A letter to Senator Mark Warner and staff

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I'm a graduate student in bioengineering at Caltech. I just reached out with a separate request on behalf of a Caltech student group, but this time I'm reaching out on my personal capacity (hence my gmail, not Caltech email).

I have been watching Senator Mark Warner since last year when I discovered your remarkable advocacy technology legislation with the 2018 whitepaper "Potential Policy Proposals for Regulation of Social Media and Technology Firms" and with the 2019 bills S.2658 (ACCESS Act of 2019), S.1084 (DETOUR Act) and S.1951 (DASHBOARD act).

In particular with regards to the ACCESS Act, the issue of requiring interoperability for the internet "walled gardens" is something that has been on my mind for several years, on which I had scarcely seen any discussion or action on the issue until I came across the whitepaper and the bill. To say that I was thrilled would be an understatement.

We now spend such a large fraction of our waking hours in front of a screen connected to the internet that it has become effectively part of our living environment. The pandemic only made that even clearer. To legislate to foster the kinds of digital services and interactions we would like to see is akin to legislating to ensure clean air and water.

Your whitepaper highlights many issues relating to the governance of social media and technology companies that, while under American jurisdiction, will have a global reach. Similarly, there are many other issues regarding the governance of the internet itself that fall under American jurisdiction and have a global reach. These issues are frequently technical and end up not entering popular conscience and discussion (such as the governance of ICANN, which I discuss separately at the end).

I care deeply about these things, and have been led to believe that you care too. Therefore, I would like to put myself at your disposal, on a volunteer basis, to help you advance these issues and others related to science and technology. I understand it is election season, and that you might lose, but even if you do, my offer still stands.

I now provide some background information about myself so that you may assess how I might best be able to help.

I was born in Florianópolis, Brazil, where I lived most of my life. My high-school offered vocational training, where I got an electronics technician degree, and in 2012 I started my undergraduate studies in Brazil, initially pursuing

chemistry. In 2014 I had the chance to participate in an exchange program at Brandeis University. I was so blown away by American academia and the entrepreneurial can-do atmosphere that I ended up transferring and graduating in 2016 with a degree in biological physics.

At Brandeis I worked with a neuroscience lab and with a biophysics group. I also discovered 3D printing and fell in love with it, making hundreds of molecular models for teaching biology. I have also used 3D printing to create open source hardware for biology and chemistry labs that is much cheaper and flexible that commercial alternatives. After Brandeis I worked at a biotech in Boston doing synthetic biology (that is, engineering microbes to produce any compounds we want). At the end of 2017 I started the graduate program in bioengineering at Caltech.

I am now a fourth year graduate student in the bioengineering program at Caltech. My research deals with single cell RNA sequencing, a family of experiments that allows us to easily count RNA molecules in thousands of cells. If the cell were a computer, DNA would be the hard drive, and RNA the RAM. Thus, the RNA molecules in a cell reflect everything that it is doing right now, but we need to figure out how to interpret it. I try to do that by leveraging the latest and greatest advances of machine learning, and applying them to the deluge of data we got in biology. One day, after we figure everything out, this will enable us to do everything that Theranos promised, and more.

I am not shy, I can write well, and I care deeply about science and technology. I have a strong quantitative background, expertise in biology and biotechnology, and familiarity with the idiosyncrasies of American academia, having published multiple research papers.

At Caltech I participated in multiple science policy workshops and events. Together with another Caltech colleague, for about 6 months starting fall 2019 I have assisted the California Senate Majority Leader Robert M. Hertzberg with technology related policy, mainly by writing short briefings on blockchain related topics, because California had a "blockchain working group" going on, which now concluded it's activities and put out a report.

My website is www.munfred.com.

Thank you. Really.

- Eduardo

ICANN governance

An example of how US legislation can steer the global internet

The Internet Corporation for Assigned Names and Numbers (ICANN) is responsible for managing the Internet's global Domain Name System (DNS), and top-level domains (TLDs) such as .com, .net, and recently many others like .party or .news. ICANN used to be directly under the purview of the US government, but as of October 2016 it switched to a "multistakeholder model" with safeguards in place to avoid complete capture by third parties[1][2].

These safeguards are proving to be insufficient. For example, recently ICANN attempted to privatize control of the .org TLD, meaning one company would control the prices for the annual renewal of any .org domain. There was swift popular backslash, but the deal was ultimately only stopped by intervention of the California Attorney General - intervention at the US state level staved off a global disaster for the internet[3].

ICANN has also been shown to be signing very questionable deals and engaged in behavior whose sole aim seems to be rent seeking[4]. It has become clear that while it was imperfectly run while under direct US purview, it is now significantly worse. ICANN has a monopoly over the internet address book, and as such should be regulated like a utility - except that unlike any other utility owner, it's reach is global and immediate. The US continues to be in a unique position to steer ICANN and the governance of the internet, in a way that will make not only every American better off, but every person in the world.

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[1] October 2016 article describing ICANN history and the transition reasoning: https://www.bbc.com/news/technology-37527719

[2] January 2017 article describing the transition process: https://www.zdnet.com/article/icann-still-under-us-laws-wont-go-under-un-purview/

[3] April 2020 Article describing the .org scandal: https://arstechnica.com/tech-policy/2020/05/icann-blocks-controversial-sale-of-org-domain-to-a-private-equity-firm/

[4] January 2020 Article discussing price increase in .com domains and ICANN executive compensation: https://www.theregister.com/2020/01/07/icann_verisign_fees/