



TECH POLICY LAB

UNIVERSITY *of* WASHINGTON

SECOND ANNUAL REPORT

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LETTER FROM THE FOUNDERS

The Tech Policy Lab at the University of Washington continues to pick up steam in our second year. We have hosted national policy discussions, collaborated directly with policymakers on open data and other issues, and continue to develop strong, method-based interdisciplinary research. Here are some of the highlights of our second year:

Bigger Questions. The Lab is beginning to step back and look at tech policy more systemically—including why and when tech policy fails—while continuing to do deep dives on individual emerging technologies. These include augmented reality, robotics, and crypto-currency, to name a few.

New Methods. Aware that tech policy often reflects mainstream views, the Lab piloted a series of diversity panels (disability, gender, current and formerly incarcerated) to formally build non-mainstream voices and research into our analysis. The technique has already yielded rich insights.

Global Relationships. Throughout our second year we have reached out at the international level to share our work and build lasting relationships. Two of many examples: the Lab organized a panel for the IAPP Data Protection Congress in Brussels and Co-Director Kohno recently led a seminar at an international summit on “The Internet in Asia” in Japan at Keio University. A few months later we hosted members of Keio’s International Center for Internet & Society. We have ambitious plans for 2016.

Training the Next Generation. The Lab has an ongoing commitment to train the next generation of tech-savvy policymakers. In creating the Lab’s first Tech Policy Seminar, we brought together engineering students with an interest in law and policy, and law or policy students with an interest in technology. We are also developing undergraduate policy modules for engineering curricula. We are barely two years in and alums of the Lab have already become, for instance, policy-conscious computer science professors and a technologist at the Federal Trade Commission.

Thought Leadership. The Lab hosted, among others, the Electronic Privacy Information Center’s **Marc Rotenberg**, Deputy Chief Technology Officer at the White House Office of Science and Technology Policy **Alex Macgillivray**, Electronic Frontier Foundation member and science fiction author **Cory Doctorow** and, as part of our Distinguished Lecture series, leading moral philosopher of technology **Jeroen van den Hoven** and roboticist and special effects legend **Anthony Dyson**, who built R2-D2 for Star Wars. We also hosted and co-sponsored We Robot IV, the premiere robotics law and policy conference in North America, which took place at the University of Washington.

Growth and Sustainability. As we enter our third year we have been working towards long-term sustainability of the Lab, including through diversification of funding. We are expanding our group of faculty associates, collaborating on projects with other universities, and growing our curricular offerings.

We hope you find this report on our second year helpful. Onward!

Ryan Calo

Batya Friedman

Tadayoshi Kohno

RESEARCH

We are thrilled to share several new projects and results. The Lab continues to develop and refine its own methodology and has begun to work on big picture projects, initiating a study of why and how tech policy fails. Recognizing that tech policy is often dominated by mainstream voices, we have also developed formal diversity panels as a means to solicit input from underrepresented populations. We continue to examine individual technologies, both in scholarly research, and more accessible outputs such as whitepapers and workshops. While advancing previous work in augmented reality and crypto-currency we have added projects in open government data and accessibility technology.

Understanding Failure in Information Technology Policy

Rules and policies in the area of information technology too often fail to achieve the desired effect. Governments and other regulating bodies frequently struggle to fulfill their roles as both guardians of the public interest, and as enablers of innovation and opportunity. The complexity and potentially disruptive novelty of emerging technologies can make it challenging for decision makers to respond effectively to new developments.

In our tech policy failure project, the Lab leverages our developing understanding of the commonalities in tech policy failure to develop a policymaking toolkit that will aid in the crafting of robust and appropriate regulations for emerging technologies. By identifying historical pitfalls and prospective points of failure, we seek to provide policymakers with tools and resources that lead to effective and relevant technology policy.

Diversity Panels

The need to create rich, well-thought-out, inclusive technology policies from the onset cannot be overstated. Such policies will increase the likelihood that the needs of non-mainstream populations will be addressed in new, developed, and amended policies. One frequently cited reason for why many potential stakeholders may not be consulted entails lack of time. As a result the policies often fail to consider the needs of non-mainstream populations including women, the formerly incarcerated, children, and people living with disabilities.

Aware of the tremendous value that the contribution of these groups could make to forming robust and fair information technology policies, we are piloting an approach designed to garner feedback using relatively short focused conversations on specific technologies—what we refer to as “diversity panels.” The conversations are structured to encourage panelists to discuss what they perceive to be “broken” in a preliminary whitepaper about a given technology. In addition, panelists are asked to discuss how they see the technology changing or creating a new human experience for the population they represent. The conversations provide us with insights which are used to prepare more balanced and informed publications that, in turn, can be used by policymakers and their constituents to create policies and make decisions.

For example, to assess whether or not our research into the area of augmented reality, discussed below, addressed the needs of non-mainstream groups, we assembled and convened three diverse voices advisory panels to discuss the paper: accessibility (people with disabilities), formerly and currently incarcerated people, and women. An effort was made to include a broad group of individuals within each area. For example, for the formerly and currently incarcerated panel we recruited formerly incarcerated, currently incarcerated, lawyers, and corrections educators. As another example, for the women’s panel we recruited women from many segments of life (e.g., successful career women, women who had experienced domestic violence).

The diversity panels add practical value to the process of developing materials and publications targeted toward those interested in developing more robust and fair policies. The Lab plans to create additional panels centered around other non-mainstream groups including youth, people living in extreme poverty, and the homeless. The members of these panels will be convened to discuss technology policy related topics as they arise in the course of the Lab’s ongoing work around, for example, the future of payment and the city of Seattle’s open data plans. The insights gained from these panels will be used to develop materials and publications that can be used in the policymaking process to make informed decisions.

Augmented Reality

In September 2014, we presented our interdisciplinary research paper, [Augmented Reality: Hard Problems of Law and Policy](#), at a workshop attached to the leading academic security conference UbiComp. Over the last year, we have leveraged this research as the basis for a whitepaper geared toward policymakers, for publication this fall. We also intend to organize a series of meetings in Washington D.C. to discuss our work with legislators, federal agencies, and advocacy organizations interested in AR policy. As mentioned, our work on AR also provided an opportunity to pilot the diversity panels.



Crypto-currency

We extended our initial review of crypto-currencies into an article submitted to the Financial Cryptography conference. In *Cryptographic Currencies from a Tech-Policy Perspective: Policy Issues and Technical Directions*, we examined legal and policy issues surrounding crypto-currencies, such as Bitcoin, and how those issues interact with technical design options. With an interdisciplinary team, we considered a variety of issues surrounding law, policy, and crypto-currencies—such as the physical location where a crypto-currency’s value exists for jurisdictional and other purposes, the regulation of anonymous or pseudonymous currencies, and challenges as crypto-currency protocols and laws evolve. We reflected on how different technical directions may interact with the relevant laws and policies, raising key issues for both policy experts and technologists.

We were also invited to participate in discussions with other stakeholders around Uniform Law Commission recommendations for state legislation and have been working with MIT's Digital Currency Initiative on projects including patent pools for Bitcoin. Next up is a project on crypto-currency policymaking at the international level.

Municipal Open Data

As part of a grant from the City of Seattle, and with new associate faculty member Jan Whittington from UW's Urban Design and Planning as primary, we began a new project on open data for cities. We have worked hand-in-hand with the City of Seattle to understand its current procedures from various disciplinary perspectives.

Municipalities across the US perceive the potential benefits to their organizations and the public at large from making the datasets they collect available online to the public. However, the same municipalities along with numerous scholars and public policy advocates are increasingly concerned about the consequences of releases of data about local resi-

dents. In particular, public entities collect and maintain databases that include personally identifiable and financially meaningful information about the people within their jurisdictions. Releases of data without consideration of privacy however could have an adverse impact on individuals or society. Similarly, datasets released that allow the categorization of individuals into groups can raise concerns for social equity. The purpose of this research is to assist municipalities by way of a case study in Seattle on the City's past and present releases of data, public preferences and awareness of open data releases, and evolving formats and implications of such releases with the adoption of new technologies. Furthermore, this research includes collaboration with the City for formulating a set of criteria and procedures for governing the release of datasets to the general public. Based on this empirical work, we generated a set of recommendations to help the city manage risk latent in opening its data.

How Data Opens

Cities **PUSH** data to an open data portal

People **PULL** data out (e.g., public disclosure requests)

Cities **SPILL** data (e.g., external or internal breaches)

Seattle Public Library

Members of the Seattle Public Library's technology team were interested in finding ways to maintain the confidentiality of borrower records while being able to do grant reporting on issues like demographics of their users. Over a series of meetings, the Lab explored the Library's goals and potential technical security solutions for their requests. We plan to continue working with the Library, expanding our Open Government Data project's review of City of Seattle vendor Terms of Service to the Library's vendors.

EDUCATION

We have continued to work towards our goal of creating technologists conversant in policy and attorneys conversant in technology, helping them to tackle tech policy challenges in government and the private sector upon graduation.

Curriculum Modules on Tech Policy

Under the leadership of associate faculty David Henry, we have been developing education modules for undergraduate technical education. These modules position students to envision solutions to technical problems within a particular policy environment, which is carefully framed for pedagogical objectives. For example, one module focuses on the features and uses of aerial drones, and asks students to consider how technical features and policy might encourage appropriate uses while discouraging inappropriate ones. A second module focuses on technical solutions for enabling college students to share and manage their personal information in an educational environment. The policy environment for first module is underspecified, and the challenge is to extend the technical design space to include policy design. In the second, the policy environment is fairly well specified, and the challenge is to develop technical solutions that conform to existing regulatory requirements. By prompting students to envision solutions to technical problems in such varying kinds of policy environments we seek to develop students' critical awareness for policy. These modules will be piloted in the UW Information School in Autumn 2015.

Tech Policy Seminar – CSE 590Y

This year we organized a seminar that included both law and engineering graduate students. The goal was to attract computer scientists with an interest in law and policy, and law or policy students with an interest in technology. The course was organized such that each week a pair of students, one from each discipline of law and engineering, presented on a topic of interest to them. Topics included mobile privacy, drones, online harassment and cell site simulators. We received very positive feedback and plan to continue to offer this seminar annually.

Presentation at SOUPS education workshop

The Symposium on Usable Privacy and Security (SOUPS) brings together an interdisciplinary group of researchers and practitioners in human computer interaction, security and privacy. This year, Heather Richter Lipford from the UNC Charlotte and Simson Garfinkel from NIST, funded by an NSF grant, organized a SOUPS workshop to start collecting the topics, knowledge units, and skills as well as learning goals and objectives within usable security and privacy for a variety of computing students. We shared our experience with the Tech Policy Seminar and undergraduate modules. One of the most discussed topics at the workshop was how to include a discussion of policy and ethics within regularly scheduled courses, and the UW Tech Policy Lab's leadership in that space was widely acknowledged by the participants. The ultimate goal is to devise open source curriculum units to be dropped in to a course.

EVENTS & WORKSHOPS

The Tech Policy Lab continues to provide great opportunities for those interested in emerging technology topics to engage with a variety of visitors, workshops, and other events. From the national We Robot conference to workshops and the local monthly Tech Policy Happy Hours, this year the Lab brought tech policy topics to a wide audience.

Flagship Conference

In spring 2015 the Lab, with the support of the University of Washington School of Law, hosted the fourth annual conference on robotics, law, and policy. We Robot draws scholars from across the United States and abroad. The Lab brought over twenty speakers to Seattle for an event with a first day attendance of over 150 people.

We Robot fosters conversations between the people designing, building, and deploying robots, and the people who design or influence the legal and social structures in which robots operate. This year's call particularly encouraged contributions resulting from interdisciplinary collaborations, such as those between roboticists and legal, ethical, or policy scholars.

Built on existing scholarship that explores how the increasing sophistication and autonomous decision-making capabilities of robots together with their widespread deployment everywhere from the home, to hospitals, to public spaces, to the battlefield disrupts existing legal regimes or requires rethinking of various policy issues, this year focused on "solutions," projects with a normative or practical thesis aimed at helping to resolve issues around contemporary and anticipated robotic applications. Panels included discussions of robot passports, anthropomorphizing robots, governance, and teleoperated robot security.



Distinguished Lecture Series

In our second year we began a biannual Distinguished Lecture. Our lecture series brings to Seattle individuals the public might not otherwise hear from and shares their work with the community. In its first year, the series provided an opportunity to learn about “Responsible Innovation in the Age of Robots and Smart Machines” with moral philosopher of technology Jeroen van den Hoven; and hear from Anthony Dyson, the roboticist who built R2-D2.

Jeroen van den Hoven: Responsible Innovation in the Age of Robots & Smart Machines

Many of the things we do to each other in the 21st century—both good and bad—we do by means of smart technology. Drones, robots, cars, and computers are a case in point. Military drones can help protect vulnerable, displaced civilians; at the same time, drones that do so without clear accountability give rise to serious moral questions when unintended deaths and harms occur. More generally, the social benefits of our smart machines are manifold; the potential drawbacks and moral quandaries extremely challenging. In this talk, he addressed the question of responsible innovation drawing on the European Union experience and reconsidering the relations between ethics and design. He used ‘Value Sensitive Design’, to provide illustrations from robotics, AI and drone technology to show how moral values can be used as requirements in technical design.



Jeroen van den Hoven is full professor of Ethics and Technology at [Delft University of Technology](https://www.tu.nl/en), he is editor in chief of [Ethics and Information Technology](https://www.tu.nl/en/ethics). He was the first scientific director of [3TU.Ethics](https://www.tu.nl/en/ethics) (2007-2013). He won the World Technology Award for Ethics in 2009 and the IFIP prize for ICT and Society also in 2009 for his work in Ethics and ICT.

Anthony Dyson: Conversation With the Person Who Built R2-D2

Anthony Dyson, noted roboticist and special effects model-maker, and builder of the famous R2-D2 discussed the future of robotics with Lab Co-Director Ryan Calo. In addition to building R2-D2 for Star Wars (and supervising special effects for The Empire Strikes Back and Superman 2), Tony designed and built robots for some of the largest electronic companies in the world, including Sony, Philips and Toshiba.



Workshops

As part of the Lab's effort to create different kinds of opportunities for interdisciplinary discussion, we host and engage in workshops with individuals from other universities and organizations. This year the Lab hosted workshops on topics ranging from robots to accessibility, digital civil rights and more.

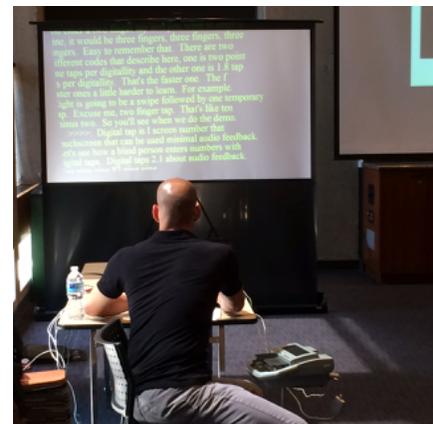
Should we regulate robots?

This discussion brought together students and faculty from arts, informatics, computer science and more to engage with Cory Doctorow and Ryan Calo around Cory's piece on "Why it is Not Possible to Regulate Robots" and Ryan's "The Case for a Federal Robotics Commission." Held at the DXARTS makerspace off-campus, the event was an opportunity to engage in discussion at an out of the ordinary setting.



Accommodating Technology - 25 Years after the Americans with Disabilities Act

2015 marked the 25th Anniversary of the signing of the Americans with Disabilities Act (ADA). While there have been incredible advances in technology over the past quarter century, new technologies also regularly surface issues of accessibility. The Tech Policy Lab organized an afternoon roundtable to discuss current accessibility efforts, new technologies' accessibility, and individual choice in the use of assistive technologies. Bringing together representatives from a variety of organizations including the Washington



Patrick Heard, providing live captioning of the discussion



Assistive Technology Act Program (WATAP), DO-IT, Technology Accessibility

Center, Disability Resources for Students, Department of Education Civil Rights Division, and Microsoft, the group explored topics including: how emerging technologies like augmented reality can be assistive as well as present challenges for accessibility; efforts to crowdsource location accessibility information; and the cultural implications of assistive technologies that individuals may not wish to use, like neuroprosthetics and robotic augmentation.

Future of Payment

Is Bitcoin the future of money? Maybe not, but block chain technology could be. From Bitcoin and Circle, to Venmo and Square Cash, there are many new popular forms of payment. Together with a group of scholars working on Bitcoin we explored both the technical and regulatory developments, with an eye towards what the future of payment could be in a possibly cashless society. Following this workshop we are continuing to work towards an output that assesses the technology and policy issues in this area.

When Companies Study Their Customers: The Changing Face of Science, Research and Ethics

Hosted by the Silicon Flatirons Center for Law, Technology, and Entrepreneurship and the Tech Policy Lab this event brought together some of the many commentators from the Facebook “emotion contagion study” with other thought leaders from academia, industry, civil society, and the legal community, to talk about the changing face of science, research, and ethics. Panelists included Edward Felton, Paul Ohm, and the Lab’s own Ryan Calo. From “A/B Testing and Manipulation Online – Should We Care?” to “The Changing Nature of Science and Research – The Public and Private Divide” the workshop provided the opportunity for important, timely discussions.

Cyber Civil Rights and Effective Responses to Revenge Porn

This year, with K&L Gates, we sponsored a roundtable on cyber civil rights and revenge porn. The panel included speakers from K&L Gates, the Federal Trade Commission, Legal Voice and Without My Consent. With active proposals in the Washington State Legislature, a new [Cyber Civil Rights](#) Legal Project at K&L Gates, and the first [FTC settlement](#) with an operator of a ‘revenge porn’ site, the topic was ripe for engaging discussion.

Special Guests

Each month the Lab hosts a happy hour to bring to together those interested in tech policy. Often they are arranged to coincide with a special guest or event, featured guests have included Woodrow Hartzog, Neil Richards, Alex Alben, Washington States’ first Chief Privacy Officer, and Michael Fertik founder of Reputation.com and author of The Reputation Economy. The Lab also invites guests to give talks on current topics, this year we had Cory Doctorow discussing privacy and Danielle Citron presenting her work on online harassment.

Cory Doctorow

The Lab worked with other programs at the University of Washington on a Surveillance & Privacy Series that brought Cory Doctorow to visit in October, 2014. His lecture “Alice, Bob and Clapper: What Snowden taught us about privacy” addressed issues of privacy, surveillance, copyright, cryptography, and social activism. In addition to being co-editor of the popular weblog Boing Boing, and writing novels, he was for-



merly Director of European Affairs for the Electronic Frontier Foundation. After his talk, the Lab hosted a dinner with Cory that included a wide variety of tech policy interested groups, including the CTO for the Seattle Public Library, professors from DXARTS and the Law School.

Danielle Citron: Hate Crimes in Cyberspace



Most internet users are familiar with trolling—aggressive, foul-mouthed posts designed to elicit angry responses in a site’s comments. Less familiar but far more serious is the way some use networked technologies to target real people, subjecting them, by name and address to vicious, often terrifying, online abuse. In *Hate Crimes in Cyberspace* Prof. Danielle Citron exposed the startling extent of personal cyber-attacks and proposes practical, lawful ways to prevent and punish online harassment.

The Lab hosted a lecture from Prof. Citron with fantastic turn out. Danielle Citron is the Lois K. Macht Research Professor & Professor of Law at the University of Maryland Francis King Carey School of Law. Professor Citron is a privacy expert and has written for the *New York Times*, *Forbes*, and *Slate*.

OUR PEOPLE

In our second year we added students and faculty, building our connections to other units through Faculty Associates. Broadening from our initial base with the Information School, Law School, and Computer Science & Engineering, we added expertise from Electrical Engineering and Urban Design & Planning. Our faculty associates have worked on projects from teleoperated robot security to policy education modules and open government data.



The Tech Policy Lab also added three new students this year, with a total of nine Ph.D. and J.D. candidates collaborating on a variety of projects. Our Computer Science Ph.D. candidate Adam Lerner is working on web tracking. At the Information School, Meg Young ran the focus groups that formed the foundation for our Open Government Data project. Before graduating and heading to the Federal Trade Commission as its inaugural Technology Policy Fellow, Aaron Alva continued his work on policy levers for big data and represented the Lab at “Building a Cybersecurity Roadmap: Developing America’s Edge.” Our current undergraduate research intern is working towards a dual degree in Philosophy and Information Science.



Lab Co-Directors



Ryan Calo's paper "Robotics and the New Cyberlaw" was published in the University of California, Berkeley's California Law Review. As drones and robotics captured the public's attention this year, Ryan was regularly featured in mainstream media and appeared on Good Morning America to discuss the policy implications of drones. As program committee Chair for the We Robot Conference held at the University of Washington, Ryan brought together the resources for a successful conference.

Batya Friedman is leading the Lab's project that seeks to understand why technology policy so often seems to come up short. In addition to this research, she was instrumental in the creation of the Diversity Panels, and the Lab's engagement with policy and undergraduate technical education and, more broadly, has begun to explore how to integrate analyses and design of policy into undergraduate technical education as a means to train a new generation of more policy aware technologists.

As lead Faculty Director this year **Tadayoshi Kohno**, guided the Lab through expansion. Collaborating with faculty associate Howard Chizeck and Tamara Bonaci, they published work on cyber security threats against teleoperated surgical robots. At APRU Japan, he joined a panel on the future of the internet and helped bring members of Keio's International Center for Internet & Society to Seattle. He also joined as an inaugural member of the Forum on Cyber Resilience, a new National Academies Roundtable with leading voices on cyber security.

Staff

As associate director **Emily McReynolds** provides the hub for the Lab's many interdisciplinary projects. She led the creation of the Tech Policy Seminar and organized We Robot as well as many other opportunities for interdisciplinary conversation. She was the lead author on a paper examining cryptographic currencies from a tech policy perspective and presented the Lab's work at the Financial Cryptography workshop on Bitcoin. Representing the Lab at conferences, including Governance of Emerging Technology and SOUPS, Emily shared the Lab's projects with technologists and policy experts.

Another key addition to the Lab's capacity was University of Washington Law School graduate Jesse Woo. Jesse helped with drafting the results of augmented reality research and provided research for the foundation of the Open Government Data project with the City of Seattle.

Students

Our student scholars were essential contributors to a number of Lab projects. Meg Young led the focus groups for the Lab's Open Government Project which was featured at UC Berkley's Symposium on Open Data: Addressing Privacy, Security, and Civil Rights Challenges. Mike Katell and Lassana Magassa spent significant time interviewing technology policy thought leaders in law and computer science on why technology policy fails.

Mike Katell has an extensive IT background, before joining the Tech Policy Lab and the Information School as a Ph.D. student he spent ten years in IT at the legal aid nonprofit Columbia Legal Services. Since starting at the Lab he has contributed to projects on Tech Policy Failure as well as had two papers accepted for publication. "Do Privacy and Privilege Converge? Thoughts on the Coming Storm of Privilege-Based Privacy Affordance" will be part of the 2015 Amsterdam Privacy Conference and "The Personal Information Exchequer Rights and Restitution Engine" will be including in the 2015 Critical Alternatives Workshop on Value Sensitive Design.

Lassana Magassa is a Ph.D. candidate at the UW Information School. His research explores how different modes of social control impact people's perceptions and uses of technology. As part of the Diversity Panel project Lassana organized three focus groups, building the foundation and relationships for future panel work.

Alumni

Two of our students have moved on to exciting positions in technology policy work. Aaron Alva will be joining the Federal Trade Commission in the fall working with Chief Technologist Ashkan Soltani as the FTC's first Technology Policy Fellow. Bryce Newell has begun a three year post-doctoral research position at the Til-



burg Institute for Law, Technology, and Society (TILT), where he will continue his focus on police use of surveillance technologies, privacy and access to information. Tamara Bonaci received the Yang Research Award for Outstanding Doctoral Student for her work on security and privacy of cyber-physical systems including legal and ethical issues.

LOOKING AHEAD

We've had an intensely rewarding first two years and look forward to continued growth in activity and impact. Here are some of our plans and goals going forward:

New Programming. We intend to convene our community around a series of ambitious, global summits devoted to identifying grand challenges in tech policy. We have also lined up or invited exciting speakers as part of our Distinguished Lecture series, which will feature cyber security leader General Kevin Chilton and others.

Expanding Research. As we add projects each year, we find more ways to build on the incredible resources and diversity of talent that is available at a leading research university. Our research brings together more and more disciplines to help at the city, state, and national level on open data, new forms of payment, robotics, and cyber civil rights.

Overarching Methodologies. Led by Batya Friedman, we are designing projects to affect the underlying methodology used in research and developing recommendations targeted to policymakers. Our tech policy failures project and diversity panels are planned to be public-facing, open source learning tools in the next year.

Training the Next Generation. We continue to expand our educational endeavors, adding an annual tech policy seminar this year and new open source curriculum modules planned for our website, we look forward to working with others to build policy savvy technologists.

Thank you for your interest in the Tech Policy Lab!