmbH & Co KG. He served as Lead of Business Development Initiatives at Mobcrush. He had been the Head of Business Development at FunPlusgame inc. since joining in January 22, 2015. Mr. Essig was responsible for scaling the FunPlus business through partnerships with game makers, platform and technology companies as well as strong brands. He served at Apple, where he managed the games section of the App Store. He has years of entertainment and games experience, including a key role at the Creative Artists Agency (CAA) where he was instrumental in developing its games practice. His responsibilities included representing independent video game designers and studios in the development of licensed and original game IP for console, downloadable, social and mobile gaming platforms. His success at CAA eventually landed him his coveted role at Apple. During his tenure, the games store billings increased by six-fold.
**TIBUCIO DE LA CARCOVA**
Tibu is a tech entrepreneur with more than 19 years of experience building information technology related companies, the last 14 years with focus on computer games. Experienced in console development and mobile games as COO/Studio Head. Currently working at Palo Alto startup Xapo as Head of Product.

**ABE OTHMAN**
Abraham Othman, Ph.D., is a visiting scholar in the Operations, Information and Decisions Department of the Wharton School (University of Pennsylvania). Dr. Othman received an A.B. in Applied Mathematics from Harvard University in 2007 and a Ph.D. in Computer Science from Carnegie Mellon University in 2012, where he was supported by a Google Ph.D. Fellowship. His research interests involve the practical applications of artificial intelligence, optimization, numerical methods, and computational economics. In 2015, Dr. Othman was named to Forbes Magazine’s “30 under 30” list. He lives in San Francisco, where he runs a machine learning company and advises a number of dApp startups, including Augur and STOX.
Game Industry Partners

IDREAMSKY
HKESPORTS
GRABGAMES
GIANT MONKEY ROBOT

One Last Thing...

“Aura has assembled the best investors, advisors, and team for attracting game developers and players. Aura’s secret weapon is the team and their drive. They are the most connected, passionate, and driven team in the blockchain world today. David Helgason, Aura’s first investor, is the founder of Unity, the world’s largest game engine. Mark Pincus, another investor, founded Zynga. Jeff Lyndon, founder of iDreamky has over 150 million people playing his games in China. Add in Kai Huang (creator of Guitar Hero), Greycroft, and many other game, tech and blockchain legends, Aura is a world class venture. Launching just one successful and engaging game on Aura, there’s the potential for hundreds of thousands, if not millions of daily active users. The team will activate investor and partner relationships to drive adoption of Aura from both the developer and player side. It’s a super exciting time for them to be in the market.”

Jay McCarthy
Partner and Co-founder of SparkLabs & Sparkchain
Appendix
## Competitive Analysis

<table>
<thead>
<tr>
<th></th>
<th>Aura</th>
<th>Bitcoin</th>
<th>Ethereum</th>
<th>EOS</th>
<th>LUDOS</th>
<th>Cocos</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>CONSENSUS</strong></td>
<td>DPOS</td>
<td>POW</td>
<td>POW</td>
<td>DPOS</td>
<td>POS</td>
<td>DPOS</td>
</tr>
<tr>
<td><strong>BLOCK TARGET TIME</strong></td>
<td>1 Sec</td>
<td>10 Min</td>
<td>15 Sec</td>
<td>.5 Sec</td>
<td>1 Sec</td>
<td>3 Sec</td>
</tr>
<tr>
<td><strong>CURRENT TPS MAX</strong></td>
<td>&gt;1,000,000</td>
<td>-</td>
<td>-</td>
<td>1,000,000</td>
<td>-</td>
<td>100,000</td>
</tr>
<tr>
<td><strong>CURRENT TPS</strong></td>
<td>30,000</td>
<td>7</td>
<td>15</td>
<td>1,275</td>
<td>-</td>
<td>3,500</td>
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<tr>
<td><strong>DAPPS</strong></td>
<td>Yes</td>
<td>No</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td><strong>SCALABILITY</strong></td>
<td>P2P Protocol</td>
<td>None</td>
<td>Sharding</td>
<td>-</td>
<td>Sharding</td>
<td>Delegated Template</td>
</tr>
<tr>
<td><strong>SMART CONTRACT LANGUAGE</strong></td>
<td>JavaScript, C#, C++</td>
<td>None</td>
<td>Solidity</td>
<td>C++</td>
<td>C++</td>
<td>-</td>
</tr>
<tr>
<td><strong>LANGUAGE</strong></td>
<td>Go, JavaScript</td>
<td>C, C++</td>
<td>C, C++</td>
<td>C, C++</td>
<td>C, C++</td>
<td>-</td>
</tr>
</tbody>
</table>

### Graphs

- **Transactions per Second**
  - Aura: 1,000,000
  - Bitcoin: 500,000
  - Ethereum: 50,000
  - EOS: 10,000
  - LUDOS: 500
  - Cocos: 50
Video Game Market

The games market is a very profitable environment with a current market of 2.3 billion gamers across the globe that will spend $137.9 billion on games in 2018.

2018 Global Games Market
PER DEVICE & SEGMENT WITH YEAR-ON-YEAR GROWTH RATES

In 2018, mobile games will generate $70.3Bn or 51% of the global market.

It is expected that consumer spend on games will grow to $180.1 billion by 2021, a compound annual growth rate (CAGR) of +10.3% between 2017 and 2021.

2012–2021 Global Games Market
REVENUES PER SEGMENT 2012–2021 WITH COMPOUND ANNUAL GROWTH RATES

In the span of a decade, mobile gaming will have grown from the smallest segment in 2012 to a 100-billion-dollar industry in 2021.
References


