



## The Quantum Leap March 28, 2022

### What is Sandbox AQ?

On March 22, 2022, Sandbox AQ announced its formal launch as a separate company from Alphabet (f/k/a Google). I consider this to be seminal event in the Quantum Computing (QC) industry so wanted to provide additional color to emphasize the magnitude of the announcement.



As the press release from the Company notes, Sandbox AQ aims to combine Artificial Intelligence (AI) with Quantum Computing technologies in a software-as-a-service (SaaS) model aimed at Global 1000 companies. There is growing focus at the intersection of these two cutting-edge technologies (AI and QC) whereby it is expected that QC can enhance and accelerate the powers and capabilities of AI, so this dual-focus makes sense (see my prior post [“At the Intersection of QC, AI and Machine Learning”](#) for more on this topic).

Overtly, Sandbox AQ is an enterprise SaaS platform, led by CEO Jack Hidary, who is an extremely accomplished thought leader in Quantum Computing and accomplished entrepreneur. The fact that it was created at Alphabet, is being led by Jack, and is very well funded, would alone be sufficient to grab the attention of the QC industry. However, there is a lot more to unpack from the announcement, and which I hope to convey in this post. Namely, the company was incubated and spun-out from a preeminent force in the emerging QC world, is being led by Jack Hidary and Chaired by Eric Schmidt (former CEO/Chairman of Google, former CEO/Chairman of Novell, former CTO of Sun Micro), has received multiple-\$100-million in initial funding from a list of preeminent venture investors, has an illustrious Advisory Board and has world-class customers on day one.

And, interestingly, Sandbox AQ is a software enterprise and NOT a hardware provider – the Google team, which famously (although not without controversy) achieved quantum supremacy in 2019 with their 53-qubit Sycamore machine, remains within the Google X division (the division affectionately known as “the moonshot factory”) and continues to push the envelope in QCs of the superconducting variety. By excluding the Santa Barbera/Venice Beach QC hardware team, Sandbox AQ can be hardware agnostic.

Sandbox AQ begins as an independent company focused on two major initiatives: post-quantum cryptography (PQC) and quantum sensors. Any day now it is expected that NIST (National Institute of Standards and Technology) will announce their selection of the Round 3 candidate algorithms from among 7 finalists and 8 alternates, with a finalized standard expected by 2024. Such algorithm(s) are intended to replace RSA which dominates today’s public key cryptography, but which will be vulnerable to powerful QCs. Sandbox AQ has developed an AI based discovery engine that will find all the places where an enterprise needs to upgrade the cryptographic software to a quantum secure PQC solution [Quantum Computing Report, March 25, 2022]. On the sensor front, quantum-based sensors can provide novel navigation systems based on geophysical signals (such as local variations of magnetic and gravitational fields) and are not dependent on satellites. This will be vital for autonomous vehicles and is of interest to

the military for navigation in instances where GPS is unavailable or denied. There are also quantum sensor applications in medical diagnostics and at the discovery of novel materials, including pharmaceuticals, using AI [Spencer, 2022].

Let's drill down further so you can appreciate the stature of this announcement.

## **Leadership**

As noted above, Sandbox AQ is being led by Jack Hidary as CEO and Eric Schmidt as Chairman. Here is some more color on each:

**Jack Hidary:** Jack is a serial entrepreneur, technology researcher and accomplished author. He founded EarthWeb/Dice, which had a series of venture rounds before going public. He also co-founded Vista Research which he sold to S&P/McGraw Hill. He is a board member of the XPrize, a Sandbox Group Director at Alphabet and founder of the Jack D Hidary foundation, among other activities. His book "Quantum Computing: An Applied Approach", published by Springer and now in its second edition, is a leading textbook for many universities and training programs and he has collaborated with MIT on a series of academic papers focused on deep learning. Jack studied neuroscience at Columbia and received the Stanley Fellowship in Clinical Neuroscience at NIH where he worked on functional brain imaging and artificial neural networks.

**Eric Schmidt:** was the Emeritus Chairman at Alphabet. He was responsible for the external matters of all of the holding company's businesses, including Google advising their CEOs and leadership on business and policy issues. Prior to the establishment of Alphabet, he was the chairman of Google for four years. From 2001-2011, he served as Google's chief executive officer, overseeing the company's technical and business strategy alongside founders Sergey Brin and Larry Page. Under his leadership, Google dramatically scaled its infrastructure and diversified its product offerings while maintaining a strong culture of innovation, growing from a Silicon Valley startup to a global leader in technology. Prior to joining Google, he was the chairman and CEO of Novell and chief technology officer at Sun Microsystems. Previously, he served on the research staff at Xerox Palo Alto Research Center (PARC), Bell Laboratories and Zilog. Mr. Schmidt is a Co-Founder of TomorrowVentures, a Co-Founding Partner at Innovation Endeavors and serves as Board Member at Abacus.AI. He also is a Co-Founder and serves as director of The Schmidt Family Foundation and serves as Chairman at Broad Institute. He holds a bachelor's degree in electrical engineering from Princeton University as well as a master's degree and Ph.D. in computer science from the University of California, Berkeley. He is a member of the President's Council of Advisors on Science. He was elected to the National Academy of Engineering in 2006 and inducted into the American Academy of Arts and Sciences as a fellow in 2007.

## **Initial Investors**

Sandbox AQ completed a recent funding round and received "hundreds of millions" (i.e., nine-figures) from several investors (and I presume Alphabet also made a significant initial

investment). It is a strong and illustrious group which not only brings capital to the business, but also a strong network of connections. Here are some details:

Investor	Description
<b>Bradley Bloom</b>	Co-founder and senior advisor at Berkshire Partners, Advisory Board Member at New Era Capital. Former partner at Thomas H. Lee Co.
<b>Breyer Capital</b>	Led by James Breyer the co-founder and CEO of Breyer Capital. Mr. Breyer is a Board Member at The Blackstone Group and has been an investor in over 40 consumer internet/technology companies.
<b>David Siegel</b>	CEO and Director of Meetup. Former CEO of Investopedia, former President of Seeking Alpha, former SVP 1-800-Flowers and former GM at Duane Reade.
<b>Eric Schmidt</b>	Former Chairman and CEO of Google, additional details noted in prior section
<b>First Light Capital</b>	A women-led investment firm focused on seed investments in technology and pharma.
<b>Guggenheim Inv.</b>	Led by Scott MinerD, Managing Partner and Global CIO. Former MD with Credit Suisse First Boston.
<b>Parkway Venture</b>	A NYC/Boston venture firm with interests in software, SaaS, AI and Machine Learning.
<b>Section 32</b>	A Los Altos, California venture firm that invests in healthcare, information technology, life sciences, SaaS, cybersecurity, AI, ML, and other technology-based sectors.
<b>Thomas Tull</b>	Former founder, Chairman and CEO of Legendary Entertainment where he pioneered the use of data analytics to improve the way movies are marketed. Also founder of Tulco LLC, which seeks to invest in AI, ML and predictive data analytics.
<b>TIME Ventures</b>	Led by Marc Benioff, Co-Founder, Co-CEO and Chairman at Salesforce.com. Member of the World Economic Forum Board of Trustees.
<b>T. Rowe Price</b>	An asset management firm based in Baltimore, MD, with over \$1.6 trillion in assets under management.

## Advisory Board

In addition to strong executive leadership and a well-connected set of investors (some of which also serve on the Advisory Board), Sandbox AQ has announced a diverse and powerful Advisory Board which includes the following:

Name	Profile
<b>Marc Porat</b>	Serial entrepreneur of six ventures including General Magic (voice infrastructure software) and PlanetX
<b>Wendy Tan White</b>	CEO, Intrinsic (robotics software and AI), former VP at X, the moonshot factory
<b>Dr. Taher Elgamal</b>	CTO, Security at Salesforce.com; Co-founder of Nok Nok Labs and InfoSec Global; renowned cryptography hailed as the “father of SSL”
<b>Dr. Yossi Matias</b>	VP, Engineering & Research at Google
<b>Dr. Andrew Conrad</b>	CEO, Verily (Google X’s Life Sciences org) and Co-founder of the National Genetics Institute
<b>Dr. Fei-Fei Li</b>	Sequoia Professor of Computer Science at Stanford University; former VP/Chief Scientist of AI/ML at Google Cloud
<b>Dr. Ashton Carter</b>	Former US Secretary of Defense; Director of the Belfer Center for Science & Int’l Affairs at Harvard University’s Kennedy School
<b>Susan M. Gordon</b>	Former Principal Deputy Director of National Intelligence

<b>Admiral Mike Rogers</b>	Retired Admiral, former Commander of US Cyber Command, and Director, National Security Agency. Senior Fellow and Adjunct Professor in the Kellogg Executive Leadership Institute at Northwestern University
<b>Admiral John Richardson</b>	Retired Admiral and former Chief of Naval Operations, US Navy
<b>Blythe Masters</b>	Founding Partner at Motive Partners
<b>Frank Vettese</b>	Co-founder, SummitNorth capital and advisory firm; former CEO of Deloitte
<b>David Siegel</b>	Computer scientist, entrepreneur, co-founder and co-CEO, Two Sigma, a quantitative trading firm managing \$60 billion; MIT Board Member
<b>John Seely Brown</b>	Former Independent Co-Chair of Deloitte's Center for the Edge; former Amazon board member and Chief Scientist, Xerox PARC

While it is unclear how actively involved this Advisory Board will be, given that it was announced as part of the spin-off, it's likely it is an integral part of the business.

## Customers

In addition to the marquee leadership, investors and advisors, Sandbox AQ also begins with substantial clients on day one. Specifically, the following were included with the Company's opening press release:

- Vodafone Business (global technology communications company)
- Softbank Mobile
- Wix (Cloud-based development platform)
- Mount Sinai Health Systems
- US Federal Government

That last name on this is a bit cryptic but given the noted programs in quantum sensing and their applicability to defense, this is no surprise. Beyond these initial customers, the company is aiming to provide quantum and AI solutions to the Global 1000 enterprises and has strategic alliances with some powerful professional services firms which it plans to announce soon. Sandbox AQ is also in close collaboration with faculty partners at leading universities and plans to invest in Ph.D. students and to host postdocs.

## Summary

Sandbox AQ begins life as an independent company with an enviable roster of executives, investors, advisors, and customers, not to mention a sizable war chest. By combining QC and AI, they are at the forefront of both emerging technologies, and by remaining hardware agnostic, they preserve the ability to focus wherever the latest hardware breakthroughs come from. As noted by Eric Schmidt: "the convergence of quantum and AI technologies is already transforming entire industries, accelerating scientific discovery and reimagining what we thought was possible." I look forward to seeing how Sandbox AQ leverages its substantial resources and connections to help companies navigate and excel in this rapidly changing world and predict Sandbox AQ will remain a force to be reckoned with.

***Disclosure:*** *I have no beneficial positions in stocks discussed in this review, nor do I have any business relationship with any company mentioned in this post. I wrote this article myself and express it as my own opinion.*

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