



A Journey Through Technology

WRITTEN BY
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Laetitia Garriott de Cayeux is the founder and managing partner of Global Space Ventures, an investment fund focused on dual-use critical technologies from AI to biotech, space, and beyond. She serves on the Pentagon's Defense Science Board and NATO's Maritime Unmanned Systems Innovation Advisory Board, and is a life member of the Council on Foreign Relations. Garriott de Cayeux is also committed to accelerating more hopeful futures, and bolstering women's places in science and innovation through her participation on the board of the XPRIZE Foundation and the National Museum of Mathematics. She was recently awarded the Visionary Award for Lifetime Achievement from her French alma mater, ESSEC Business School. During her acceptance speech, she challenged her fellow alumni with the question, "What's your moonshot?"

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Impact Through Innovation

In 1995, at the age of 17, I fell into and in love with impact through innovation when I was selected to represent my native country of France at the Global Information Infrastructure Junior Summit in Tokyo. The European Commission hosted a G7 roundtable on the emerging Global Information Society. Hundreds of youths were invited to help illuminate opportunities that the rise of the World Wide Web could provide.

Through my participation in the GII Junior Summit, I understood early on and have remained all these years a big fan of moonshots—leveraging the power of competition as a way to inspire, catalyze innovation, and accelerate more hopeful futures—which I continue to advance today through my investing activities and the great work of the XPRIZE Foundation that looks to incentivize extraordinary innovation in science and technology with awards of a scale that can make a difference.

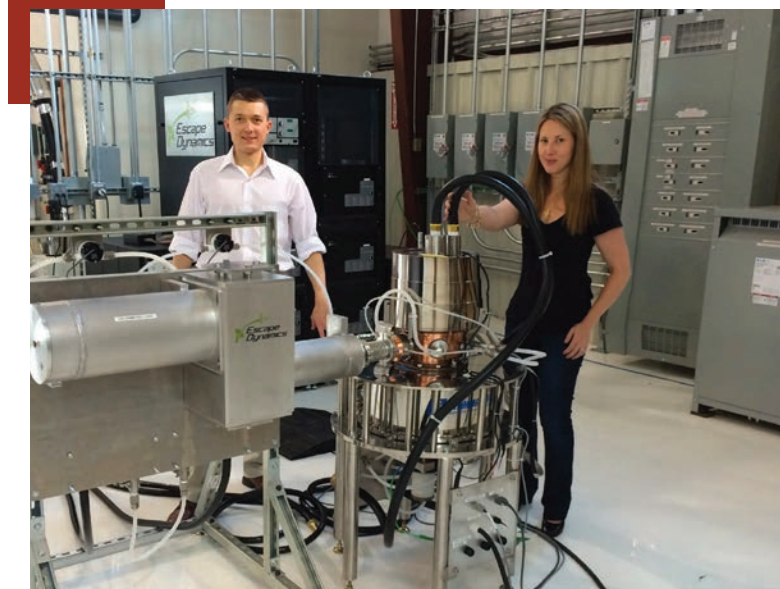
The GII Junior Summit is also where I would meet Nicholas Negroponte (then the director of the MIT Media Lab), who later became a sponsor on my path to U.S. citizenship.

American by Choice

My early career in finance took me straight out of a top business school in France to Goldman Sachs, a Harvard M.B.A., and work in Hong Kong, London, and New York. While I am proud of my French roots, I sought out America to make it my home.

America's embrace of making better futures happen on a large scale won me over. Driving innovation and progress is what I wanted to do. I had started out in mergers and acquisitions but was now thriving as an investor. After a few years in leadership and investment roles at TPG-Axon and Renaissance Technologies for Jim Simons, I launched my own hedge fund, whose strong returns earned me an industry rising star award from Institutional Investor.

Then, entrepreneurial opportunity beckoned again, and I co-founded and became the president of Escape Dynamics, a Colorado-based technology company focused on bringing to market fully reusable spaceplanes powered with high-power microwave-beamed energy. Meanwhile, I had made a first investment in SpaceX in 2012. Elon Musk was a friend and I believed in his vision and ability to execute. It wasn't



clear at the time full reusability could be reached with chemical rockets. But our team at Escape Dynamics demonstrated performance greatly surpassing the limit of chemical combustion rockets. NASA took notice and added beamed rocketry to its road map for future technology development.

Garriott de Cayeux with Escape Dynamics co-founder Dr. Dmitry Tselikhovich

The Shortest Path to Revenues

One day, as we were seated in the SpaceX Goddard conference room, Elon encouraged me to shift my thinking from funding toward the shortest path to revenues. That turned out to be a key part of SpaceX success—and a key challenge for EDI. SpaceX had figured how to monetize the value of its core mission's building blocks to NASA and the Department of Defense, which have since saved tens of billions of dollars from that partnership. Our high-power microwave systems could also be of great value for NASA and U.S. national security. Not only could they launch a rocket into space, but they also had the power to defend at



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Top: Garriott de Cayeux (in red) with NATO Innovation Advisory Board members at NATO headquarters in Brussels

Bottom: Garriott de Cayeux with former Defense Secretary Ashton Carter

the speed of light with no need for expendable ammo. We had secured authorization to conduct tests at White Sands Missile Range and the Defense Advanced Research Projects Agency (DARPA) had shown interest in funding our efforts. Securing research and development funds from the Defense Department, however, was anything but fast, and beamed-energy space launch revenues were a far reach.

We had raised \$10 million in private capital. But without near-term commercial value, the capital needed was magnitude greater. Perhaps more fundamentally, the Department of Defense did not have programs in place at the time to ensure that critical technologies did not die on the vine because of a lack of patient capital. The day we decided to shut down our Colorado lab was hard for everyone.



Innovation, the Nerf of Defense

Our team's successes and the demise of a critical technology effort caught the attention of the Department of Defense. I remember vividly my conversation with Defense Secretary Ash Carter at Capital Factory in early 2016. Imagine what scaled production of high-power microwaves and beamed energy systems could have

meant for homeland air defense. We needed funding pathways and mechanisms to support critical technologies that could serve our country. Thirty million is all that had been appropriated for FY2016 for the Defense Innovation Unit that had just launched (with Congress now considering over \$1 billion in funding for FY2024).

I began to "put my money where my mouth was." SpaceX, which pioneered reusable launch and proliferated low-Earth-orbit satellite technologies, became Global Space Ventures' first \$10 billion start-up, or decacorn. Global Space Ventures portfolio companies now also include Lynk, the maker of the first "cell towers in space," which provide commercial satellite service direct to unmodified cell phones. ThrustMe, another seed investment, pioneered iodine-fueled electric propulsion systems whose best-in-class power to weight and size ratio represent an incredible boon for this new age of low-Earth-orbiting satellites. SparkCognition, a leading AI company, which built its reputation doing predictive maintenance on turbines for power generation and putting AI assistance in the cockpit of Boeing planes, was selected last year as one of the commercial partners for a \$950 million Air Force contract to advance future command-and-control capabilities. Not to mention Colossal Biosciences, whose team of over 70 scientists and three laboratories are innovating across computational biology, cell and genome engineering, stem cell biology, embryology, protein engineering, and assisted reproductive technologies to advance genetic engineering and solutions in support of applications across de-extinction, conservation, and beyond. All of these are companies I am so proud to have been an early investor in and continue to help accelerate.

Little by little, I also began working with various national and international bodies in security and defense beyond DARPA, to include the Defense Science Board. Not to mention NATO, which I have advised on innovation matters such as unmanned maritime systems, including DigitalOcean.

DigitalOcean is a nice gateway to the idea of dual-use technologies. Just as NATO would derive great value from probing oceans from sea floor to surface in real time, for awareness of surface or subsurface naval activities, such technologies would also be invaluable to world climate models, which are needed to help understand and address the most existential challenge of our generation. A win for defense, a win for science, and a win for global resilience!

Accelerating Dual-Use Technologies

I offer the same message everywhere: We must accelerate funding toward dual-use critical technologies—military and civilian. And we need to focus on innovations like high-power microwave technology, which Escape Dynamics was developing and could be transformational. Many of our new technologies are now making a huge difference on the battlefield, as we've seen in Ukraine.

What we've also seen play out in Ukraine is how commercial technology can uniquely help support our allies and partners. It happens to be much easier to get commercial technology into the hands of a partner and their warfighters than it is to get technology passed through the bureaucracy and into a U.S. Department of Defense program (even when there is a demand within the department).

On a Mission to Build Better Futures

The primary challenge that fast-tracking dual-use critical technologies can solve is to sustain and extend our innovation power and military edge in great power competition, while simultaneously working toward building a more secure and peaceful world.

This belief underpins the choices I am currently

making for my new fund, Global Space Ventures II, so we can support the SBIC Critical Technologies program just launched by the Department of Defense to encourage and scale early-stage investments in technologies critical to national security. That encouragement comes mostly in the form of an innovative government-guaranteed loan instrument—a great way for the DOD to capitalize on all the research and due diligence that venture capital investors are doing to vet these investments, and thus a win for investors and a win for the security of our country!

I believe dual-use technologies don't just limit the impact of conflict, but also can work toward diminishing the likelihood of conflict, and building better futures. This is because dual-use technologies are not only disrupting the battlefield balance of power, but also showing promise in solving major civilian resilience challenges, which often compound and exacerbate existing drivers of conflict, and in augmenting civilian resilience, and thus potentially also deterrence. But the market incentives are not always there.

This is why I'm also involved in the XPRIZE, which as an example, has launched the XPRIZE Wildfire and the XPRIZE Carbon Removal. That prize is worth \$100 million—the largest incentive prize in history. This is the type of audacious geoengineering it will take to fulfill pledges that the U.S. and more than 190 other parties made at the Paris Agreement in 2015—and the already fleeting goal of limiting global warming to 1.5 degrees Celsius. All of these initiatives are core to my hopes and beliefs for the future. **LM**