ARIN

ELECTIONS ☑

VOTER **GUIDE 2019**

SLATE FOR

ARIN BOARD OF TRUSTEES
ARIN ADVISORY COUNCIL
NRO NUMBER COUNCIL

VOTING **OPENS**
4:00 PM ET
THURSDAY, 31 OCTOBER

VOTING **CLOSES**
6:00 PM ET
FRIDAY, 8 NOVEMBER

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✅ Board of Trustees

✅ Advisory Council

✅ Number Resource Organization Number Council (NRO NC)

Please note that ARIN publishes the candidate responses as they are submitted; they are not altered or edited in any way.

ARIN ELECTIONS

16 September 2019

Dear ARIN Member,

I am writing to you in your capacity as the designated Voting Contact for your organization for the upcoming ARIN elections. As your organization's sole designated Voting Contact, you are responsible for casting an online ballot on behalf of your organization during ARIN's annual Election occurring at the end of October.

Please mark your calendar noting that the online polls for the ARIN Board of Trustees, ARIN Advisory Council (ARIN AC), and the Number Resource Organization Number Council (NRO NC) elections will open at 4:00 PM ET on Thursday, 31 October and remain open until 6:00 PM ET on Friday, 8 November.

This year, ARIN seeks to fill two (2) of the six (6) member-elected seats on its Board of Trustees. There are five (5) seats up for election from our 15-member ARIN Advisory Council and one (1) ARIN representative seat up for election on the NRO Number Council.

In preparation for voting, I encourage you to familiarize yourself with each candidate – specifically, carefully read the information made available inside this Voter Guide. Consider the issues that are most crucial to you, your organization, and the Internet, and weigh the information available on each of the candidates.

Voting is simple, requiring only a few minutes of your time but fulfilling a vital community responsibility. Your ballot can be cast online from the comfort of your office, home, or mobile device anytime during the election timeframe. To access and cast your ballot, log in to your ARIN Online account and click on the "Vote Now" link located on your dashboard.

On behalf of ARIN and our community, thank you for your time, support of, and participation in ARIN's 2019 Elections! Please reach out to our member services team at members@arin.net if you have questions, or require assistance.
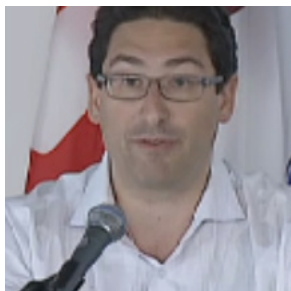
Sincerely,

John Curran
President and CEO
American Registry for Internet Numbers (ARIN)

Board of **Trustees**

Bram **Abramson**
Technology Counsel

https://twitter.com/bramabramson
https://www.linkedin.com/in/bramabramson
Curriculum Vitae

Board Member Job Requirements:

(a) Potential ARIN Board Members are expected to thoroughly review the Board Member Job Requirements found here as part of completing this questionnaire. Do you foresee any issues with fully executing those requirements and expectations? If yes, please provide specific details below.

No, I don't foresee any issues with fully executing the requirements and expectations of a board member. I'd be honoured to carry them out.

Conflicts of Interest:

(a) Please disclose any conflicts of interest you may have that would impact your ability to perform your duty as a member of the ARIN Board of Trustees.

There are no conflicts of interest that would impact my ability. I have reviewed ARIN's Nomination and Appointment Conflict of Interest List and its Conflicts of Interest list in considering this.

(b) How do you propose to resolve any conflicts identified in (a)?

Not applicable -- there are no conflicts.

Education:

(a) Please list any undergraduate degree(s) you received, the institution and the date issued.

B.A., Communications, with a certificate in Community & Public Affairs. Concordia University, 1995.

(b) List any graduate degrees you have received, the institution and the date it was issued.

B.C.L., LL.B., Law. McGill University, 2007.

Present Job:

(a) Please provide the name of any company or organization you currently are employed by or receive direct or indirect compensation from. Please describe the business of each such entity and your current title, and the office address of the business.

Since April, I have been consulting for public-sector, commercial, and not-for-profit entities -- working in English and in French -- in the areas of telecommunications, media, privacy, and financial regulation. My work relates to law reform, policy analysis, and corporate governance.

Board Service:

(a) Please identify any non-profit or for-profit corporate board(s) you currently serve on, how long you have served and what offices, if any you have held.

1. Canadian Internet Registration Authority -- Community Investment Committee (2019-2021). This is a committee established by CIRA to guide its community investment program, to which I was appointed by CIRA's board.

2. Ontario Securities Commission -- FinTech Advisory Committee (2019-2020). This committee advises regulatory staff on matters relating to new financial technologies and innovative businesses in the securities industry.

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(b) Similarly, please identify any non-profit or for-profit corporate board you served on in the past 5 years that are not included in answer to (a).

3. Commission for Complaints for Telecom-television Services -- director & governance committee member (2016-2018). This is a body established by Canada's telecommunications and broadcast regulator, to which complaints from consumers and small businesses are delegated. The seven-member board includes three industry representatives; I was elected as the representative of non-incumbent and smaller telecom providers.

4. Free Geek Toronto -- director (2016-2017). This Toronto social enterprise, established as CyberEquality Inc., works to repurpose old and unwanted computers, and related devices, in order to increase access to computing, promote the use of free and open-source software, reduce the impact of e-waste, and provide technical training to increase employability.

(c) Please describe how service under (a) or (b) may have prepared you for service to ARIN.

Board and advisory work along the continuum that links public, para-public, and not-for-profit sectors has rounded out my for-profit work in ways that help inform how I'd serve ARIN. I have learned to work in the open and reach out to stakeholders, without crossing the line that separates a board that leads from the day-to-day management that takes charge of operations -- and whose creativity and skill mustn't be frustrated in doing so. I have advised on legal and risk management situations from the standpoint of a overseer who listens carefully and builds consensus, not an in-the-trenches advisor looking to get my arms around the whole process:

- In assisting CIRA's Community Investment Program, I have had tangible experience and learned valuable lessons about helping guide a grants and funding program from the granting side which I believe will help serve ARIN as it embarks on growing a similar initiative.

- In advising the Ontario Securities Commission on fintech matters, I have come to understand the importance of being able to convey directly an awareness of similar issues seen through different eyes -- and how it should not be taken for granted that a regulatory or policy body's day-to-day operations already have these perspectives.

- At the CCTS I served as the director of a body at the centre of the telecom industry, with a front-line call centre staff working every day to assist stakeholders, at which questions around consistency of approach and linking day-to-day concerns with the broad policy directions set, where key. I'd like to bring this

experience to a situation which, in some ways, is similar at ARIN.

- At Free Geek Toronto I worked with an organization with both a key core mission (recycle computers) but, at the same time, a broader set of goals that it tried to realize through that mission (enhance community members' employability, help the environment, champion the open-source movement). I see something similar in ARIN, which is the steward of numbering resources, but has a broader mission as part of a resilient, open Internet ecosystem governed and run by community members who freely choose to become involved and hash out solutions in which the best ideas win.

As a technology-oriented lawyer I have long been involved in providing governance advice. But my role as a board member would be very different from that of someone acting in the capacity of ARIN's legal adviser. My experience on advisory boards and on governing boards has helped put me in the position of being able to contribute in the latter position.

Related Experience:

(a) Do you have any other industry related experience that you feel is relevant to your serving? What did you find the most rewarding from those experiences?

I have worked, in both financial and legal capacities, in the telecommunications and Internet sectors, for most of my professional life, and have been focussed on Internet infrastructure evolution from those points of view -- which require technical understanding, but are not technical roles -- since the mid-1990s. I have watched more and more of the spheres of everyday life, from audiovisual entertainment to interpersonal communication to government and financial services, become "over-the-top" applications conducted over the Internet, and in ways that influence how the Internet is architected and run.

I have been involved with telecom and media regulation as these have evolved from "beauty contest" competitions between the most deserving candidates, to more market-based approaches. That is not to say that a similar evolution is what is in the best interests of the IPv4 space -- but that I have professional experience in evaluating the arguments for optimizing different sides of the equation.

I have been the person focussed tightly on setting up law enforcement relations functions for an ISP and for a cryptocurrency provider, and have combined training with experience both as chief privacy officer and in implementing responsible approaches to anti-money-laundering. These, combined with broader legal experience around company formation, will stand ARIN in good stead in addressing similar questions on privacy, accuracy, and accountability as

steward of sensitive registry information.

I have enjoyed roles where I bring disparate ideas and people together to help craft solutions that make sense, but may not have been obvious. I achieved successes for clients, including my employers, when I was able to identify approaches that moved things forward without threatening anyone's entrenched position, treat those as low-hanging fruits for early wins, and build from there.

Engaging in that kind of work for ARIN would be energizing and deeply rewarding. I believe that bringing my ability to understand risks and opportunities in this sector, born of broad-based industry experience, will allow me to make a substantial contribution to ARIN's activities. ARIN benefits from excellent legal counsel. Complementing that function with a corresponding voice on the board would, I believe, enhance the organization's ability to guide implementation of legal advice in a way that is harmonious with other considerations from the get-go.

Required Biography:

(a) Please provide here your full biographical information (attached separate resume or Curriculum Vitae is an acceptable substitution) including, if you choose, any data asked for in this questionnaire, and provide a brief description highlighting your experience relevant to the duties of the ARIN Board of Trustees. You may also optionally include additional web links to external websites (e.g. social media) though that may not be substituted for the aforementioned required biography.

I first got involved with networking as SysOp of a FidoNet BBS, available at speeds as fast as 1200 bps, at age 15. I'm now 45, and hope I've picked up some relevant experience along the way.

Throughout, I've woven community involvement and university teaching into what I do -- activities I enjoy and which have honed my ability to connect with those I'm presenting to -- and various professional designations to help ensure I was meeting a baseline level of competency (Ontario bar membership, private investigator licence, privacy and anti-money-laundering designations, and a couple of mini-MBA programs intended for in-house counsel and for media industry participants). However, my post-university career has unfolded in three main phases.

1. TELECOM INDUSTRY ANALYST

In 1998, I left graduate school at Université de Montréal to move to Washington, DC and map telecommunications infrastructure with a tiny company called TeleGeography. The Internet was in full blossom and my graduate studies in communication policy felt like they were beside the point. I spent three years analyzing telcos around the world and their infrastructure, scrutinizing corporate structures, parsing traceroutes, hanging out at conferences, and developing the kinds of critical lenses and spidey sense that are pretty similar to ARIN's work vetting and registering addressholders. We put out statistics republished by the ITU, created wall maps of deployed cross-border Internet capacity, and tracked submarine cables. It was glorious.

After 9/11, I decided to head back to Canada, and joined the national telecom regulator (CRTC) to help build capacity for conducting industry analysis of competition. I again had to work with companies from all over the place -- here, mostly Canada -- creating analytic frameworks, handling confidential data, and aggregating it up to usable statistics with accompanying big-picture thought. But the government context imposed a kind of conservatism and cautiousness that were important lessons learned for those stewarding key resources. Just like ARIN.

2. TELECOM, DATA AND COMMUNICATIONS LAWYER

While at the CRTC, it seemed to me that the lawyers had the most interesting jobs there, so I decided to become one. I ended up joining a big law firm rather than going back to the CRTC -- I wanted to be near family in Toronto -- and spent the next seven years or so apprenticing, then practicing, in the technology practice group of a major Canadian law firm. Our practice was unique in that it combined domestic communications industry advice on governance, corporate structure, and policy advocacy, with an important international telecom law reform practice. Most of the policy and regulatory work, and lots of the international work, were in multi-stakeholder proceedings on fairly arcane points.

I was the only junior in a small group of greybeards and experienced counsel working on highly technical matters that mixed policy and technology. Our client base was diverse. Throughout we had to be scrupulous, careful, and creative in complex organizational settings. There isn't much there that isn't relevant to the role I'd play on ARIN's board.

3. IN-HOUSE COUNSEL

I left private practice in 2014 to play, successively, two in-house roles. From 2014 to 2017, I was Chief Legal & Regulatory Officer at TekSavvy (AS5645), where the team I built -- most of which is still in place -- included a law enforcement relations function with a pro-privacy, pro-transparency bent. I was very active during this period in industry forums, like the Canadian Network Operators Consortium (CNOC), and in regulatory advocacy on technical matters.

Then, from 2018 to last April, when I began consult-

ing, I was General Counsel of a blockchain software company called Decentral Inc., which makes a software-as-a-service wallet called Jaxx Liberty. I was thrust into a whole new world of financial reguation, coalition-building in uncertain circumstances, and aspirational decentralization. It was 1998 all over again, only blockchain instead of Internet, with various blockchain networks adopting Internet governance features like RFCs wholesale. It was an eye-opening and reminder-filled immersion in the balance between enthusiasm, hardcore geekery, and big-picture context for scaling.

In between, I took a sabbatical of sorts as Open Web Fellow with the Mozilla Foundation (2017-2018). My fellowship was hosted by the Citizen Lab, a University of Toronto unit that does work on human rights and global cybersecurity. I learned that my skill set is better suited to advising on concrete situations than in an academic environment, but I enjoyed the chance to spend the year pursuing knowledge, speaking at conferences, and other things fellow-y.

ARIN's Challenges:

(a) What do you believe to be ARIN's greatest challenges? How do you believe that your background and skills would help ARIN in addressing these challenges? (Maximum 250 words)

ARIN is at something of a crossroads. ARIN is managing the downward glidepath of increasingly scarce IPv4 resources whose value, in many cases, are at a peak -- requiring that it engage in the kind of registrant analysis and anti-fraud activity that are the focus of an intense global conversation around corporate transparency, privacy, and data protection. At the same time, ARIN is stewarding a more plentiful resource in IPv6 numbers, establishing a foundation that avoids pairing abundance with sloppiness or cruft. Some places where these collide:

- Around registrant transparency, a standards-based information ecosystem is emerging. Organizations like the Open Corporates Trust are evolving alongside global bodies like the Financial Action Task Force on Money Laundering. At the same time, the GDPR is finding echoes in countries interested in a free flow of data with Europe, spurred on by citizenries' enhanced awareness of privacy rights. How ARIN adopts metadata standards that allow it to participate in pro-privacy registrant transparency, with a foot in both camps, is the next chapter in the process.

- Around law enforcement relations, there is a long row to hoe. ARIN has put markers in place. But this process will continue to evolve with technology and with policy. Proceduralizing these functions in ways that ensure consistency, and build trust through transparency, is the next step.

I know these areas. I've tackling anti-money-launder-

ing from a privacy standpoint I led Canada's first ISP transparency report. I'd be honoured to help steward how ARIN addresses them.

Board Discussion Topics:

(a) As a member of the Board, what would your philosophy and goals be towards Board and Executive Management succession?

Good succession planning goes to the core of a healthy organization. Board and management have to be attracted to the organization by, and perform their roles with, the sense that there is a longer future for them here that includes capacity-building and progression. Moves to ensure roles like the past chair and chair-elect are identified and seated in advance go int he same direction. ARIN has a done a good job with initiatives like staggered terms and management succession charts. We have seen steady, sustained involvement by key board and advisory members, and by employees who remain with the organization as an excellent employer.

The challenge now will be to maintain that stickiness while widening the circle to a more diverse group that goes beyond informal ties to sweep in new demographics and enhances diversity. Initiatives like the fellowship program to bring in new energy are an important piece -- something I can attest to personally.

My philosophy is therefore one that prioritizes capacity-building and outreach from the bottom up: create permeability that lets enthusiasm seep in from the grassroots, bring good people in who want to build on that, and take the time to develop them. My goal is that non-insiders with outstanding potential feel comfortable getting involved, and supported in doing so. Diversity that reflects organic involvement from ARIN's non-U.S. members of all genders, particularly in the Caribbean and outside the Anglophone sphere, is the intended outcome.

(b) Based upon your understanding of ARIN's current strategic plan, what opportunities or challenges do you foresee for the organization, which would influence the current or future strategic plans.

ARIN's strategic plan includes strong accountability to membership, a mission-driven approach to law enforcement, a strong training focus, and upholding the multi-stakeholder model of policy formation. These will be challenged by ongoing real-world and technical developments, ranging from political and environmental instabilities, to the need to act quickly and effectively in ways that make consultation harder. In addition to the privacy- and security-related challenges described above, it seems to me that -- as the blockchain hype has begun to give way to sustained conversations about how shared and

distributed databases are evolving and ought to -- there will be challenges around ARIN's information infrastructure itself. As ARIN continues to review and enhance online services in ways that both serve direct users and participate in larger ecosystems, it will need to consider how to marry resilience, accuracy, and anonymity.

(c) Understanding and managing organizational and environmental risk is an important responsibility of the Board. What do you see as potential risks to the organization and how should the Board best discharge its responsibilities regarding risk?

Continuity risks inherent to ARIN include a political environment that could threaten its organizational independence, third-party legal threats, and technical challenges around record retention and operations. The Board has a responsibility to review business continuity planning as well as the adequacy of controls that are in place, without getting involved in day-to-day operations. Doing that will involve working closely with the CEO to shape the kinds of dashboards and regular reporting that allow both the Board and, where appropriate, the community, to spot issues that need digging deeper into.

Community risks in which ARIN must avoid participating include the risk that its practices harm digital rights and freedoms, and the environment in which we operate. This could range from facilitating bad practices by state authorities, to not doing enough to secure the ecosystem against malicious or incompetent actors participating in it -- see RPKI. Adopting a pro-privacy, pro-security, and pro-rights approach, and a decision-making calculus that minimizes environmental footprint, and following through with initiatives that minimize inherent risk, are important ways in which to avoid these. But we can't do that with diverse and broad participation, and engagement with our communities, that helps us see threats to rights and to the environment we would miss.

Patrick W. **Gilmore**
Addrex

https://www.linkedin.com/in/ianai/
Curriculum Vitae

Board Member Job Requirements:

(a) Potential ARIN Board Members are expected to thoroughly review the Board Member Job Requirements found here as part of completing this questionnaire. Do you foresee any issues with fully executing those requirements and expectations? If yes, please provide specific details below.

No issues.

Conflicts of Interest:

(a) Please disclose any conflicts of interest you may have that would impact your ability to perform your duty as a member of the ARIN Board of Trustees.

I am employed by Addrex, Inc. Addrex is a marketplace for the transfer of IPv4 number blocks. Addrex charges a fee for facilitating policy compliant transfers on the marketplace.

(b) How do you propose to resolve any conflicts identified in (a)?

If during the course of my tenure there is business which may possibly benefit my employer or constitute a potential conflict, I shall recuse myself from any such vote. I will consult with ARIN counsel on potential conflicts and be conservative on what constitutes a conflict or benefit to my employer.

I was elected to the board prior to my employment with Addrex, which began in September 2018. I discussed any possible conflict with the management and counsel at both ARIN and Addrex before taking the position. There has been no burden on the Board of Trustees due to the AC creating policy, not the Board of Trustees.

Education:

(a) Please list any undergraduate degree(s) you received, the institution and the date issued.

UCLA, BS Mathematics, 1992

(b) List any graduate degrees you have received, the institution and the date it was issued.

None

Present Job:

(a) Please provide the name of any company or organization you currently are employed by or receive direct or indirect compensation from. Please describe the business of each such entity and your current title, and the office address of the business.

Addrex
Marketplace for IPv4 number blocks
Vice-President Marketplace Services
505 Huntmar Park Drive, Suite 325, Herndon, VA 20170, USA

Deep Edge
Infrastructure ecosystem provider
Founder & Special Board Advisor
800 Boylston Street, MS: 990168, Boston, MA, 02199-9998, USA

Board Service:

(a) Please identify any non-profit or for-profit corporate board(s) you currently serve on, how long you have served and what offices, if any you have held.

PeeringDB, 15 years, previous Chairman

North American Network Operators' Group (NANOG), 4 years then term limited, re-elected 3 years ago, previous Vice Chairman, previous Secretary

American Registry for Internet Numbers (ARIN), 3 years, previous Secretary

(b) Similarly, please identify any non-profit or for-profit corporate board you served on in the past 5 years that are not included in answer to (a).

Seattle Internet Exchange (SIX), 11 years

London Internet Exchange (LINX), 11 years, previous Vice Chairman

(c) Please describe how service under (a) or (b) may have prepared you for service to ARIN.

I have extensive experience in bottom-up, com-munity-based organizations. I have helped them grow from inception to critical pieces of the Internet ecosystem (PeeringDB), transition to an independent entity (NANOG), and through long term growth (SIX, LINX).

I have been on the board of ARIN itself for the past three years, helping guide the organization through changes to the Nominations Committee, addition of a CFO, transition of the COO, and changes in budget & staffing which moved the company from a deficit to a surplus.

Related Experience:

(a) Do you have any other industry related experience that you feel is relevant to your serving? What did you find the most rewarding from those experiences?

Most of you probably know me from my position as chief network architect at Akamai Technologies. I have also been chief architect at national and international backbones and CTO of a cloud & colocation company. These positions have given me a deep understanding of the technologies, economics, and, perhaps most importantly, politics underlying how packets get from point A to point B. Number policy is an integral and vital part of that ecosystem.

I have also spent more than two decades serving the users of the Internet through the various roles as a board member, contributor to Internet standards, creating and running Internet exchange points, and doing whatever I can do to ensure the overall security and stability of the Internet.

I volunteer for boards and projects because I honestly believe the Internet has made the world a better place. The Internet is not perfect, but I still believe it is on balance a plus for the human race. I want to be part of making it not just work, but work for everyone, better and faster, easier and safer. That is what I find most rewarding.

Required Biography:

(a) Please provide here your full biographical information (attached separate resume or Curriculum Vitae is an acceptable substitution) including, if you choose, any data asked for in this questionnaire, and provide a brief description highlighting your experience relevant to the duties of the ARIN Board of Trustees. You may also optionally include additional web links to external websites (e.g. social media) though that may not be substituted for the aforementioned required biography.

CV is attached. My LinkedIn URL is https://www.linkedin.com/in/ianai/.

For those who believe a CV is "TL;DR", here is the

Reader's Digest summary:

Current Positions:
* Addrex, VP Marketplace Services
- Marketplace for IPv4 transfers
* Deep Edge, Founder & Special Board Advisor
- Infrastructure ecosystem
* ARIN, Board of Trustees
* NANOG, Board of Directors
* PeeringDB, Board of Directors

Past Positions:
* Markley Group, CTO
- Cloud and Colo provider
* Akamai Technologies, Chief Network Architect
- CDN
* Onyx Networks, Chief Network Architect
- Global backbone
* Priori Networks, Director of Operations
- National (US) backbone
* SIX, Board of Directors
* LINX, Board of Directors

ARIN's Challenges:

(a) What do you believe to be ARIN's greatest challenges? How do you believe that your background and skills would help ARIN in addressing these challenges? (Maximum 250 words)

The elephant in the room is IPv4 exhaustion. The Internet needs to transition to IPv6 not just quickly, but also safely and efficiently.

The board's job is not to decide how that transition will happen. The community will decide how it wants to transition, both through individual business decisions and through community policies shepherded by the AC in ARIN and similar processes in other RIRs. The board's job is to ensure ARIN has the resources needed to execute those policies.

To do that, the board has a duty to ensure the organization is fiscally sound over the long term. This can be a challenge if the community changes the very fabric of how ARIN operates. I have been on the board of multiple organizations going through major changes such as moving to a completely different funding model, and creating a new corporation to move an organization out of a parent corporation.

I also believe the board should help guide efforts - with input from the community and staff - around outreach and education to accelerate v6 adoption. An obvious part is to push content, cloud, and connectivity providers to deploy and support v6. I have a great deal of experience implementing v6 on content and cloud infrastructure. I have also worked for many years to bring people and companies together to trade v6 traffic. With education and cooperation, v6 is today better performing in some instances than v4. This trend must continue, and ARIN can help.

Board Discussion Topics:

(a) As a member of the Board, what would your philosophy and goals be towards Board and Executive Management succession?

Succession in Executive Management is a difficult topic, and one I have been working on with John and the rest of the board during my tenure. I chaired the committee which picked NANOG's first Executive director, so I know how difficult it can be to find good executives for non-profits.

I honestly believe we are lucky to have our current CEO. However, it is the board's duty to ensure we are not dependent upon any single individual, no matter how good they are. The board is working with staff to eliminate all single points of failure in the organization, not just the CEO. Succession planning is critical to the stability of the corporation, which is a key responsibility of the board.

This does not mean we have two people for every position. This means we have a plan in place should any individual leave the organization. This plan is reviewed at regular intervals by staff and the board, making changes over time as the circumstances evolve.

Board succession is just as important. The board needs both fresh ideas and continuity. The board has fewer tools to manage turnover within the board than it does with staff, but there are some tools such as appointing an unelected board member.

To that end, I have been working to change the Nominations Committee. I believe the NomCom was put in place with good intentions, and has done good work, but it is not as transparent as I would like ARIN to be. We need a better process which allows the community more visibility into selection of board candidates. The board also should do a better job educating the community on which skills the board believes it needs to be effective. The board is working on these changes, although they will not be ready for this election.

(b) Based upon your understanding of ARIN's current strategic plan, what opportunities or challenges do you foresee for the organization, which would influence the current or future strategic plans.

This is what some would call an "exciting time" for ARIN - with all that implies, good and bad.

As mentioned above, proper management of the v6 transition is critical to ARIN's continued success. But there are many more challenges ARIN must face.

The community expects ARIN to provide more features and services. Taking security as an example at the top of many people's minds, new services such as RPKI are now required despite not being considered or even existing when ARIN was formed. The question becomes: How does ARIN satisfy the user requirements without overstepping its remit, and within acceptable funding & risk models?

(c) Understanding and managing organizational and environmental risk is an important responsibility of the Board. What do you see as potential risks to the organization and how should the Board best discharge its responsibilities regarding risk?

There are many threats to the organization the board must consider at all times, and occasionally take active measures against.

An example is the risk of RIR competition. If one of the other RIRs found a secondary income source and decided to subsidize registry services making them free, many ARIN resource holders may transfer to another RIR. This would impact ARIN's revenue and put at risk ARIN's ability to satisfy its mission.

There is always the risk of legal action again ARIN. The United States is notoriously litigious, and courts are frequently unaware of the RIR system, its history, or why it is important. A single bad judgement in even a minor case could cause an existential threat to the organization. I fully support ARIN's careful and thoughtful approach to legal matters, including the large sum set aside for legal matters.

Something many would not consider a risk but I do is the "feature creep" of additional services. RPKI discussed above is an excellent example. It puts a non-trivial cost on the organization to develop and maintain the service with zero additional revenue, to say nothing of the significant legal risk in providing the service.

Jacob **Glick**
North Inc.

https://twitter.com/jacobglick
https://www.linkedin.com/in/jacobglick/

Board Member Job Requirements:

(a) Potential ARIN Board Members are expected to thoroughly review the Board Member Job Requirements found here as part of completing this questionnaire. Do you foresee any issues with fully executing those requirements and expectations? If yes, please provide specific details below.

No.

Conflicts of Interest:

(a) Please disclose any conflicts of interest you may have that would impact your ability to perform your duty as a member of the ARIN Board of Trustees.

(b) How do you propose to resolve any conflicts identified in (a)?

n/a

Education:

(a) Please list any undergraduate degree(s) you received, the institution and the date issued.

University of Toronto, Honours Bachelor of Arts with High Distinction, 1999

(b) List any graduate degrees you have received, the institution and the date it was issued.

University of Toronto, Bachelor of Laws, 2002

Present Job:

(a) Please provide the name of any company or organization you currently are employed by or receive direct or indirect compensation from.

Please describe the business of each such entity and your current title, and the office address of the business.

General Counsel at North Inc.

Head of Legal, Public Policy, Government Relations, Intellectual Property, Regulatory and Corporate Governance at North. North makes the Focals smartglasses. Venture funded, with leading investors including Intel, Amazon and Fidelity, North is a leading scale-up technology company, changing the way people and computers interact.

Board Service:

(a) Please identify any non-profit or for-profit corporate board(s) you currently serve on, how long you have served and what offices, if any you have held.

Board of Directors, OpenMedia - since 2017
Nomination Committee, Canadian Internet Registration Authority (CIRA) - since 2017
Senior Executive Fellow, Centre for International Governance Innovation (CIGI) - since 2017
Executive Committee, Canadian Internet Policy Public Interest Clinic (CIPPIC), University of Ottawa Faculty of Law - since 2019

(b) Similarly, please identify any non-profit or for-profit corporate board you served on in the past 5 years that are not included in answer to (a).

Distinguished Visiting Executive Fellow, University of Ottawa Faculty of Law - 2017-2018
Board of Directors, Canadian Wireless Telecommunications Association (CWTA) - 2015-2017

(c) Please describe how service under (a) or (b) may have prepared you for service to ARIN.

I have built a career as a leading global executive on complex issues of law, public policy and technology. I have done this both professionally and in my community commitments. I care deeply about protecting the open, multi-stakeholder led internet. I hope to continue giving my time and energy to organizations that further this mission.

Related Experience:

(a) Do you have any other industry related experience that you feel is relevant to your serving? What did you find the most rewarding from those experiences?

I have worked in leadership roles for the largest internet company in the world (Google), one the largest ISPs in Canada (Rogers) and now one of the leading startups in Canada (North). In all cases I have been able to help shape the development of internet policy in Canada and around the world.

Required Biography:

(a) Please provide here your full biographical information (attached separate resume or Curriculum Vitae is an acceptable substitution) including, if you choose, any data asked for in this questionnaire, and provide a brief description highlighting your experience relevant to the duties of the ARIN Board of Trustees. You may also optionally include additional web links to external websites (e.g. social media) though that may not be substituted for the aforementioned required biography.

Jacob Glick is the General Counsel of North Inc. (formerly Thalmic Labs), a scale up company based in Kitchener-Waterloo, developing and manufacturing the next generation of computers in the form of smartglasses. He is also a senior executive fellow at CIGI and a global leader on complex issues at the intersection of technology, public policy and law. Previously he served as the Chief Corporate Affairs Officer of Rogers Communications Inc., reporting directly to the CEO.

Jacob joined Rogers from Google Inc., where he was the Head of the Central Public Policy and Government Relations team, based at Google's headquarters in California. Prior to that, he founded and led Google Canada's Public Policy and Government Relations team.

He also served as General Counsel, Director of Policy Development and Corporate Secretary at the Canadian Internet Registration Authority (CIRA) and was a litigator with McCarthy Tétrault LLP. In 2017-2018 he was a distinguished visiting executive fellow at the University of Ottawa Faculty of Law, Centre for Law, Technology and Society.

Jacob holds a bachelor of arts with high distinction and a bachelor of laws, both from the University of Toronto.

ARIN's Challenges:

(a) What do you believe to be ARIN's greatest challenges? How do you believe that your background and skills would help ARIN in addressing these challenges? (Maximum 250 words)

I believe that ARIN's most important challenge is in continuing to demonstrate the efficacy of the multi-stakeholder approach to internet governance. It can do this by maintaining operational excellence, focusing on its core mandate. It also faces challenges as the internet risks fracturing, and moving away from traditional open standards and protocols. It should be a voice for an example of the benefits of the open standards that have brought so much social benefit and prosperity. As someone with C-level

experience at Canada's leading telecommunications provider and a career committed to the open internet I can be a meaningful contributor to ARIN's strategy in addressing these challenges.

Board Discussion Topics:

(a) As a member of the Board, what would your philosophy and goals be towards Board and Executive Management succession?

The appropriate role for leaders -- management or board -- is to set an organization up for sustainability and growth. Part of sustainability means ensuring that a new generation of leaders is being developed, given opportunities and supported. A healthy organization, of any size, but especially one that operates a critical global resource must have appropriate strategies in place and much be held accountable to execute on those.

(b) Based upon your understanding of ARIN's current strategic plan, what opportunities or challenges do you foresee for the organization, which would influence the current or future strategic plans.

As above, I believe that the fracturing of the open internet, and the open standards on which the internet has grown is a major strategic challenge for ARIN. Conversely, if the internet continues to rely on open standards and protocols, there is huge growth potential for ARIN as IOT becomes woven into the fabric of society, and brought to life by emerging 5G networks.

(c) Understanding and managing organizational and environmental risk is an important responsibility of the Board. What do you see as potential risks to the organization and how should the Board best discharge its responsibilities regarding risk?

The Board must work with management to provide a comprehensive assessment of threats facing the organization. This must be done holistically. We can't be distracted by the issue of the day. That is, risks cannot be managed one-off or in a vacuum but rather taken altogether. This takes operational excellence from management and disciplined strategic guidance from the Board. Specially - risks to ARIN include the ones mentioned above (the fracturing of the open internet), the move to walled gardens online, cybersecurity, and supporting the growth required for IOT and 5G.

Catherine **Middleton**
Ryerson University

https://twitter.com/catmiddleton
https://people.ryerson.ca/cmiddlet/
Curriculum Vitae

Board Member Job Requirements:

(a) Potential ARIN Board Members are expected to thoroughly review the Board Member Job Requirements found here as part of completing this questionnaire. Do you foresee any issues with fully executing those requirements and expectations? If yes, please provide specific details below.

No

Conflicts of Interest:

(a) Please disclose any conflicts of interest you may have that would impact your ability to perform your duty as a member of the ARIN Board of Trustees.

No conflicts of interest

(b) How do you propose to resolve any conflicts identified in (a)?

Not applicable

Education:

(a) Please list any undergraduate degree(s) you received, the institution and the date issued.

Bachelor of Arts (Honours), Queen's University, Kingston, Canada. 1987.

(b) List any graduate degrees you have received, the institution and the date it was issued.

Master of Business Administration, Bond University, Gold Coast, Australia. 1991.
Doctor of Philosophy (PhD), Schulich School of Business, York University, Toronto, Canada. 2002.

Present Job:

(a) Please provide the name of any company or organization you currently are employed by or receive direct or indirect compensation from. Please describe the business of each such entity and your current title, and the office address of the business.

Ryerson University, Ted Rogers School of Information Technology Management (TRSITM).

Current title: Professor and Interim Director of TRSITM

350 Victoria Street, Toronto, ON, Canada M5B 2K3

Board Service:

(a) Please identify any non-profit or for-profit corporate board(s) you currently serve on, how long you have served and what offices, if any you have held.

No current board positions.

(b) Similarly, please identify any non-profit or for-profit corporate board you served on in the past 5 years that are not included in answer to (a).

CANARIE (canarie.ca, Canada's national research and education network). Board member from 2011-2019, Board chair 2015-2017
Compute Ontario (computeontario.ca). Board member from 2014-2019

(c) Please describe how service under (a) or (b) may have prepared you for service to ARIN.

I am an experienced not-for-profit director. As a director of CANARIE and Compute Ontario I have developed strong expertise in corporate governance in the not-for-profit technology sector. I have served as a Board Chair and Vice-Chair and have chaired Executive, Governance and Nominating, and Audit Committees, providing leadership across all aspects of governance work. As Board Chair, I worked to understand and synthesize differences in director perspectives, and sought to build consensus on strategic direction. I worked closely with management to provide strategic oversight and guidance, and to identify risks and risk mitigation approaches. As a director, I have taken on the responsibilities noted in ARIN's Trustee Responsibilities list, and my expertise will supplement the ARIN Board of Trustees' capacity to provide advice and guidance to the organization. I understand the time commitments required to be an effective director, and offer strong interpersonal and strategic skills honed through previous directorships to the ARIN Board of Trustees.

Related Experience:

(a) Do you have any other industry related experience that you feel is relevant to your serving? What did you find the most rewarding from those experiences?

I am a business school professor and information technology researcher, with 20+ years of experience working on telecommunications policy issues. My particular interests relate to the development of high quality, affordable and accessible fixed and mobile communications services. Through my research and policy work I've developed a strong understanding of strategic issues in internet service provision. I spent a year working as a policy fellow at Canada's communications regulator (the CRTC) and have extensive knowledge of Canadian and international regulatory policies regarding internet service provision. I have contributed to policy discussions in Canada and internationally. The most rewarding aspect of all this work is developing expertise to advocate for improved access to communications services for all, by synthesizing and analyzing various policy and technical approaches and articulating possible solutions to multiple stakeholders.

Required Biography:

(a) Please provide here your full biographical information (attached separate resume or Curriculum Vitae is an acceptable substitution) including, if you choose, any data asked for in this questionnaire, and provide a brief description highlighting your experience relevant to the duties of the ARIN Board of Trustees. You may also optionally include additional web links to external websites (e.g. social media) though that may not be substituted for the aforementioned required biography.

Please see the attached CV for details. As noted above, I served a leadership role on the CANARIE board. My CV and information provided throughout this questionnaire demonstrate that I have the skills and experience sought for a new Board of Trustees member, as listed in the Expected Qualifications and Responsibilities document. I have completed corporate governance training through Canada's Institute of Corporate Directors and hold the ICD.D designation. Through my policy work and attendance at the Internet Governance Forum I am familiar with, and have contributed to, the multistakeholder environment for Internet governance in which ARIN operates. I have extensive experience in evaluating funding applications (including proposals to fund research software, proposals to develop community Internet infrastructure, and research proposals), experience that can be leveraged to provide guidance to ARIN's Community Grant Program. I share infor-

mation on mobile and fixed Internet infrastructure policy through my Twitter account: https://twitter.com/catmiddleton. My university bio is at https://people.ryerson.ca/cmiddlet/.

ARIN's Challenges:

(a) What do you believe to be ARIN's greatest challenges? How do you believe that your background and skills would help ARIN in addressing these challenges? (Maximum 250 words)

It is difficult to offer an assessment of any organization's greatest challenges as an outsider to that organization. Based on my understanding of ARIN and its work, I believe that three important challenges it does face are i) managing and facilitating the transition from IPv4 to IPv6; ii) ensuring cybersecurity (of its own operations and facilitating secure practices by its customers); and iii) further developing and maintaining the highly skilled employee base that enables the organization's success in the face of a competitive labour market. I would first take the opportunity to learn more about the challenges identified by ARIN's management team. As the board's role is strategic oversight I would draw on my background and skills as a board member and a business school professor to assess ARIN's current approaches to managing these challenges. Specifically, I would ask probing questions about relevant short and long term plans, assess responses and offer suggestions and guidance for additional actions and strategic planning that could advance ARIN's long term objectives.

Board Discussion Topics:

(a) As a member of the Board, what would your philosophy and goals be towards Board and Executive Management succession?

In my view, succession planning should be an ongoing priority for the Board. With respect to Executive Management succession, the Board should have a strategy in place for both planned and unplanned succession, and review it on a regular basis. I understand that the organization has recently managed the transition of key senior executives, providing an opportunity to identify and assess critical success factors that might arise in managing a transition in the President and CEO role. In developing succession plans, attention should be given to professional development and mentoring of existing employees to encourage their advancement within the organization. Explicit attention should be paid to meeting the organization's needs for diversity of thought and experience. With respect to Board succession, the organization has an opportunity to support the development of future board members by encouraging their participation in ARIN through its Fellowship Program, the Community Grants program, the Advisory

Council and other events. Board succession requires long term planning, a clear understanding of gaps in expertise among its existing members, and must aim for board composition that reflects the diversity of ARIN's stakeholder community.

(b) Based upon your understanding of ARIN's current strategic plan, what opportunities or challenges do you foresee for the organization, which would influence the current or future strategic plans.

Note that challenges are discussed in answer to questions above and below. The current strategic plan outlines a coherent, integrated vision for the organization, advancing its core mission and building on the organization's past successes in service delivery for its members. Opportunities can be developed to create additional value for members, for instance developing new services as technology changes, and expanding and enhancing education and outreach initiatives to support the IPv4 to IPv6 transition. The rejuvenated fellowship program and the Community Grants programs both provide opportunities to expand ARIN's outreach, and can be leveraged to bring new knowledge and new talent to inform the organization's activities.

(c) Understanding and managing organizational and environmental risk is an important responsibility of the Board. What do you see as potential risks to the organization and how should the Board best discharge its responsibilities regarding risk?

Each of the three challenges identified above is a source of risk for ARIN: managing the IPv6 transition effectively and efficiently; cybersecurity to protect ARIN's own operations and ensure member trust in the organization; and retaining highly qualified staff with expertise to support ARIN's technical, policy and regulatory requirements in a fast changing business environment. Board members must do their own due diligence to assess ARIN's progress in identifying and managing risks (there are other risks not noted here). In addition, regular review of specific risks is a board responsibility (e.g. by means of reviewing a risk registry and conducting financial audits). The board should offer guidance to ensure ARIN's strategic and financial planning addresses risk mitigation.

Bill **Sandiford**
Intelligens

https://twitter.com/Bill_Sandiford
http://www.billsandiford.ca/aboutme/bio/index.html
Curriculum Vitae

Board Member Job Requirements:

(a) Potential ARIN Board Members are expected to thoroughly review the Board Member Job Requirements found here as part of completing this questionnaire. Do you foresee any issues with fully executing those requirements and expectations? If yes, please provide specific details below.

I do not foresee any issues with fully executing those requirements and expectations.

Conflicts of Interest:

(a) Please disclose any conflicts of interest you may have that would impact your ability to perform your duty as a member of the ARIN Board of Trustees.

None that I am aware of.

(b) How do you propose to resolve any conflicts identified in (a)?

No conflicts identified in (a)

Education:

(a) Please list any undergraduate degree(s) you received, the institution and the date issued.

None. Attended Laurentian University in Sudbury, ON, Canada in the B.Sc Computer Science program for 1.5 years before leaving to start a business.

(b) List any graduate degrees you have received, the institution and the date it was issued.

None

Present Job:

(a) Please provide the name of any company or organization you currently are employed by or receive direct or indirect compensation from. Please describe the business of each such entity and your current title, and the office address of the business.

Self Employed by Intelligens as President. Intelligens provides telecommunications consulting services, mainly to small and medium size independent internet service providers in Canada.

As a member of the Board of CIRA, I receive nominal compensation along with my other board members as publicly disclosed here: https://cira.ca/about-cira/board-and-governance/board-compensation

Board Service:

(a) Please identify any non-profit or for-profit corporate board(s) you currently serve on, how long you have served and what offices, if any you have held.

In addition to the ARIN Board of Trustees, I currently serve on the board of CIRA, the Canadian Internet Registration Authority. I have served on the board of CIRA for 7 years. I have chaired several committees of the board and have served as Vice-Chairman in the past. I currently Co-Chair the Community Investment Committee

(**b) Similarly, please identify any non-profit or for-profit corporate board you served on in the past 5 years that are not included in answer to (a).**

I was a founding board member and the founding chairman of the Canadian Network Operators Consortium (CNOC). I served on the board from 2010 to 2016. CNOC is a not for profit corporation that is the voice of competitive Internet and telecommunications service providers that own/operate telecommunications networks in regions across Canada.

Outside of the technology space, I have given back to my community through my service on the board of the Whitby Minor Hockey Association and the board of the Whitby Dunlops Senior Hockey Club.

(c) Please describe how service under (a) or (b) may have prepared you for service to ARIN.

Throughout the years, my service on various boards (including ARIN) has prepared me well for my continued service to ARIN.

First and foremost, my service to the various boards I have been involved with has taught me good governance practices. It is imperative that a strong board understands good governance.

Additionally, my past service has taught me the importance of a strong and diversified board. Diversity is crucial not only as it pertains to race, gender, and geography but also where it relates to diversity of thought, experience, and professional background.

Outside of my first hand experience on various different boards, I am a graduate of the University of Toronto's Rotman School of Management Not-For-Profit Program. This program, jointly developed by the Institute of Corporate Directors and the Rotman School of Management, focuses on key accountabilities and responsibilities for not-for-profit leaders through extensive use of team-based learning.

Related Experience:

(a) Do you have any other industry related experience that you feel is relevant to your serving? What did you find the most rewarding from those experiences?

I have been involved in the internet industry for my entire professional career.

My career started in 1996 with an internet service provider that I founded. I led that company through a continued period of growth as the internet matured. Over the years the company matured from offering dialup services to becoming a broadband and telephone service provider. The company was acquired by a friendly competitor in 2014.

Since that time I have acted as a consultant to several other internet service providers and an internet exchange point.

The most rewarding part of these experiences has been the colleagues that I have met along the way. I have been able to learn so much from all of them The continued growth and expansion of knowledge that I have been able to acquire in our industry continues to help me in the discharge of my duties as a board member. I thoroughly enjoy continuing to "train the mind" with new challenges.

Required Biography:

(a) Please provide here your full biographical information (attached separate resume or Curriculum Vitae is an acceptable substitution) including, if you choose, any data asked for in this questionnaire, and provide a brief description highlighting your experience relevant to the duties of the ARIN Board of Trustees. You may also optionally include additional web links to external websites (e.g. social media) though that may not be substituted for the aforementioned required biography.

Please see Curriculum Vitae attached.

ARIN's Challenges:

(a) What do you believe to be ARIN's greatest challenges? How do you believe that your background and skills would help ARIN in addressing these challenges? (Maximum 250 words)

ARIN's greatest challenge continues to be the successful management of the organization as the internet eco-system changes around it in a post IPV4 world.

Since runout in the ARIN region, the company has morphed from being an organization that mostly issued IPV4 resources to one that mostly manages the transfers of IPV4 resources amongst its other duties. The environment around the organization has changed and will continue to do so.

Over the years I have gained a lot of experience managing change while ensuring continuity of service both at the for-profit and not for-profit levels. This experience will be a key asset for ARIN should I be re-elected.

Board Discussion Topics:

(a) As a member of the Board, what would your philosophy and goals be towards Board and Executive Management succession?

All organizations, large or small, for profit or not for profit need a comprehensive and well thought out succession plan for their board and their Senior/Executive Management teams. ARIN is no exception.

It is imperative that ARIN continue to refine its succession plans at both the board and management levels. As a member of the Board I will ensure that the succession plans are regularly discussed and updated to ensure organizational continuity should there be a key departure regardless of whether that departure is planned or unplanned.

(b) Based upon your understanding of ARIN's current strategic plan, what opportunities or challenges do you foresee for the organization, which would influence the current or future strategic plans.

The internet eco-system, including the Regional Internet Registry (RIR) system continues to evolve. ARIN's management must remain attuned to the environment in which it operates.

ARIN's strategic plan must take into account this change and the opportunity and threats that come along with it. The organization will need to continue to offer good value for the services it provides while doing its best to keep fees economical for its members and customers. New services will need to be

developed as per market conditions and competitive demand.

ARIN and its management will need to stay focused on the organizations goals while keeping an eye out for competitive challenges and refine the strategic plans accordingly.

(c) Understanding and managing organizational and environmental risk is an important responsibility of the Board. What do you see as potential risks to the organization and how should the Board best discharge its responsibilities regarding risk?

Like all businesses, ARIN faces many different risks of differing levels of severity.

As mentioned previously, the internet eco-system in which ARIN operates continues to evolve. Ensuring that the organization is prepared to handle these changes remains as one of ARIN's biggest risks. Threats from potential government regulation of the internet, both within our region and beyond, must be closely monitored.

The organization also must remain relevant and responsive to the needs of its members and customers. The potential exists for competition to develop in the RIR space. ARIN will need to remain nimble in order to react to this competition should it emerge. If a competitive market were to become a reality for registration services ARIN will need to be able to offer the best services available at an economical cost. Failure to do so could lead to a massive loss of membership and revenue.

The board must ensure that all risks are appropriately monitored, tracked, and responded to where applicable. Having an appropriate risk mitigation plan will be key. The board must work hand in hand with management in maintaining and refining risk mitigation strategies.
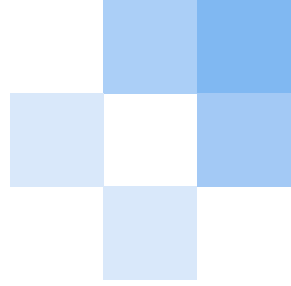
Advisory **Council**

Jeffrey **Anderson**
Implex.net

https://www.linkedin.com/in/jeffrey-sparky-anderson-1a61b926/

Bearing in mind that you run and serve as an individual, rather than as representing an organization, please provide the name of any organizational affiliations.

Implex.net
United States Coast Guard
United States Coast Guard Auxiliary
Federal Emergency Management Agency

Please provide a brief CV highlighting experience relevant to the duties of the ARIN Advisory Council.

I have spent 20 years working as a Senior Network engineer for Internet Service Providers. It has been a unique adventure watching the internet grow in scale during that time frame. A thorough understanding of ARIN's policies and procedures have helped facilitate efficient use of IP resources for companies and government agencies of all sizes. It is this exciting challenge which makes continued involvement in the ARIN community absolutely necessary for further growth and refinement.

Please disclose any conflicts of interest you may have with doing your duty as a member of ARIN's Advisory Council. How do you propose to resolve such conflicts?

Not Applicable.

Describe any limitations on your ability to attend Advisory Council and Public Policy Meetings in person or to serve the entirety of a three-year term.

Potential deployment for United States Coast Guard Duty and/or Federal Emergency Management Agency in the event of a National Emergency.

Have you attended ARIN meetings or otherwise participated in ARIN procedures in the past? What did you find the most rewarding from those meetings or procedures? What suggestions for improvement might you have?

Selected for a ARIN 43 Fellowship along with multiple ARIN on the Road events. The most rewarding experience of these events is the ability to collaborate with other resource holders.

How do you think ARIN's function, scale, or role should change?

I believe further outreach efforts are needed to engage smaller resource holders. This will provide greater community involvement in the future.

What differentiates you as a candidate or makes you uniquely suited to the post?

I have spent my entire career working with Internet Service Providers and Government Life Safety groups. I believe this has given me a uniquely objective perspective on policy development and application. It is my goal to bring this expertise to the AC.

How do you separate your personal opinions from those of your organization and those of the community? What areas of policy, if any, need more attention and why?

I believe the fundamental key to being effective in an Advisory position is the ability to listen objectively. Collaborating with our community members is what gives them a voice!

What are your thoughts on the rights and responsibilities of legacy IP address holders?

The community should consider further efforts to engage them to maintain accurate WHOIS records. It is to the communities benefit to achieve this goal.

What are your thoughts on needs-based justification for the receipt of IP addresses?

The community should consider more stringent requirements and vetting to help alleviate the potential for fraud/misuse.

What do you believe to be ARIN's greatest challenges?

Improving and increasing the amount of outreach to facilitate involvement by smaller organizations / resource holders. Also, proper vetting of resource requests / transfers / sales / etc.

If you could improve any aspect of the ARIN AC, what would it be?

Continued diversity within the AC. It is vitally important that our AC is representative of the entire community.

The role of the Advisory Council is to advise the ARIN Board of Trustees on Internet number resource policy and related matters. Describe a similar experience you have had in such an advisory role.

I currently serve as a Vessel Safety Examiner Staff Officer for the United States Coast Guard Auxiliary. Whereby, I advise and provide training on proper use and implementation of vessel safety equipment and procedures. Also, I make recommendations to the board of my company where I have worked as the Senior Network Engineer for 12 years regarding network architecture and implementations.

Owen **DeLong**
DeLong Consulting

http://www.arin.net/about_us/ac.html

Bearing in mind that you run and serve as an individual, rather than as representing an organization, please provide the name of any organizational affiliations.

DeLong Consulting
Great Home Tek, Inc.
Billy Jones Wildcat Railroad
Aircraft Owners and Pilots Association

Please provide a brief CV highlighting experience relevant to the duties of the ARIN Advisory Council.

At the end of this year, I will have served 12 years (4 terms) on the ARIN Advisory Council. In that time, I have made significant contributions to the content of the Number Resource Policy Manual and I wish to continue working with ARIN's community to preserve the bottom-up stakeholder driven processes and improving ARIN Policy to the benefit of the community and the Internet.

Please disclose any conflicts of interest you may have with doing your duty as a member of ARIN's Advisory Council. How do you propose to resolve such conflicts?

I do not know of any COI at this time.

Describe any limitations on your ability to attend Advisory Council and Public Policy Meetings in person or to serve the entirety of a three-year term.

I am not aware of any such limitations at this time.

Have you attended ARIN meetings or otherwise participated in ARIN procedures in the past? What did you find the most rewarding from those meetings or procedures? What suggestions for improvement might you have?

In the twelve years I have served on the Advisory Council, I have not missed a single ARIN meeting and I have missed very few AC monthly conference calls. I enjoy the community and interacting with a diverse group of people at our meetings. I find the process of bringing people together and working to develop consensus based policies exceptionally rewarding.

How do you think ARIN's function, scale, or role should change?

It's not entirely clear to me at this time that it should. Hopefully we will reach a point in the future (and I hope it is sooner rather than later for all our sakes) where IPv4 is no longer a major factor in the day to day operation of the larger Internet. Once that occurs, I think ARIN's scale may be slightly reduced due to a reduced need for processing vast amounts of IPv4 transactions and because IPv6 does not require the additional vetting involved in coping with certain organizations in possession of legacy registrations.

What differentiates you as a candidate or makes you uniquely suited to the post?

I've been active in the ARIN community since shortly after it was first established and for the last 12 years, I've been a member of the Advisory Council. I hope the community will give me the honor of serving an additional 3 years as I believe there is still significant work to be done in moving the Internet forward with IPv6.

How do you separate your personal opinions from those of your organization and those of the community? What areas of policy, if any, need more attention and why?

I have a very strong track record voting my personal opinions in the room with everyone else and representing the community when I vote in the Advisory Council meetings. I'm well aware of and fully accepting of my obligations to the community. Unless I believe that there are material facts of which the community is generally unaware which provide a strong justification for taking an opposing position, I will always substitute the community's will for my own judgment in my role on the AC. My voting record on the AC over the last 12 years clearly shows this.

What are your thoughts on the rights and responsibilities of legacy IP address holders?

I think that other than greater difficulty maintaining contact and consistent registration records, legacy holders are different from other resource holders only in the fact that they are not subject to ARIN's fees. Legacy holders are, by and large those institutions that helped build the internet. I have no problem with the idea of leaving them to be as they wish and reaching out to try and invite them to join the ARIN community.

OTOH, the unique challenges that they pose for the ARIN staff are yet another reason I look forward to a day when IPv4 is largely deprecated and the Internet has moved on with IPv6.

What are your thoughts on needs-based justification for the receipt of IP addresses?

I am long on record supporting needs-based justification and I continue to believe that this cornerstone of ARIN policy is a vital part of making internet number resources available to as many people as possible.

What do you believe to be ARIN's greatest challenges?

1. The continued use of IPv4
2. The increasing prevalence of NAT, especially CGN
3. The incredibly slow IPv6 adoption rate in the enterprise sector.

If you could improve any aspect of the ARIN AC, what would it be?

I would change the vote tabulation rules in such a way to make abstentions count as an abstention rather than the current mechanism which effectively makes abstaining equivalent to a "no" vote.

The role of the Advisory Council is to advise the ARIN Board of Trustees on Internet number resource policy and related matters. Describe a similar experience you have had in such an advisory role.

It really can't get more similar than my twelve years of experience on the Advisory Council doing just that. Here are just a few of the highlights of policies I've been instrumental in bringing to fruition:
1. The first IPv6 Provider Independent Space policy in the world.
2. IPv6 Nibble Boundary and Round Up to provide simpler and larger IPv6 blocks
3. The ability for ARIN resource holders to get a do-over on their IPv6 addressing plan.
4. The relaxing of ARIN's minimum end-user IPv4 assignment to /24
5. The preservation of needs basis for specified transfers
6. The Reciprocal Compatible Policy requirements in Inter-RIR transfers

There are, of course, many more examples, but these are some of the best.

Alyssa **Moore**

Canadian Internet Registration Authority

https://www.linkedin.com/in/lyssamoo/

Bearing in mind that you run and serve as an individual, rather than as representing an organization, please provide the name of any organizational affiliations.

Canadian Internet Registration Authority, Internet Society Canada Chapter, QIX (Montreal Internet Exchange), Canadian Internet Governance Forum

Please provide a brief CV highlighting experience relevant to the duties of the ARIN Advisory Council.

I currently work as a Senior Policy & Advocacy Advisor at the Canadian Internet Registration Authority (CIRA), the not-for-profit organization responsible for the .CA top level domain. In this role I keep abreast of Canadian regulatory affairs and legislation. I also participate in the country code name supporting organization (ccNSO) at ICANN, and other international fora for internet governance.

Previously, I worked as the Policy & Strategy Advisor at Cybera - Alberta's piece of Canada's non-profit Research & Education Network. At Cybera, I was responsible for positioning the organization as an authority on Internet and computing policy by participating in government consultations, facilitating advocacy opportunities, and monitoring legislation, best practices, and regulatory bodies.

I currently sit on the Board of Directors of the Internet Society Canada Chapter and QIX (the Montreal Internet Exchange). I also sit on the steering committee of the Canadian Internet Governance Forum.

I hold a Bachelor of Arts in Political Science from Carleton University.

Please disclose any conflicts of interest you may have with doing your duty as a member of ARIN's Advisory Council. How do you propose to resolve such conflicts?

I have no conflicts to report at this time.

Describe any limitations on your ability to attend Advisory Council and Public Policy Meetings in person or to serve the entirety of a three-year term.

None.

Have you attended ARIN meetings or otherwise participated in ARIN procedures in the past? What did you find the most rewarding from those meetings or procedures? What suggestions for improvement might you have?

I became involved as a fellow in 2016 at ARIN 37, and was later elected to the Advisory Council following ARIN 38. I enjoy the bottom-up, consensus-based policy making process that is relatively unique to the world of multistakeholder internet governance. In my three years as an AC member, I have served as a mentor to 4 ARIN fellows. Having been introduced to the world of internet governance as a fellow myself, this is the part I find most rewarding.

How do you think ARIN's function, scale, or role should change?

I became involved with ARIN shortly after IPv4 exhaustion in the region, so my experience has been only in a post IPv4 free pool world. It's clear that ARIN continues to play a role in the period between IPv4 exhaustion and complete IPv6 uptake. This includes continued promotion of IPv6 as well as monitoring, anticipating, and responding to the IPv4 transfer market and the issues - including fraudulently obtained resources - that come with that. The shift away from allocation of resources toward maintaining an accurate registry also becomes increasingly important. This is especially necessary to combat waning trust in the technologies that underpin the Internet.

What differentiates you as a candidate or makes you uniquely suited to the post?

My background is non-technical, though I am adept at understanding, then translating and breaking down technical concepts for a broader audience. I come from the worlds of policy analysis in two member-based network operators. I've also been engaged in civil society and politically active in my volunteer life. As a result, my strengths lie in building relationships, human capacity, and consensus - all necessary skills for shepherding policy and facilitating the PDP. Through my day job, I also participate in several fora for internet governance outside the RIR system. As a result, I have a very broad view of global internet issues generally. Finally, I have worked for

non-profit organizations for five years, a sector that I feel needs some representation on the AC.

How do you separate your personal opinions from those of your organization and those of the community? What areas of policy, if any, need more attention and why?

The AC is charged with taking into consideration the feedback of the community and the implementation of the will of the community. I hold the democratic principles and community driven nature of ARIN's Policy Development Process in high esteem. Under no circumstances would I allow my personal biases to affect my ability to represent the greater ARIN community. When speaking openly at meetings, if re-elected, I will continue to identify and differentiate personal statements from statements as a member of the AC.

In terms of policy areas in need of more attention, I am focused on policy that improves registry accuracy.

What are your thoughts on the rights and responsibilities of legacy IP address holders?

I am in support of legacy IP address holders' rights to the address blocks endowed upon them before ARIN's inception - including the rights to use of those address blocks, and to transfer those address blocks. I am not in favour of bestowing special status upon legacy IPv4 resources once they have been transferred from the original recipient.

What are your thoughts on needs-based justification for the receipt of IP addresses?

In a bygone era, needs-based justification made sense to distribute IPv4 resources from the free pool. In the post-exhaustion, however, ARIN policy has evolved - and should continue to evolve - to reflect the existence of the transfer market as a tool to get resources into the hands of network operators that require them. As the recent waitlist related fraud demonstrates, ARIN has a duty to the community to remain vigilant in monitoring the movement of IPv4. Additionally, policy should continue to encourage proper reallocations and reassignments rather than off-the-books-leasing of number resources.

With respect to IPv6, while a much larger address space, I believe it is still necessary for a requestor to demonstrate appropriate need for the resources.

What do you believe to be ARIN's greatest challenges?

Besides working to inspire increased adoption of IPv6 and to improve registry accuracy, ARIN's greatest challenge is getting folks to understand and care about these issues through membership engagement, visibility, and communicating the RIRs' role in the Internet governance landscape to a wider variety of stakeholders.

If you could improve any aspect of the ARIN AC, what would it be?

I would like to continue with new efforts at engaging network operators outside of PPML and ARIN meetings. So far we have sent an AC rep to speak at 3 NANOGs. I'd like to explore more options for engagement.

The role of the Advisory Council is to advise the ARIN Board of Trustees on Internet number resource policy and related matters. Describe a similar experience you have had in such an advisory role.

Given the nature of my job as a Policy Advisor in the Internet industry, much of my work experience aligns with the role of a member of the ARIN AC. My current position is Senior Policy & Advocacy Advisor at the Canadian Internet Registration Authority. My previous role was as a Policy Analyst at a non-profit network operator. In the course of my work, I have made written submissions to government related to the Internet and telecommunications industries. I have also participated in hearings of the Canadian Radio-television and Telecommunications Commission (CRTC).

Tina **Morris**
Amazon Web Services

Bearing in mind that you run and serve as an individual, rather than as representing an organization, please provide the name of any organizational affiliations.

Amazon Web Services, NANOG Board of Directors

Please provide a brief CV highlighting experience relevant to the duties of the ARIN Advisory Council.

US Navy (6yrs) Cryptologic Technician Maintenance

TWC/BrightHouse Networks (11yrs) Principal Network Engineer
Amazon Web Services (5 yrs) Sr. Technical Business Developer – IP Address Strategy

Please disclose any conflicts of interest you may have with doing your duty as a member of ARIN's Advisory Council. How do you propose to resolve such conflicts?

None at this time, but I would recuse myself as necessary should something occur.

Describe any limitations on your ability to attend Advisory Council and Public Policy Meetings in person or to serve the entirety of a three-year term.

I will be able to attend all in person meetings without restriction.

Have you attended ARIN meetings or otherwise participated in ARIN procedures in the past? What did you find the most rewarding from those meetings or procedures? What suggestions for improvement might you have?

I have attended all ARIN Meetings since 2009. I find the community discussion and networking to be the most valuable portion of the meeting.

How do you think ARIN's function, scale, or role should change?

I believe this is more of a question for the BoT, as the AC is a address policy-based organization. However, ARIN still has a large role in IPv4 as long as the transfer market continues, eventually there will be a shift in community needs. When that happens ARIN should be prepared to right-size the organization and simplify initial IPv6 allocations via automation.

What differentiates you as a candidate or makes you uniquely suited to the post?

I have been in a Network Engineering role of some variation since I joined the US Navy after high school, for the last 11 years I have had roles that were primarily IP Address related. I am an active participant in the IPv4 transfer market and IP Address Policy.

How do you separate your personal opinions from those of your organization and those of the community? What areas of policy, if any, need more attention and why?

We wear many hats in this forum however, we must remember that we function on the Advisory Council as an individual and a representative of the community at large. While it is true that our experiences outside the AC add color and perspective to the conversation it is important to do what is right for the overall community, my employer understands and supports my ability to serve as an individual.

What are your thoughts on the rights and responsibilities of legacy IP address holders?

Legacy holders pre-date ARIN and therefore have no formal obligation to participate. However, registry accuracy benefits everyone, and helps protect those resource holders from fraud. I encourage all Legacy holders to work with ARIN and establish accurate registry information.

What are your thoughts on needs-based justification for the receipt of IP addresses?

I believed in needs basis for assignments from the ARIN free pool for both IPv4 and IPv6. However, needs basis is not necessary in the IPv4 transfer market. I believe that 99% of organizations will self-regulate their consumption of IPv4, and will not acquire more addresses than they can consume in a reasonable time period for financial reasons. As someone that has sought these approvals, I find the internal justification for those funds, far exceeds any justification ARIN as ever required.

What do you believe to be ARIN's greatest challenges?

RPKI - deployment, scale, and support
Transfer Market - support, processing, and fraud detection
IRR - Turn up and adoption
IPv6 Simplification - automate where possible, increase adoption

If you could improve any aspect of the ARIN AC, what would it be?

As the Chair of the AC for the last two years, I have sought input from the other members and implemented several process improvements.

The role of the Advisory Council is to advise the ARIN Board of Trustees on Internet number resource policy and related matters. Describe a similar experience you have had in such an advisory role.

I have served on the AC for 6 years in this advisory role to the BoT. In addition, at Amazon I often advise leadership in matters related to number policy.

Anita **Nikolich**
Illinois Institute of Technology

Bearing in mind that you run and serve as an individual, rather than as representing an organization, please provide the name of any organizational affiliations.

Illinois Institute of Technology

Please provide a brief CV highlighting experience relevant to the duties of the ARIN Advisory Council.

2018 – Current: Cybersecurity Researcher, Department of Computer Science, Illinois Institute of Technology
2014 – 2018: Program Director, National Science Foundation
- Established the Cybersecurity Innovation for Cyberinfrastructure (CICI) program, which funded security for critical services such as DNS, routing and scientific infrastructure.
- Transitioned of academic security research projects into commercial use via the Transition to Practice (TTP) program.

2008 – 2013: Executive Director, Infrastructure, University of Chicago
- Led a team of engineers that delivered voice and data, security, email, servers, storage, backup, mainframe and data centers for the University.
- Participated as

2002 – 2008: Director, Global Telecommunications, Computer Science Corporation
1999 – 2001: Director, Security Operations, Intermedia Communications (acquired by WorldCom)
1997 – 1999: Security Engineer, SAIC

Please disclose any conflicts of interest you may have with doing your duty as a member of ARIN's Advisory Council. How do you propose to resolve such conflicts?

None.

Describe any limitations on your ability to attend Advisory Council and Public Policy Meetings in person or to serve the entirety of a three-year term.

None.

Have you attended ARIN meetings or otherwise participated in ARIN procedures in the past? What did you find the most rewarding from those meetings or procedures? What suggestions for improvement might you have?

No.

How do you think ARIN's function, scale, or role should change?

The network topology is changing. Between the emergence of more Content Distribution Networks and advances in Edge computing, this change is going to be rapid. ARIN could serve as an ideal bridge by which to assist research efforts around future protocols, network topology, reliability, changing economics and censorship while continuing to serve as a powerful voice for policy and Internet governance.

What differentiates you as a candidate or makes you uniquely suited to the post?

I have a breadth of experience as both a provider and consumer of network services. I've worked in very diverse environments with completely different missions and goals. My background is a combination of Federal government, a large ISP, the Research and Education/Scientific community, the security community and private industry. All these environments have given me an appreciation for different perspectives to Internet governance and its role in society.

How do you separate your personal opinions from those of your organization and those of the community? What areas of policy, if any, need more attention and why?

It's tough, especially if you are passionate about a certain topic! However, my four years as an NSF Program Director reinforced the fact that while one's personal opinion and experience is valid, the overriding goal must be to serve the broader community, which may have wildly different opinions. If you're in a role in which you're expected to be neutral, you learn that your opinion may not be the one that results in the best outcome.

Security in general, routing security in particular, and policies around RPKI, DNSSEC and BGPSec (way in the future maybe) adoption need more attention. Incentives for the adoption of current and emerging Internet security protocols need to be thought about more carefully, because uptake is very slow. The lingering legal questions around

ARIN service agreements (the Registration Service Agreement (RSA) and the Relaying Party Agreement (RPA)) and the use of ARIN's RPKI services have, by some accounts, prevented widespread adoption. These should be addressed again in a neutral way to understand if it truly is a legal obstacle or an operational one. More outreach and community engagement in this area can be done.

I'm very encouraged by ARIN proposals such as ARIN-prop-266 that makes BGP Hijacking a policy violation. Initiatives such as these can benefit operators in the shorter term by sending the message that members should pay more attention to basic best practices to at least avoid accidental hijacks. One of the tricks of course is enforcement and penalties, since that's not ARIN's role.

As part of the Research and Education (R&E) community, I'm particularly attuned to the fact that we sit in a unique space. R&E contains state and national network and service providers - many which hold legacy address ranges that were assigned decades ago - and interconnect a vast range of education and science services that are often very uniquely configured and operated. Continuing to ensure that ARIN understands this unique space is very important to me as a representative of the community.

What are your thoughts on the rights and responsibilities of legacy IP address holders?

I personally believe that IP address block holders have ownership rights akin to (limited) property rights for their addresses. But I have seen firsthand the complexities that occur when a legacy owner has many more addresses than can practically be used and little to nothing that legally proves "ownership" and also the security ramifications of large swaths of unused address space. While well intentioned, the ARIN position of retaining exclusive ownership and control was perceived by some to be a little extreme. I think there must be a happy medium since ARIN is crucial to orderly IPv4 address administration.

What are your thoughts on needs-based justification for the receipt of IP addresses?

If open Internet access is seen as a social and public good and a human right, which I believe, then equality of access to Internet resources should remain a goal of ARIN. In this case, ARIN should absolutely distribute IP addresses based upon demonstrated need.

What do you believe to be ARIN's greatest challenges?

Maintaining a balance between privacy and the public good. For example, urging the government to require ISPs to keep accurate WHOIS records for copyright infringement purposes can be perceived as both helping the public but has a downside in terms of privacy.

The topology of the Internet is changing from the one we've known for 40+ years. Protocols are evolving. ARIN should continue to operate with the understanding that the landscape will be drastically different in 10 years.

If you could improve any aspect of the ARIN AC, what would it be?

Closer collaboration with the Internet Society (ISOC). Particularly in the last two years, ISOC has done some amazing work advancing knowledge and awareness of the importance of network security (MANRS), social media implications, broadening participation in the global Internet and the characterizing the Internet as a fundamental human right. MANRS has provided a positive incentive for operators to clean up their old or bad registry contact data, something that benefits ARIN's members. As an ISOC member, ARIN should continue to work closely with ISOC on both the technical and non technical goals.

The role of the Advisory Council is to advise the ARIN Board of Trustees on Internet number resource policy and related matters. Describe a similar experience you have had in such an advisory role.

I am currently on the advisory board for the RPKI pilot project for the California state research and education network, CENIC, which will deploy RPKI in the state of California and beyond.

I am currently a member of the Working Group on Cybersecurity for the NSF funded Midwest Big Data Hub.

I am one of the organizers of the AI Village at DEFCON, a security conference that attracts up to 30,000 attendees. One of our roles is to educate policy makers on the potential harms of AI.

From 2014-17 I served on the Engineering Advisory Committee for the Illinois Century Network (ICN), the state's research and education network.

From 2010-12 I served on the Technical Advisory Committee for the Midwest's research and education cooperative network, the CIC.

From 2009-11 I served on the Cisco Higher Ed Technical Advisory Board.

Joe **Provo**
Google

https://www.linkedin.com/in/jprovo/

Bearing in mind that you run and serve as an individual, rather than as representing an organization, please provide the name of any organizational affiliations.

Google
GweepCo Cooperative Network

Please provide a brief CV highlighting experience relevant to the duties of the ARIN Advisory Council.

ARIN Advisory Council (2016 - 2019):
- fellow mentoring; community engagement and representation
- highlights of policy development:
-- Author of NRPM editorial cleanups and policy proposals (ARIN-prop-251, ARIN-2019-14)
-- Shepherd on ARIN-2017-4, ARIN-2018-3, ARIN-2019-4, ARIN-2019-6, ARIN-2019-11, ARIN-2019-12
-- Proposed and championed the "narrow" restrictions to restart the waiting list

NANOG Steering Committee/Board of Directors (2006 - 2010):
- representation of community; translation of community needs into organization action and policy
- organization outreach; mentoring; volunteer co-ordination
- documentation; process optimization.

K12.MA.US delegated manager (1994 - present):
- management as a resource steward
- co-ordination of volunteers

RSUC, UltraNet, RCN, ITA Software, Google (1990 - present):
- evaluate needs, craft/implement/operate sound technical solutions

- training, presenting and mentoring; interprovider communication, negotiation and co-ordination
- project and program management, internal negotiation to marshal resources

Please disclose any conflicts of interest you may have with doing your duty as a member of ARIN's Advisory Council. How do you propose to resolve such conflicts?

I am not aware of any conflicts with serving on the AC. I have no responsibility for numbers management at my day job and have not performed any consulting involving number resources since 2000.

Describe any limitations on your ability to attend Advisory Council and Public Policy Meetings in person or to serve the entirety of a three-year term.

None.

Have you attended ARIN meetings or otherwise participated in ARIN procedures in the past? What did you find the most rewarding from those meetings or procedures? What suggestions for improvement might you have?

Yes. I have attended many meetings, participated in PPML and the community in general, only more so since being elected to the AC in 2016. I still feel that the most rewarding interactions have been with those holding opinions different than mine, such that I have the opportunity to play a role in reaching compromise and consensus on issues.

How do you think ARIN's function, scale, or role should change?

I believe ARIN as an organization is very responsive to the needs of the community. Increased outreach and training sessions regarding RPKI serve as a great example. That is a key role in my opinion and one which should not change, though I do believe that highlights how RIR functions have been changing to be more a part of the Internet operations landscape. I think ARIN needs to strongly embrace this as automatic handling of attestations of resource-holder legitimacy will only be of increasing importance.

What differentiates you as a candidate or makes you uniquely suited to the post?

I come to numbers policy work with no agenda. I've been involved in resource allocation since the NACR days, and as such know there is no single "natural" or "inevitable" outcome for global numbers policy. Today's landscape is the sum total of decisions we have made along the years in the bottom-up process, so we have the duty of carefully considering

long-term implications of even the most seemingly minor changes. I am always willing to hear a viewpoint and make decisions based on balanced consideration.

How do you separate your personal opinions from those of your organization and those of the community? What areas of policy, if any, need more attention and why?

Since I started in working in all this during the 1994 Internet commercialization wave, my involvement in Internet operations, governance and policy predates my current employer. Not only that, I am well aware that a stable, functioning community-driven Internet is a necessary prerequisite for any future endeavors. My record of voting in the AC reflects my impression of the ARIN community's will, even when counter to my personal views.

We've made progress on removing historical baggage from the NRPM, but there's still more to do. Policies which can streamline and de-obfuscate are still needed, as well as those which can create incentives for further IPv6 adoption. IPv4 run-out and costs on the transfer market have not been a large enough disincentive to move more services away from the "legacy protocol".

What are your thoughts on the rights and responsibilities of legacy IP address holders?

My position here hasn't changed. As a legacy resource holder myself, I firmly believe the intent under which such allocations were made (to provide needed resources to the requesters) is a solid and legitimate right. We resource holders do need to fund the services we use and the development of new services. We bear the responsibility to keep our registry entries accurate.

What are your thoughts on needs-based justification for the receipt of IP addresses?

I will re-iterate that the fundamental purpose of needs-based justification has not changed: to ensure an equitable playing field for new entrants. In no small part, this is by prohibiting entities with large pockets from merely purchasing all they wish and stifling innovation. IP addresses are finite resources for actual technical use, not an investment vehicle.

What do you believe to be ARIN's greatest challenges?

As previously mentioned, embracing the role of being a more tightly coupled element in the Internet operations ecosystem. To maintain relevance for the membership, this will require increasing the shift from being primarily a data repository to be a provider of services layered atop that data.

If you could improve any aspect of the ARIN AC, what would it be?

More broad stakeholder involvement. ARIN has been doing an excellent job of direct outreach in geographies and economies which may not be "on the conference circuit", gathering more involvement from smaller and far-flung operators. However that mostly remains in the same verticals (telecom, data centers, service provider, cloud). I have attempted to increase involvement of communities where there is intersection but often no policy development voice in our region, like the anti-abuse realm.

The role of the Advisory Council is to advise the ARIN Board of Trustees on Internet number resource policy and related matters. Describe a similar experience you have had in such an advisory role.

I have served on the ARIN AC for 3 years performing such duties. Prior to NANOG's transformation into an independent organization, the Steering Committee played an advisory role to Merit staff and Board of Directors, the actual decision-makers for the origination. My years serving on the SC were instructive in how to do so effectively and get our community's needs heard.

Steven **Wallace**
Indiana University
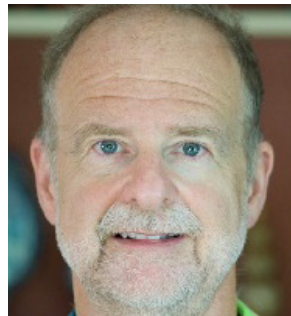
https://www.linkedin.com/in/steven-wallace-8a6868162
https://itnews.iu.edu/people/ssw.php

Bearing in mind that you run and serve as an individual, rather than as representing an organization, please provide the name of any organizational affiliations.

Indiana University, Internet2

Please provide a brief CV highlighting experience relevant to the duties of the ARIN Advisory Council.

I currently lead Indiana University and Internet2's outreach efforts to improve the adoption of Mutually Agreed Norms for Routing Security (MANRS). During the last six months, I've conducted or organized six workshops and webinars aimed at improving the adoption of MANRS within the higher education community.

For over 30 years, the entirety of my professional career, I've worked to expand the use and availability of advanced Internet capabilities within the US higher education community. My career in networking started on the campus of Indiana University in 1988. Ten years later, I was fortunate to lead the deployment of Internet2's initial backbone, supporting IPv4, IPv6, and native IP multicast. Today I work for both Indiana University and Internet2 as an enterprise architect and cybersecurity advisor.

Please disclose any conflicts of interest you may have with doing your duty as a member of ARIN's Advisory Council. How do you propose to resolve such conflicts?

none.

Describe any limitations on your ability to attend Advisory Council and Public Policy Meetings in person or to serve the entirety of a three-year term.

I've confirmed with my employer that I'll be given the time off to attend ARIN meetings and pursue the duties and responsibilities of an Advisory Council Member.

Have you attended ARIN meetings or otherwise participated in ARIN procedures in the past? What did you find the most rewarding from those meetings or procedures? What suggestions for improvement might you have?

My most recent experience was attending ARIN 43. The two aspects I found particularly rewarding were the process and policy through which ARIN conducts business and the explicit inclusivity that welcomed all types of participants. While the process of doing business is formal, the effect is to ensure all voices are heard, without interference. Ideas were fully voiced without fear of judgment or interruption. While ideas were heard as their proposers intended, the process left ample room for feedback from the entire community, even those not physically present.

How do you think ARIN's function, scale, or role should change?

The import of IP resources and services such as IRR and RPKI, coupled with the increasing level of contention for scare IPv4 addresses, is likely to increase ARIN operational stress. ARIN is transitioning from coordinating IP number resource allocation to protecting what many see as their property (i.e., IPv4 addresses), as well as offering services such as RPKI to better secure these resources from misuse. I see this trend continuing, and I'll advocate for the capabilities and resources to meet these new demands.

What differentiates you as a candidate or makes you uniquely suited to the post?

My passion is to improve the effective use of advanced networking within the US higher education and research community. My contributions as an ARIN Advisory Council member will be informed by my lifetime of experience working for the interests of universities and research organizations. I'm active in the national network-related activities of organizations such as Educause, Internet2, and the The Quilt. This provides me opportunities to meet with, and hear the needs of, a large sector of Internet stakeholders.

How do you separate your personal opinions from those of your organization and those of the community? What areas of policy, if any, need more attention and why?

A role of an AC member is to ensure the community can effectively navigate ARIN's policy and processes. ARIN policies and processes exist to ensure community involvement. One of the AC member's primary tasks is to assist community members in expressing their ideas and recommendations clearly, and in a form that is consistent with ARIN policy, regardless of the AC member's views. While my professional opinions, based on decades of experience, will inform my recommendations, I'm mindful that that they shouldn't subvert the community's will.

What are your thoughts on the rights and responsibilities of legacy IP address holders?

I would like to see legacy IP address holders be more normalized with ARIN. I'm aware that some legacy holders are unable to agree to the current RSA. As a result, they may be deterred from embracing new services such as RPKI.

What are your thoughts on needs-based justification for the receipt of IP addresses?

IPv4 addresses are a scarce resource. Despite 20 years of IPv6 availability, access to IPv4 addresses is required to fully participate in today's Internet. As far back as I can remember, ARIN has required IPv4 address applicants to justify their allocations. Now that IPv4 addresses are practically exhausted, with only a few remaining pools to meet special

needs, in fairness to the entire Internet, ARIN has a responsibility to allocate these addresses based on needs-based criteria.

What do you believe to be ARIN's greatest challenges?

ARIN will increasingly be challenged by the scarcity of IPv4 addresses and the rising need to support Internet routing integrity. ARIN's efforts to defend against illicit efforts to obtain IPv4 addresses are a drain on its resources. ARIN legal expenses have been increasing, and this is likely to continue. ARIN's support for IRR and RPKI will become increasingly important. RPKI adoption within the ARIN region needs to improve. This will likely require that ARIN find an approach to the RPA that satisfies its liability protection needs and presents a lower barrier to adoption.

If you could improve any aspect of the ARIN AC, what would it be?

My view, so far, has been as an outsider of the AC. Dave Farmer has done a remarkable job of keeping the higher education community informed of and engaged with ARIN. My goal is to provide the same flow of information and ideas, as well as support the policy development process. If appointed to the AC, I'll be in a better position to offer constructive input.

The role of the Advisory Council is to advise the ARIN Board of Trustees on Internet number resource policy and related matters. Describe a similar experience you have had in such an advisory role.

Throughout my career, I've served on several advisory councils, working groups, committees, etc. that made policy recommendations. At the university level, I make specific policy and technical implementation recommendations. These recommendations have been broad such as the scope of multifactor authentication requirements, to very narrow such as architectural patterns for improving the resilience of cloud-based applications. These recommendations inform those that set policy, as well as standing alone as policy themselves.

At the national level, I've contributed to policies that apply to the Internet2 network. For example, after an intensive investigation of the requirements of the Communications Assistance for Law Enforcement Act, I formed a comprehensive recommendation that ultimately was adopted as Internet2's CALEA's policy.

Matthew **Wilder**
TELUS Communications

https://www.linkedin.com/in/matthewwilder/

Bearing in mind that you run and serve as an individual, rather than as representing an organization, please provide the name of any organizational affiliations.

TELUS Communications - Sr Engineer
Institute of Electrical and Electronics Engineers - Vancouver section executive

Please provide a brief CV highlighting experience relevant to the duties of the ARIN Advisory Council.

I have worked in the telecommunicaitons industry for 14 years, with more than 10 years of experience specifically in IP Address Management and IPv6. In that time I have helped lead TELUS, one of Canada's premier communications providers, to implement IPv6 for the benefit of its many customers and shareholders, as well as the Internet community at large. I am passionate about driving IPv6 adoption across the industry. I have been able to present at several industry forums, including IPv6 World Congress and recently at CaribNOG. I have also blogged about IPv6 on several occasions with ARIN and the Internet Society.

I volunteer as a section executive of the Vancouver section of the Institute of Electrical and Electronics Engineers. I hold a Bachelor of Applied Science from the University of British Columbia, and a Master of Business Administration from the University of Victoria.

Please disclose any conflicts of interest you may have with doing your duty as a member of ARIN's Advisory Council. How do you propose to resolve such conflicts?

I have no conflicts of interest that I am aware of. Should any arise, I will remove myself from the issue at hand.

Describe any limitations on your ability to attend Advisory Council and Public Policy Meetings in person or to serve the entirety of a three-year term.

None anticipated.

Have you attended ARIN meetings or otherwise participated in ARIN procedures in the past? What did you find the most rewarding from those meetings or procedures? What suggestions for improvement might you have?

I have attended most of the ARIN meetings over the last ten years, remotely, if not in person. The meetings never fail to illuminate the concerns of community members as it pertains to policy development. Some of the major advancements in policy over the last decade include the emergence of mechanisms to support a transfer market and the introduction of special IPv4 address pools for NRPM 4.4 (Microallocations for Infrastructure) and NRPM 4.10 (IPv4 for IPv6 Deployments). These examples are emblematic of how the ARIN community has succeeded in adapting to the challenges faced in light of IPv4 address depletion while recognizing ARIN's role in providing continuity for the Internet community to continue to thrive.

Without a doubt, the meetings I have been able to attend in person have offered a much richer experience, with opportunities to discuss policy development with ARIN staff and community members during breaks. These hallway conversations - and table topics - offer great opportunities for rich discussion to delve into the nuance of more challenging issues that ARIN and the community are facing.

How do you think ARIN's function, scale, or role should change?

ARIN's function, scale and role are generally quite appropriate at the moment. From a staffing and operations perspective, ARIN must continue adapting to the challenge of detecting fraudulent activity, and working with the community as appropriate to develop policy changes to remove any policy loopholes that have been exploited.

Additionally, the community has an opportunity to simplify the NRPM by removing a good volume of the policies which previously served the purpose of slowing IPv4 address depletion.

What differentiates you as a candidate or makes you uniquely suited to the post?

My experience with deploying IPv6 and promoting IPv6 adoption are what make me uniquely suited to the Advisory Committee role. I enjoy finding common ground, which I know will be useful in the role of AC as consensus building is an important characteristic in order to successfully shepherd policies for community adoption.

How do you separate your personal opinions from those of your organization and those of the community? What areas of policy, if any, need more attention and why?

As a system level thinker, my primary frame of reference tends to be the broader community of stakeholders first. This paradigm tends to help me set aside the opinions stemming from my organization affiliations. The areas of policy which might need attention are first those which are potential targets for fraudulent activity. As the value of IPv4 addresses climbs, the interest of bad actors will escalate in order to find ways to leach valuable IPv4 addresses. It is incumbent upon staff and the community at large to work on hardening policy by identifying and limiting such potential abuse within reason.

What are your thoughts on the rights and responsibilities of legacy IP address holders?

Legacy IP Address holders, as with any other members of the community, have the right to participate in the policy development process, the right to use the resources assigned to them, and the responsibility to appropriately report the use of their resources while covering the cost of ARIN operations to perform the critical functions of the registry.

What are your thoughts on needs-based justification for the receipt of IP addresses?

There is no question that needs-based justification benefits the Internet community and should continue to serve as the cornerstone for IP Address assignments and allocations. With the advent of IPv4 address depletion, and the emergence of the transfer market, the price of IP Addresses could become very volatile if speculative purchases could be made by those who do not need IP Addresses.

What do you believe to be ARIN's greatest challenges?

ARIN's greatest challenges as I see it are to limit the opportunity for future fraudulent activity by bad actors, and to promote the quality of the registry as the number of undocumented transfers and leases escalates.

If you could improve any aspect of the ARIN AC, what would it be?

Although this improvement is perhaps not so much for the ARIN AC itself so much as the tools the AC has at its disposal, I wonder if there might be more effective means move policies forward more rapidly with regular input from the community. For example, perhaps online poling tools might invite more participation than strict reliance upon PPML. I believe experimentation in this area might invite richer community engagement to help facilitate more rapid and effective policy development.

The role of the Advisory Council is to advise the ARIN Board of Trustees on Internet number resource policy and related matters. Describe a similar experience you have had in such an advisory role.

As a professional engineer at a large communications company I regularly present recommendations to leaders within my organization.

Alison **Wood**
State of Oregon

https://twitter.com/wood_alison?lang=en

Bearing in mind that you run and serve as an individual, rather than as representing an organization, please provide the name of any organizational affiliations.

State of Oregon
Oregon Track Club
Willamette Valley Vineyards

Please provide a brief CV highlighting experience relevant to the duties of the ARIN Advisory Council.

Network engineer with the insane joy of reading packet captures, solving mysterious network slowness complaints and committed to educating the people of why the network truly isn't the problem. Ever.

Relevant Experience:

ARIN Advisory Council – January 2016 – present

Duties:

• Serve in an advisory manner to the Board of Trustees
• Work with the community to bring policy ideas into proposals
• Serve on committees, such as the NOMCOM

Employment
Lead Analytics Engineer
Oregon State Data Center – September 2005 – present

Duties:
• Lead a team of eleven network engineers in managing and maintaining a large, critical enterprise network.
• Solve complex network and application issues.
• Build, monitor and maintain Nagios, Statseeker, Netscout PM, and Solar Winds Tools.
• Build, monitor and maintain Cisco Prime.
• Build, monitor and maintain Cisco Access Control Server.
• Design and write reports on capacity planning, and advise customers on network requirements.
• Develop procedures for multi-million dollar network equipment upgrades and replacements.
• Instruct technicians on network design, deployment and tools
• Build, deploy, remotely upgrade and troubleshoot Cisco routers and switches in diverse WAN, LAN and Campus environments.

Certifications
Certified Web Designer, June 2000

Additional Training
Certificate of completion for Unix II
Certificate of completion for Cisco Router Troubleshooting
Certificate of completion for Advanced Cisco Router Configuration
Certificate of completion for Cisco Switching
Certificate of completion for Introduction to Cisco Router Configuration
Certificate of completion for bridges
Certificate of completion for switches
Certificate of completion for Systems Management Server
Certificate of completion for Quality Awareness Training

Please disclose any conflicts of interest you may have with doing your duty as a member of ARIN's Advisory Council. How do you propose to resolve such conflicts?

I do not have any conflicts of interest.

Describe any limitations on your ability to attend Advisory Council and Public Policy Meetings in person or to serve the entirety of a three-year term.

I do not have any limitations.

Have you attended ARIN meetings or otherwise participated in ARIN procedures in the past? What did you find the most rewarding from those meetings or procedures? What suggestions for improvement might you have?

I have attended all ARIN meetings since 2015 and many online prior to that. My favorite part of ARIN meetings is to sit down with members of the community, listen to their ideas then help them develop that idea into a policy proposal. The addition of the PDP Tutorial and the Fellowship program have brought a lot of creative ideas from the community to the advisory council.

I would love to see small workshops, similar to the PDP tutorial on subjects such as IPv6 rollouts, WHOIS, RPKI and other hot topics within the ARIN community, where ideas and advice could be shared.

How do you think ARIN's function, scale, or role should change?

While the free pool is exhausted and ipv4 allocation grinding down, ARIN's role in v4 will remain active for many years. Several companies will run in a dual stack environment until the last possible moment, but ARIN's role will move substantially into the IPV6 realm.

There have been recent suggestions from members of the community on ARIN's role in the future internet, from Internet police to IP address space retailer. I believe ARIN's role going forward is to continue to encourage, educate and assist in IPv6 deployment, to keep access to IP address space fair and accessible to all levels of users and to engage with the other IRR's to ensure that the Internet continues to grow and flow.

What differentiates you as a candidate or makes you uniquely suited to the post?

As an engineer that currently advises a pool of CIO's, I am uniquely positioned to understand the technical aspects of ARIN policy while being able to communicate as an advisor.

As a network engineer I bring the technical perspective of an ARIN customer to the advisory council. My role as an engineer in state government allows me the opportunity to serve all of the citizens of

Oregon, with the intensity of keeping an enterprise network up and running 24/7. I understand and am sympathetic to the needs of the ARIN community and how policies that we advance as Advisory Council members directly affect network engineers and their user community.

My experience as a network engineer also helps me to work with members of the community when they have an idea for a policy proposal. My "day job" meshed with my advisory council role helps me to understand the ideas of the community, the applicability of the potential policy and assist with the policy development process.

How do you separate your personal opinions from those of your organization and those of the community? What areas of policy, if any, need more attention and why?

My organization is responsible for computing for the state of Oregon. It is imperative that the rights and technological policies that I propose, support and bring to fruition are optimal for the success of the people of Oregon and the agencies that support them. State government can be a tough and highly political environment and it is imperative that leadership and guidance be provided in the best interest of the people and the success of our agencies and municipalities.

Policy that has fiduciary or outage causing potential certainly require more insight and research.

What are your thoughts on the rights and responsibilities of legacy IP address holders?

Legacy holders have had their space since 1997 or before. I agree with John Curran's statement that IP address space needs to be managed according to the principles established in the Internet Registry system, with a responsibility by the legacy holder to update contact information, etc. ARIN's LRSA fulfills the protection of the legacy space and the ability to manage the space within the IRR. Legacy IP address holders are entitled to the same opportunities as all other entities, with the hope that they will agree to the LRSA.

What are your thoughts on needs-based justification for the receipt of IP addresses?

After the depletion of the IP pool, needs based justification is a way that organizations can obtain ip space off of the wait list. The org must justify their need and then wait until resources are available. It is a bit cumbersome way of obtaining space, but the alternative is to purchase ip address space on the transfer market. The equivalent cost for purchasing on the transfer market for a /22 is sometimes a better option if the space does not fall under ARIN's justification classification or the organization needs the addresses immediately.

What do you believe to be ARIN's greatest challenges?

Outreach, education and fraud. ARIN has emerged as a solid resource for IPv6 education. The outreach to the community provided by ARIN is strong, but it remains to be a challenge to reach all v4 users that do not understand the ramifications of remaining v4 only. That outreach leads to education, of what v6 is, how to develop, plan and implement v6 replacements and rollouts. ARIN's last greatest challenge is fraud. Fraud is another area in which ARIN has made great strides to inhibit fraudulent behavior. Unfortunately bad actors will continue to seek cracks in policy to profit from.

**If you could improve any aspect of the ARIN AC, what would it be?**

Everyday I continue to be impressed with the integrity, knowledge, mentoring and guidance of the ARIN AC. The dedication of my fellow AC members is remarkable. I am inspired by the AC and have had the pleasure of participating in improvements to the council over the last three years including the community electing new council members from diverse backgrounds and training specific to our compliment our skills as council members. I look forward to the continued growth and diversity of the council.

The role of the Advisory Council is to advise the ARIN Board of Trustees on Internet number resource policy and related matters. Describe a similar experience you have had in such an advisory role.

As the state of Oregon's network gained complexity, troubleshooting the connections of over 40,000 users required standardization. The state's data center is home to 12 large state agencies and many more municipalities. To function efficiently, reduce MTTR, simplify capacity planning and improve the user experience my team of engineers proposed standard templates, unified QOS settings, and a small menu of equipment - essentially standardizing business methods. These policies were brought to the CIO council of the customer base.

As a decision maker and engineer for these policies, I presented them to the council, answered questions, worked through an optimization process, security concerns, documented and implemented the changes.

A direct result was reduced cost to the customer, increased uptime, simple lifecycle replacement and a simple franchise environment.
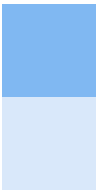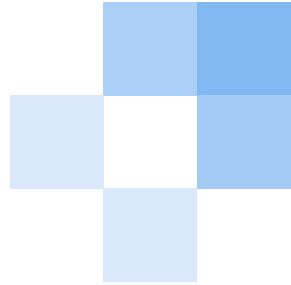
NRO **Number Council**

Martin **Hannigan**
Deep Edge Holdings, Inc.

https://www.linkedin.com/in/martyhannigan

Bearing in mind that you run and serve as an individual, rather than as representing an organization, is there an organizational affiliation you'd like to state?

I am the Founder and Chief Executive Officer of Deep Edge. Deep Edge is a private equity backed Internet infrastructure company.

Are you available to serve the entirety of a three-year term?

Yes.

Describe any limitations on your ability to travel to attend ARIN and ICANN meetings in person or participate in scheduled teleconference calls.

None.

ASO AC conference calls are held once a month, historically at 11 AM UTC, would this present a problem?

No.

Why do you want to serve on the NRO NC, and what goals do you want to accomplish?

I want to continue serving the Internet and number resource community in ways that are beneficial to the past, present, and future of the Internet. My goals are to promote diversity and inclusiveness of all; provide honest services to the community; and help maintain the system of unique identifier policy and procedures driven by bottom up Internet governance.

What, if any, conflicts of interest might arise for you as an NRO NC member? Specifically, do you serve in what could be perceived as any Internet governance roles, provide any services directly or indirectly to ARIN, or represent any significant interest from the community?

None.

What is your record of serving the Internet community in the ARIN region?

Here is a key to the ICANN groups listed throughout; http://bit.ly/ICANN-SO-KEY

o 2005-2006 NANOG mailing list chair
o 2011-2019 NANOG Member (in good standing)
o 2006-2010 ICANN NRO-NC/ASO-AC
o 2009-present Caribnog member
o 2010-2012 ICANN Security Stability and Resilience Review Team (2)
o 2011-2012 ARIN Advisory Council
o 2014-2016 ICANN GNSO Registry Stakeholders Group Member
o 2011-2015 Toronto-IX Vice President and Director (Canada)
o 2013-2017 Open-IX Founder and Director (Global)
o 2015-present Richmond IX Advisory Board Member (Virginia)
o 2016-present Mass IX Advisory Board Member (Massachusetts)
o 2016-2018 Montgomery IX Advisory Board (Alabama)
o 2016-Present Founder, New England Peering Forum (Massachusetts)
o 2018-Present Montgomery IX Board Member (Alabama)

What participation do you have within ICANN, in the past or currently? Are you a member of any other ICANN AC or SO?

o 2006-2010 Member, ICANN NRO-NC, ASO-AC Address Supporting Committee
o 2010-2012 ICANN Security Stability and Resilience Review Team (2) (appointed GNSO representative)
o 2014-2016 Member, GNSO Registry Stakeholders Group

I am not a member of any ICANN AC or SO.

What differentiates you as a candidate, or makes you uniquely suited to serve on the NRO NC?

o Long term involvement with ICANN, RIR's and the NRO-ASO/AC
o Operating Internet networks and DNS internationally since 1988
o Deep understanding of how number resources factor into security, stability and resiliency of the Internet
o Applied for, received and managed ~/8 of IPv4 and ~/26 of IPv6 numbers from various RIR's
o Using and operating NSFnet and Internet networks since 1988

Provide a brief biography of recent experience, associations, and affiliations relevant to serving on the NRO NC, including names of organizations, positions held, specific duties, and dates of service.

I was appointed by the ARIN Board and served on the NRO-NC from 2006 to 2010.I served as an appointed member of the ICANN Number Resource Organization numbers council "NRO-NC". The NRO-NC also serves as the Address Supporting Organization Advisory Council "ASO AC". My responsibilities included a role in the development of global number resource policy. I was part of a team defining the operating procedures for selection of members and others to serve on ICANN bodies like the Board. We voted on policy matters as related to compliance with procedures and participated in the fulfillment of the communities wishes by transmitting policies to the ICANN Board for ratification. We provided relevant advice to the board regarding number resource policy in conjunction with the other RIR's. My affiliation during this time was the Bahamas Telecommunications Company, Verisign and Akamai.

From 2010 to 2012 I served as a GNSO appointed member of the ICANN Security, Stability and Resiliency Review "SSR" Team 2, the second such convocation of analysts of DNS security by ICANN. My role was to work as an active part of the team to assess the extent to which ICANN succeeded in implementing its security efforts. We analyzed the effectiveness of those efforts. We sought to determine if they were inclusive and wide enough in scope but

adherent to remit to meet the challenges and existential (and other) threats to the security, stability, and resiliency of the DNS. My affiliation during this time was Akamai.

From 2014 to 2016 I served as a member of the GNSO Registry Stakeholders Group as the representative of a my employer. We became a accredited registrar as part of a security regime to secure our domain name registrations from hijackers. I participated in GNSO policy commentary, ICANN issues debate and an assortment of policy driven working groups related to the domain name space. My affiliation during this time was Akamai.

In light of the ongoing transition from IPv4 to IPv6, do you have experience you wish to share with the community that is noteworthy in terms of IPv6 adoption?

I was on the globally coordinating call for World IPV6 Day working at Akamai, the largest CDN in the world. I was a principal architect in the Network Architecture group which I later went on to lead. We were responsible for v6 deployment globally. I continue to advocate for IPv6.

What is your view of the existing bottom-up, self-governance model and structure of the Regional Internet Registry (RIR) system? Do you believe there are other models or structures that would work better?

The ICANN governance framework is now over twenty years old. It has gone through changes. While it is imperfect, I am aware of none more suitable. On one hand, it can take a lot of time and effort to make changes. It can be slow going. On the other hand, it is hard to beat a collaboration of community and government. It provides for plenty of time to get it right. ICANN is global. While operating under a common framework looking for reasonable outcomes is difficult, ICANN shows it can be done. The people make it happen. Making the internet reliable and innovative is in everyone's interest, technically, politically and economically. Using that as a measure, ICANN (and the AC/SO's) are doing well.
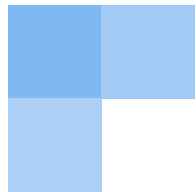
Aaron **Hughes**
6connect, Inc.

https://www.linkedin.com/in/aaronhaaronh/

Bearing in mind that you run and serve as an individual, rather than as representing an organization, is there an organizational affiliation you'd like to state?

Board Member, President and Chairman, PeeringDB Board Member, Chairman of the Board, Open-IX Chief Network Architect, UnitedLayer 25+ years industry experience, operator, policy, and peering forums

Are you available to serve the entirety of a three-year term?

Yes

Describe any limitations on your ability to travel to attend ARIN and ICANN meetings in person or participate in scheduled teleconference calls.

None.

ASO AC conference calls are held once a month, historically at 11 AM UTC, would this present a problem?

No

Why do you want to serve on the NRO NC, and what goals do you want to accomplish?

Simply stepping into shoes which need to be filled to serve the interest of the ARIN community as an ICANN SO and continue work already in progress on SLAs, policies, MOU updates (as needed) and to facilitate global policy coordination.

What, if any, conflicts of interest might arise for you as an NRO NC member? Specifically, do you serve in what could be perceived as any Internet governance roles, provide any services directly or indirectly to ARIN, or represent any significant interest from the community?

None.

What is your record of serving the Internet community in the ARIN region?

ARIN Trustee / Board member for 6 years. ARIN RIR attendee / community member, contributor 15 years. Currently serve on many boards supporting Operators, Policy makers, IP Analysts, Peering Co-ordinators, etc. ~20 years of volunteering/elected experience serving the Global Internet community.

What participation do you have within ICANN, in the past or currently? Are you a member of any other ICANN AC or SO?

Most directly as a Trustee on the ARIN Board of Trustees. I am not currently a member of any other ICANN AC nor SO

What differentiates you as a candidate, or makes you uniquely suited to serve on the NRO NC?

I've participated at RIR meetings in all five regions, work well with other cultures and communities and currently serve in global coordination roles for other non-profit organizations.

Provide a brief biography of recent experience, associations, and affiliations relevant to serving on the NRO NC, including names of organizations, positions held, specific duties, and dates of service.

https://www.linkedin.com/in/aaronhaaronh/

In light of the ongoing transition from IPv4 to IPv6, do you have experience you wish to share with the community that is noteworthy in terms of IPv6 adoption?

I'll simply state that I have been heavily involved with v6 adoption for more than 15 years and look forward to laughing about v4 the way we speak about IPX/SPX, X.25, AppleTalk, ATM Networks, and SLIPing SLURP today. :)

What is your view of the existing bottom-up, self-governance model and structure of the Regional Internet Registry (RIR) system? Do you believe there are other models or structures that would work better?

I am a strong supporter of bottom-up, transparent, self-governance models and will continue to do as much as possible to never be regulated by top-down systems and/or organizations.

Dave **Taht**
Bufferbloat.net

https://www.bufferbloat.net

Bearing in mind that you run and serve as an individual, rather than as representing an organization, is there an organizational affiliation you'd like to state?

Not really. I am incorporated as "teklibre, llc", if that matters, for the consulting I do. You can use teklibre instead of bufferbloat.net if you want.

Are you available to serve the entirety of a three-year term?

Yes

Describe any limitations on your ability to travel to attend ARIN and ICANN meetings in person or participate in scheduled teleconference calls.

Funding is always a problem. Trying to add up the costs of doing the travel looks to be in the 20k/yr range? Which I'm not presently in a position to float, as I'm semi-retired. If I have to cover the travel please withdraw my nomination.

ASO AC conference calls are held once a month, historically at 11 AM UTC, would this present a problem?

No.

Why do you want to serve on the NRO NC, and what goals do you want to accomplish?

I'd like to see IPv6 roll out faster and better! I'm also on a project to (ultimately) add back 420m IPv4 addresses to the world, and I thought that applying here might at least spark a conversation on that.

I've worked really hard to make ipv6 usable along the edge (see for example the "cerowrt" project) and it still needs love at so many levels.

What, if any, conflicts of interest might arise for you as an NRO NC member? Specifically, do you serve in what could be perceived as any Internet governance roles, provide any services directly or indirectly to ARIN, or represent any significant interest from the community?

I tend to think I represent some of the embedded portions of the linux open source world. In terms of internet governance involvement, well, sometimes, "code is law". I've been fairly active in the IETF in the past and still participate somewhat in a couple WGs. Don't provide any services to arin presently.

What is your record of serving the Internet community in the ARIN region?

I founded an ISP in florida in 1994. Sold it in 1999. I helped make embedded linux a reality. Helped invent wifi as we know it today. I worked on OLPC. Most recently I spent 8 years attempting to solve the worldwide bufferbloat problem with new algorithms like fq_codel (RFC8290), and not only making that the default in linux, but in osx and available in freebsd - along with the wifi version which is now also the linux default. (https://www.usenix.org/system/files/conference/atc17/atc17-hoiland-jorgensen.pdf) My cerowrt project attempted to make a goodly portion of the edge of the internet work better with ipv6.

What participation do you have within ICANN, in the past or currently? Are you a member of any other ICANN AC or SO?

I voted in the general election in 1998 (?).

What differentiates you as a candidate, or makes you uniquely suited to serve on the NRO NC?

I have been deeply involved in the FOSS world for decades. I know a great deal about how networks actually work, and are (mis)configured and (d) evolving today. I have a great deal of personal integrity and am closely aligned with the founders of the Internet's original ideals and am well known in FOSS. Having this deep level of technical clue would be something that I hope could be brought to bear on NRO policies....

Provide a brief biography of recent experience, associations, and affiliations relevant to serving on the NRO NC, including names of organizations, positions held, specific duties, and dates of service.

How the NRO came to my attention was the "ipv4 unicast extensions" project. Aside from that it's having been in the guts of linux's routing stacks and dealing with cloudy stuff and basically just being on the internet since the early 80s, in general.

In light of the ongoing transition from IPv4 to IPv6, do you have experience you wish to share with the community that is noteworthy in terms of IPv6 adoption?

cerowrt and openwrt worked really, really, hard to make ipv6 more generally usable before ipv6 launch day, and ever since. There were hundreds of bugs fixed, dozens of standards implemented, whole new daemons invented... and the work is still far from done in linux, much less any of the IoT stacks I've looked at.

What is your view of the existing bottom-up, self-governance model and structure of the Regional Internet Registry (RIR) system? Do you believe there are other models or structures that would work better?

I think it's dysfunctional... as are nearly all of our other internet institutions. What to fix it with or how to fix it - or even if it needs fixing - was one of the things I'd poke into with a very open mind.

ARIN

ELECTIONS ☑

VOTING OPENS
4:00 PM ET
THURSDAY, 31 OCTOBER

VOTING CLOSES
6:00 PM ET
FRIDAY, 8 NOVEMBER

Watch for an email on **Thursday, 31 October at 4:00 PM ET** with instructions on how to vote.

www.arin.net/elections