Interviewee: David Conrad
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Abstract
David Conrad is a long-time and active participant in Internet infrastructure, development, and operations. Highlights of his career include leading the team that developed one of the first TCP/IP packages for the original IBM PC, helping to start one of the first commercial Internet Service Providers in Japan, establishing and becoming the first Director General of APNIC, founding and being the CTO and co-VP of Engineering of Nominum, Inc., being the "Internet Janitor" at CloudFlare, Inc., and performing a number of roles at ICANN, including General Manager of the IANA, Vice President of IT and currently, CTO.
In the interview, David Conrad shares his experiences on APNIC, its foundation, development and works, introduces ICANN works and his role in ICANN, and his memory and impression on China internet development.

0:27
BZ: thank you very much, and today, uh, is August 4th , uh,2017, we are at the headquarters of ICANN, interview with, uh, ICANN`s CTO David Conrad (Conrad) Conrad there, or I'll ask you for answer mainstream data here. All right.

DC: yes. Uh, I'm David Conrad. ICANN CTO have been, now working at ICANN for a total of seven years. Um, but middle spaced, uh, I uh, work for ICANN then stop, then came back again. Sure.

BZ: So uh, you're born?

DC: Yes, I was born uh, in Washington, DC on January 17th, 1964,uh, spent uh, my early years dancing between Maryland in the US and twenty. Um, and then uh, went to the University of Maryland started in 1981uh, was a full time student there for a couple of semesters. And then uh, was hired by the university uh, to work on development of TCP/IP for the IBM PC, under an IBM contract, uh, started that in, I guess,1983,um, resulting in the University of Maryland Park for my undergraduate degree, uh, graduated in 1990, uh, started working at the, uh,uh, US National Science Foundation and NASA funded, uh, pacific communications network, called PACCOM uh, that was a housed at the university of Hawaii provided the first connectivity to Japan, Korea, Hong Kong, Australia, and New Zealand, uh, worked there for a couple of years, and then was asked by, uh,uh, Dr. Jun Murai, he was, uh, uh, one of the pioneers of the internet in Japan to help start up the first commercialized ISP in Japan ,uh, moved to Japan. And uh, when was that? `92, worked there for a couple of years and then was asked to start up the Asia Pacific network information center

started that up, run that until, uh, 1998, return to the US um, in `98 to run the Internet Systems Consortium, Um, around, this was around the time of the uh, internet bubble. So, uh, living in Silicon Valley we had to do a Silicon Valley startup. So created a a silicon valley startup called Nominum, which is still around, uh, did that for a number of years. Then came to ICANN the first time in 2005, worked at ICANN for uh, about 5 years, uh, resign from my canon in 2010 then uh, did a couple of consulting jobs and a few other things, and then came back to ICANN in 2014.

3:28
BZ: very good there. Um, I'm very interested in the relationship when you go to Asia Pacific Network Information Center there, when you initial that started there. What kind of readership with ICANN, I understand that's part of the ICANN, is that right?

DC: uh, not quite. Um, the uh, APNIC was established in around uh, `93, `94 time frame. It's sort of a little ambiguous because it wasn't a formal organization for many years. Um, ICANN was not incorporated until1998.Uh, so it actually predated ICANN, uh, APNIC was the second regional internet registry to be established. The first uh, was RIPE, which was established in 1992, uh, RIPE is the European uh, IP address alligator, APNIC uh, was uh, formulated as a a research project uh, between uh, research and uh, industry in Japan and uh, in Korea. So Dr. Kilnam Chon in Korea, and then at the time at the Korean Advanced Institute of Science and Technology, and Dr. Jun Murai at Keio University, the one who sort of initiated the project and asked me to help out and getting it started.

BZ: So that's basically function like and someone like ICANN where

DC: uh, in the sense of allocating IP addresses, the actual numbers that are assigned to computers, the region internet registries are um, primarily responsible for that. ICANN`s primary role is to coordinate at the at the top most level, um, the names, domain names, IP addresses and protocol parameters. Uh, we, uh,uh, even today allocate large blocks of addresses, uh, to the regional internet registries for sub allocation within the region.

5:28
BZ: So you can hire, you you guys, this kind of job opportunity because of you one of the first who do the TCP/IP package? So…

DC: yeah, yeah, I um, had developed a knowledge of TCP/IP um, it was um, a new protocol when I first started in doing software development in `83uh, time frame, um, competing against things like SNA and OSI and those protocols. Um, internet eventually sort of won. And I uh, just happened to be very lucky in that the job that I had, um, introduced me to the protocols like that, uh, I broke my own TCP implementation, uh, I learned about the DNS and how it's implemented, um, and use that information to sort of springboard into this research network at the University of

Hawaii. Um, and that introduced me to the international research networks at the time, uh, which provided me the opportunities to go to Japan and Korea and Hong Kong and assorted other countries in the region

6:36
BZ: so, which countries you stay the longest? Japan?

DC: I was in Japan. I was primarily in Japan. I relocated APNIC in `97, uh, started the relocation in`97 from Tokyo down to Brisbane, Australia and primarily for business reasons. Tokyo was very expensive and very difficult to uh, get a business lease in written. Australia was much cheaper and much easier.

BZ: And also you pick up some Japanese.

DC: Uh, so so I'm I'm not fluent

BZ: so eventually, um, all this kind of years, you work and, you know, it seems to me and you begin to work most of the companies are NGO that um, am I right?

DC: it was primarily infrastructure companies that um, you know started in university academic setting, uh continue that, then went to commercial, then went to an NGO then went back to commercial, then went back to NGO. So I just bounce back and forth wherever the uh infrastructure thing is happening.

BZ: So how difficult like that nowadays you think and to work with. I I understand, ICANN is a very international and now, you work with so many domain names. Um, what what what do you call it like, um, merchants?

DC: That`s registrars. Registrants and registrars.

BZ: yeah. So the dealing with them, you know, uh, the world is so complicated basically. How ICANN can manage this situation especially after last year you transfer to ICANN the total domain names and the transfer to ICANN. And you it seems to us and you know you can get a lot of questions, ah, you get a lot of like the people will have different stakeholder usually have their own interest. So everybody have their own interest, how how how ICANN handle that?

DC: So the the uh, the architecture that ICANN operates under which we promote as this multi stakeholder model, which you know, yes, every stakeholder has their own agendas, their own interests. Uh, but if we get all of these stakeholders together, it provides an opportunity for those agendas and interests to play off each other, find a common consensus for or um, you know, whatever policy decision needs to be made. um, that is opposed to, um, previous models which focused on one specific sector, whether it's industry or government or academia, um, which would tend to result in

consensus, but only within a narrow subset. And the other, uh, stakeholders would then get put into a position of having to either fight against or compromise their own interests in order to abide by the, uh, the the consensus of the smaller group, the uh, the sort of the model the the multi stakeholder governance structure provides is a way in which everyone who has an interest can participate and help form the consensus of the larger group.

9:43
BZ: It seems to me like that, you know, um, Asian countries usually have their own agenda, pretty much distinct from western world. Um, you know, you work there, I think have you have a firsthand experience and with their request interest. So how different um, they're usually, their agenda could be different, from those country, from west.

DC: So, uh, in my experiences, um, I found that um, the sort of different segments have sort of similar, um, interests and agendas depending on the breed, sort of regardless of uh, where they're physically located, their political geography, they, um, you know, governments tend to focus on wanting to maintain a certain level of control, and that that's, uh, independent of, you know, which government and where you're looking at. Um, I've seen, um, identical arguments uh, in Africa that I've seen, um, in Asia, that I've seen in Latin America and even, um, you know, places with North America. Um, similarly, industry always wants to minimize regulation. They want the the freest ability to go whatever way the market demands that they need to go. Um. And that's one of the reasons that the multi stakeholder model seems to work a bit better is that, it allows these different sense of interest to be in the same room and to come up with some compromise that allows um, the the different participants to get at least a portion of what they need. Um, there have been, uh, you know, areas in which um, interests, um, yeah, particular governments are, particular segments Um, want to take precedence, but that has to be balanced against the the um, the other interests and the sort of overriding goal of maintaining, uh, sort of a singular environment that allows for, um, the uh, innovation allows for the ability to communicate and allows for um, the internet to continue to meet the demands and needs of all the folks that are either have connected or will be connecting.

11:58
BZ: So, uh, you know I I attended some conferences here like IGF there and ICANN, it seems to me, you play a bigger and bigger role there, which is a a very, very important thing is the United Nations were mentioning and we'll build like, um, two years so called knowledge society. We called information society conversation. ICANN definitely wanna, you know, play a bigger and bigger roles there.

DC: So ICANN actually, um, we have a very limited, uh, mission, um, and it was actually, uh, with the transition the of the A&A functions that uh, limited mission was more, uh, carefully defined and more carefully, uh, circumscribed. So the activities

that we perform at the, uh, direction of our community are specifically limited to dealing with the, um, security and stability of the top level of the internet system of unique identify as we have no uh, interest or mechanism by which to, uh, uh, get involved with content. We have no uh, ability to influence access. Um, our role is specifically limited to uh, trying to make sure that the names and addresses that allow everyone on the internet to communicate together, um, function, uh, in a stable and secure fashion.

BZ: So that's like a stability in a security could be the top. Um, you know, concerns ICANN have.

DC: It actually is in the very first sentence of our mission in our bylaws.

BZ: So nowadays like, we, everybody know internet was not designed to sort of like protect privacy of security issue. We'll assume everybody using internet with a good reason, and the noble reason. So I'll send you honest information. But nowadays we say, fake news and the bogus information and fraud, the spams, all those kind of things. So do you see like and you know how ICANN they play a role in curb those internet evils.

DC: Um, so um, ICANN is two things actually. ICANN is a community, these multi stakeholder environment in which a bunch of different interests, uh, work together to come up with consensus policies. And then there is the ICANN organization that actually goes and implement those policies on the CTO of the organization. Um, in the context of uh, the internet and the, um, both positive and negative, um, are the organization implements the policies that the community, uh, comes up with, uh. One of the things that my group, uh, within ICANN is actually uh, specifically task with doing is providing information to the community to help them understand the implications of the policies, uh, to understand you know, what needs are there, that with that exist within the larger uh, internet ecosystem. So in the context of uh, dealing with abuse, um, we are uh, my, the organization is providing to the community, um, information about, um, how that abuses occurring, potential ways of mitigating that abuse, uh, potential ways, uh, in which the policies will either make things better or worse, um. But ultimately, it's the community that decides, uh, if a policy is uh, in the best interests of the internet as a whole, or in the best interests of a small subsection of the community, um, and some of those maybe, um, you know, for good or ill, uh, and all the only thing that we do is, we the organization provides that information to the community so that they understand the implications.

15:56
BZ: So I I think I understand better about the CEO and President of ICANN and you know, you got like approach, we already interview several of them. Can you describe like and your job as a CTO.

DC: sure, my primary role is, as I mentioned to uh, basically, um, collect and disseminate information about the way the internet system unique identifier is uh, used or abused on the internet today and in the future. Yeah. One of the uh, ways that, um, the new CEO, Marby uh, sort of positions my group, um, and my role within the organization is that of a sort of a think tank to, um, as the community, as questions about, uh, yeah, what's the potential impact of this policy or, you know, why is this happening? It's my group's responsibility to collect as much information as we can and provide that information to the community in a neutral, unbiased fashion, to help them work on the, uh, the necessary policy implications, uh, the necessary changes in policies, to prevent bad things from happening or to encourage good things.

BZ: So and your group also study internet governance or cyber security?

DC: Um, we don't, yeah, we don't we have some role um, uh, and helping others understand the internet system of unique identifiers, um, we don't directly get involved in internet governance discussions, but rather we provide the data and information to the ones who are directly involved in.

BZ: all sort of discussions about it?

DC: Exactly.

BZ: So um, uh, how many people you have? Uh…

DC: right now, I have uh, 16 people

BZ: that's that's not small research team, you know, you know, ==for social made out of organizations==. But my question here is that, we need specific expertise from certain area. Do you reach out to some say Japan or something, or you you won't go there. And then, yeah,

DC: we, um, we are actively engaged, um, discussions with a number of groups, for example, in the, uh, anti abuse operational security communities, uh, organizations like APWG and, um, MAAWG, The mobile, what is it? I forgot what MAAWG stands for, but it's, uh, uh, groups that are focused on anti abuse.Um, we, uh, has established relationships with research universities. We, um, are engaged in a number of industry groups, um, all of which, uh, when we don't have an expertise, we rely on others to, um, help us understand what the particular issues are.

18:47
BZ: So ICANN`s policy um, can be sort of like a ship up by your research and your team, your team members researcher bring in addition to that. And there's some very influential stake holder of of governments and you know, come to approach, said, okay, I'm from Kenya, I feel so unfairly treated in terms of t==he meeting.== So so those

things were affect, like ICANN`s policy, or?

DC: not generally. Um, our role is primarily to facilitate discussions among the community members and to provide them information. So if, for example, a a government were to approach us and say, yeah, uh, it's been unfair, this treatment, then my group's role would be to to try to investigate, to try to understand, and to provide a sort of neutral and unbiased uh, information that can help others understand what the real situation is.

BZ: Okay. Um, so coming back, I still want like to tap into your your understanding about, usually the east to the west. I I attended east west center, and sometimes you usually don't have um, on the same page. Uh, they have their own, like interest or they have their own agenda. Uh, how do you think about like for better, like doesn't matter is is from Africa or from the Middle East and from Asia, how is participants, ah, you know, into these kind of global discussion about the internet related issue.

DC: So, um, in my experience, uh, things take a long time, because initially people come in with a particular view of how the other parties are um, their their positions their, the world view. And uh, there's usually a period in which, um, there's arguments where people are talking past each other, because they may be using the same language. Um, but they're not using the words in the same way. And after some time, you begin to understand what the others position generally is, assuming people do want to make progress, which is usually the case. Um, and uh, after some period of time, people are able to come to a compromise positions and uh, understand that while they may not agree with particular approach of, um, one particular sector of the internet, um, they understand that that particular position is important uh to the other, and will make some adjustment uh, within their own positions, as long as the other party makes adjustments. So typical compromise, uh, type discussions, um. And unfortunately with at least within the ICANN, uh, we still are able to compromise. We still are able to, uh, come to sort of a uh, if not mutual, agreeable, mutually disagreeable positions.

21:58
BZ: Okay. Um, what kind of values you have to broadcast to your ICANN`s policy, thinking, initiative. So um, how you broadcast those.

DC: So the the the values that ICANN generally holds are, um, we're in favor of a single internet, a uh, one that provides the least restrictions on uh, innovation and the ability for people to, uh, interconnect and communicate. And we have a fairly elaborate, um, structure of global stakeholder engagement, that we, uh, go around to various venues, uh, to various groups, um, and try to explain why we have those views, why we think, you know, a single singular open internet is um, the the most effective in helping to enable, um, people and governments and countries to, um, improve, uh, to have their economies improve, have their understanding of the world

around them improve.

23:09
BZ: Um, it seems to us, the internet is play incredible, you know very very important roles since like 1969, the birth of the internet. Um, all these years would be in to say they are you know so many people ICANN not work with different think tanks governments, stakeholders, multiple stakeholders and make it works very well. Um, how do you think about let`s see next 10 years? (Um, so yes) what kind of role ICANN could end up to be

DC: so that is an area that my group is uh, tends to be focused on. And we have, uh, uh, perhaps surprisingly, uh, very neutral stance in terms of uh, technology. Yeah, right now, uh, the DNS uh, on internet protocols are the ones that make the internet able to function. Um, but we don't, um, believe that that will always be the case, that there will always be a an evolution of protocols to meet the needs. Um, and we're constantly on the lookout for new technologies and new approaches that enable, um, the other people who are connecting to the internet to do so more cheaply, better, faster. Um. One of the things that we're looking at right now, are block chains, to see how block chains may have an impact on the identifier systems that the internet uses. Um, as time moves on, it's on doubly true that the business models, uh, that sort of drive the internet will change. Um, some of those, you know, may have positive impact on ICANN organization or negative impact. And it's really up to, uh, the community to tell us within the organization what the right approach is moving forward. And since we have, um, you know, this broad spectrum of participants, the stakeholders in the community, uh, that helps us be somewhat protected against shocks and surprises. And it allows the community to, um, rely on us as sort of a stable point within sort of the changing underlying infrastructure.

BZ: Um, none of you to say work for reduced you know, because of the internet there, we have so many contents would never know before end up to produce their own people. So that's like the changes in industry professions and the people who work there. But do you expect someday will no longer have ICANN people?

DC: um, I fully anticipate at some point, the role that ICANN performs um, will be subzone by um, other entities. Um, the, uh, block chain I mentioned, um, has at least in the view of some some potential, uh, to replace the need for ICANN. I think ultimately, um, you know, my view of ICANN is that it's a meeting place that allows um, people in the different stakeholders, different agendas of different interests to come together to, um, initially, you know yell and scream past each other, but eventually to um, speak to each other and come up with some compromise solutions. I figure as long as ICANN, that role is necessary, that ICANN the organization will continue to exist to facilitate these sorts of discussions. Um, but ultimately, uh, if, you know those sorts of discussions, if you know, we have reached consensus among all the various stakeholders on policies, um, then that removes the need for the

organization.

BZ: So if I may use a metaphor, I'm thinking something seem like the ICANN sort of like the United Nations organizations on the internet. Am I right?

DC: In a way, uh, you know, the United Nations tends to get bound up with with government only. Um, ICANN, uh, we try to go beyond that and focus on, you know, anyone who has an interest stake in the underlying infrastructure. Um, we also have a much, much narrower focus. Our our mandate is specifically limited to the security and stability of identifiers, um, so we don't have any, any means any mechanisms to go beyond that. If the community decided at some point to change our our mission, to change our focus, then you know, maybe we would branch and other things. But I don't anticipate that happening, at least within my career.

27:41
BZ: I want to go back a little bit about the access, is that ICANN does not have anything to do whatever the access is, and we want to make sure its stability and security issue of the identifier size and very good. But there is like, you know, access issue. Uh, there is like that's the major scenes that it's unfair or unjust. Um, you know some people say access to internet is kind of human right, but that human rights were not available to so many people still on the earth, which is either because of political issue, like China blocks the information. Oh, it's um, you know, very underdeveloped area. I don't have success, I don't have Wi-Fi, I haven't had vehicles there. But do you think like that ICANN will totally say no, I don't care about that. I'm just on the side.

DC: Well, we we care. We have we obviously believe that a growing internet and connecting more people um, is uh, beneficial. It's the the network effect and get more people that increases the value of the network itself. Um, but ICANN has no role in supporting that, a very laudable goal. Um, we, uh, our mission is very tightly limited. Um, and in this, in the area of identifiers we do try to promote, for example, the creation of registries and registrars, uh, in developing economies, uh, because then we believe that that increases the business potential, increases the need for internet, which will help drive additional access. But beyond that, we don't have any mechanism to, uh, promote or improve access within, um, you know, the the uh, parts of the internet that aren't fully connected.

BZ: I fully understand that. So, uh, thank you for clarify that. I say, so ICANN is not everything ICANN not equal to the United Nations will handle all those things. So I'm going back to to my colleagues here for maybe you have any question for him

29:57
BZ: So uh, told us about the first time you you went to China, so what kind of uh requires so what you observe?

DC: yeah, it was um, believe1995 or so. (Ok). And um, at that time, uh, CERNET, the Chinese Education and Research Network, was just being established. And Sprint, a US company, telecom company has been hired by the Chinese government to help build out that network. And uh, I was at APNIC, running APNIC at the time, and I received a request vs. friend for um, several orders of magnitude, more address space in IP account. Uh, the initial request was um, very, very large. And I had no mechanism, no way of being able to uh, respond to that request. Ah, so I responded negatively, said, you know, so we don't have that address base. Um, and here is the process by which you can address a small amount of address space and then expanded. And I can get more from the IANA, the Internet Assigned Numbers Authority. Uh, but I I don't have the amount of address space. And as a result of that response, I was er asked to come to China, went to Beijing. I think it was in, um, it`s cold. So it's probably November, October, November time frame, uh, to speak at the Qinhua university. And I gave a presentation on APNIC. And and then I had a number of meetings with, uh, folks within the, uh, the Chinese government and tried to explain to them that I would love to help, but I can't, I don't have the resources to meet the request, had a number of the iterations of those discussions went to Beijing many times. This was a long before the new airport, uh, flying into the old airport in Beijing. Um, but eventually we were able to come to an agreement. Um, and at the time, um, folks within particularly the Ministry of Post And Telecom were unhappy. Um, because at that time, um, universities like MIT and Stanford had significantly more address space than the entirety of China. Um, uh, but I kept explaining that, that's because they got the address space a long time ago. And as you use the address space, we can get you, uh, you know, I can get you more address space. I just need to have uh, justifications, um, because of the policies that were defined by the Asia Pacific RIM community. Um, the mechanisms by which, um, I could allocate address space were constrained by those policies, but, over time, I believe China now has more address space than any other country within the AP region. Um, yeah, that's true.

BZ: yeah he's mentioning the date and it may be uh August 15, (to okay) to 16 1995,

DC: Yeah. There's very I remember, it it was summer Okay. I think maybe the second trip I was in the fall, but the uh the summer. Um I think it was also stayed at Qinhua guest house at Qinhua university

BZ: Memo? Any Memo get signed?

DC: Um, I think there was some discussion about signing a document (with APNIC?), um, yeah, um, but that, there were a couple of attempts to sign a document. It was a little complicated. Um, because of the way APNIC was structure that I was not, uh, fully allowed to enter into a green just as myself.

BZ: Jun Murai

DC: yeah, Jun Murai is a professor at uh, University of Tokyo, also adviser to the Japanese government. He was, he and Dr. Kilnam Chon, Korea advances science and technology uh, were the sort of the main, um, drivers behind APNIC, sort of the the hired help.

BZ: Lu Shouqun , you mentioned like Chinese and official from … And Mao Wei was there?

DC: He came later. The initial folks that I dealt with it, I remember uh, dealing with uh, Madam Hu, was with the internet society China, um, and a number of officials uh, within the uh,uh, Chinese academy of science, uh, Hualin Qian, (钱华林), and I forget his name, the guy passed away some years back. Uh, really, really nice guy. Um,um, but yeah, there was, uh, at that time in China, things were very interesting, uh, because the internet was just beginning and (needing more addresses) and well, yes, people need more addresses. But uh, I remember getting uh, a number of requests from different ministries saying that they were going to be providing internet connectivity for all of China. So they should get um, the allocation. And then the next day another ministry would come and make the same statement. And then and, so I had, um, ministry of posts and telecom, the electronics industry, uh, xinhua news agency, um, a number of ministry of construction, I think, um, had all come to me, uh, independently. And then I started getting provincial governments coming to request address space and then uh, city governments. So it was a very interesting time. Um, and I tried to make sure that everyone got as much of address spaces they needed for uh, the concrete deployment of networks, because we did have, um, a couple of cases, uh, where, uh, not in China, but elsewhere, where um, people would come to me, uh, and say, you know, I'm important, therefore I need this address space, because my sister college and university got that amount of address space. So… and the policies that we had implemented at APNIC at the time did not allow that. they had actually document their need before we can do the allocation. That policy remains, uh, in place across all of the RIR regional internet registries, in order to obtain address space, you have to document why you need it. Um, and that are made for so sometimes challenging discussions.

37:25
BZ: I I I'm just amazed on, you know, you are very young at that time. (Yes), `94 is very thirty years old. And that's the age I came to the United States. You know, same things are. I I came here, I just um, astound. So many things were so different even like I went to a bookstore, and they give you plastic bag can hold books. While I was in China, the plastic bag you can only hold Tofu. You know it's not strong enough to hold so many several books here

BZ: he wants to know um when China eventually get connect to the internet and you need to process there, do they got like interaction with uh, APNIC or you or what kind of help they got

DC: ah, so um, at the, the initial connective I remember correctly, um, there was some initial connections that went from uh,uh, some university to an institute in berlin. It was a very slow line. Um, and then CERNET was being established and they hired uh, Sprint who was working, it was um, under contract to the national science, US national science foundation, uh, as the international connections manager. Uh, and that's where, um, internet connectivity was um, sort of brought in first, I think went into Qinhua, but i'm not positive. Um, have you spoken with Steve Goldstein (Steve Goldstein? No, not yet). Cause he was at NSF during the period, the ICM the International Connections Manager program period. Um, and he can give you um, excruciating detail about how…But that uh, was completely separate from APNIC. We, sprint contacted me to help with the address allocations, but the actual connectivity itself was um, dealt with, you know, telecoms companies and the ministry of post and telecom.

BZ: So you said China's first internet connection going through Frankfurt,

DC: I think in Berlin. I think that yeah, maybe the Max Planck institute

BZ: He mentioned that in those areas days is not fully connected to internet, just email.

DC: Yeah. And it was a dialog type connections, still, crazy expensive. But yes, I think the first permanent connections were done through the ICM Sprint, NSF.

BZ: Did you participate in1994, April 20, China formally connected internet.

DC: I think I was uh, invited. yeah, and was in the in the room. And one one things were were connecting up.

BZ: He likes to know, you know, anything you could recall, some events or activity you involved have something to do with China getting into the internet.

Ah, let's see. So, um, so my recollections one, um, you know, initially, uh, connectivity into China was very slow, very, um, uh, very limited. But it grew very quickly. And uh, I remember, I was getting requests, I believe, from CERNET, um, for additional address space. And uh, because of the policy at APNIC, I needed documentation uh, to show that the amount of address space was justified. Um, and one day I uh, at that time, um, the APNIC office was actually at the United Nations University in Tokyo. And I got a call from the loading dock at the university, saying that they had a package for me. And I said, well, can you bring it up? And they said, no, it's from China. And uh, you're gonna have to come down and get it yourself. Uh, so I went down to the loading dock and there were uh, two palates (piles?) of documents, uh, that had been provided the documented, um, all the uh, the plans of

CERNET in order to justify the address space, um, and uh, that easily allow for the justification of the allocation. Um, and then when we did that, um, the CERNET grew very, very quickly ,um, to be, um, uh, think, uh, easily the largest, uh, research network within the AP region, uh, within a single country, and just the the amount of energy that could be expended uh, by the folks at CERNET to actually deploy the network. Um, was was mind boggling. They were able to deploy this vast network within a relatively short amount of time. Um, uh, let's see what else? Um, you know, the first meeting that I remember going to with the uh, ministry of post and telecoms. Um, at that time, there was still a lack of clarity about sort of the future protocols within the internet um, with them. what would become the internet, There was still an argument between TCP/IP versus the OSI protocol suite. And meetings that I had with engineers, uh, within the ministry posts and telecom is, um, it became very clear to me that uh, the ministry posts and telecoms sort of knew that the future was going to be TCP/IP, but I guess the ministry of foreign affairs, um, still was uh, supporting the OSI protocol suite, and that created a bit of attention, um, not just in China, throughout, particularly in Japan and Korea, pretty much every other country with possible exception of the US um, that the uh, there was this tension between, um, TCP/IP versus the OSI protocol suite. But the uh, the folks uh, ministry posts and telecoms and Chinese academy of sciences on. Yeah, the universities um, so just overwhelmingly accepted the TCP/IP deployed it and were able to provide connectivity to um, numbers of uh, particularly students that had not been seen before.

44:37
BZ: He wants to know how APNIC was established founded in in Japan.

DC: So um, APNIC was first um, sort of conceived of as an experiment. Uh, this was about a year after the uh, European registry have been established. Um, and Jun Murai and Kilnam Chon saw what Europe is doing in terms of becoming a decentralized registry for Europe, and thought that that model worked very well in Asia. So, they created this experiment called the APNIC experiment, um, and asked Dr. Mariyama, no, sorry, Dr. Nakayama at Tokyo University, uh, to be, uh, sort of the principal investigator. And then I would be uh, sort of the assistants helping Nakayama put everything together. So we did, uh, an experiment of a year. Um, I worked closely with, uh, Jon Postel here at L.A. to handle, um, request from the Asia Pacific Rim region. Um, at that time, uh, InterNIC was sort of the central NIC uh, for every place except Europe. So I worked with InterNIC to act as the uh, sort of the frontend for requests. I would receive request from the AP region and validate them, make sure everything made sense. And when I had obtained the necessary information, I would then go to InterNIC get the allocation and then provided back. So I was sort of a middleman. After about a year of that, um, I, the community at that time asked me to petition to um, the IANA, Jon Postel to do an allocation for the Asia Pacific Rim region. Uh, that's when we received um, the 202 slash seven block. So 202.0.0.0 through 203.2 35.2 5 to 2 55.uh, and then we were able to do allocations essentially autonomously. Um, at that time, APNIC was entirely voluntary. Uh, we didn't charge

for anything. I was, actually, my salary was coming from the commercialized P that I uh, had a very small role in helping to set up. They didn't need me uh, for running a network in Japan. So they offered my help to me, Murai and Chon, to help run APNIC .Um, but that was not a long term tenable solution. We need to figure out a viable funding model. Um, initially, we did uh, voluntary donations. It was surprising how many companies have a lot of trouble with voluntary donations. They wanted a price list, and they were happy to pay. They just needed a price list. So after a number of years, we came up with a more formalized structure where you pay for service, the allocation service, um, and then around `96, `97, the community started looking at the expenses for a ready APNIC ,uh, and suggest that there may be better places, cheaper places to do business than Tokyo. That's when we did a uh, a survey of all the major cities in the Asia Pacific rim region and identified Brisbane, Australia of all places as sort of the uh, as cost effective place for us to do business.

48:25
BZ: Okay, how you decide to go to Japan?

DC: Uh, basically Dr. Murai asked if I was interested and I

BZ: so you met him in Hawaii?

DC: Yeah, he uh, so, um, pack on the pacific communications network that is funded by NASA and NSF, was funding uh, connectivity to research networks, um, in the Asia pacific rim region, one of those networks interconnected with the network called wide in Japan. And that was one of Murai`s projects. So, um, and he invited me into the region and I was unmarried and didn't have a car, didn't have a mortgage. So it seems like a good thing to do there.

BZ: So, um, I understand that you know you clarified APNIC is actually before, it founded before ICANN, and eventually ICANN has there, what kind of relationship new relation between APNIC, you know, and ICANN

DC: so initially, um, APNIC, as I mentioned, was sort of this voluntary thing. We had people all over the region who are helping just as volunteers, um, as a APNIC became more formalized. Uh, that's when the uh, what's called the domain name wars broke out where um, network, uh, sorry, um, NSF allowed network solutions to charge for domain names that caused this sort of gold rush mentality. At that time, uh, APNIC, um, was one of two regional internet registries and internet. Um, and we kept telling uh, Jon Postel that, you know, perhaps we should separate out, just to avoid, uh, we have potential damage, uh, because you don't know the grand scheme of things. If you uh, don't have a domain name, you can still get by, by typing an IP address. But if you don't have an IP address, then you don't have any connectivity at all. Um, so, uh, we were moving down that path, uh, but uh, the US government came out with a white paper or the green paper, and then the white paper, and that caused other governments

to take much more notice of uh, of the internet. Um, APNIC, uh, and the other other regional internet registries right now, ah, are sort of a separate, uh, set of services, um, that make use of ICANN as a service provider. So we provide a top level allocation function to the region on the internet registries. We allocate um, large blocks of addresses to the RIRS, and they allocate out to their customers. But ultimately it's not a, it's not a required function. Then there are RIRS, could probably figure out how to do that on the own, on their own. But there's good historical and stability reasons that we continue to do it. Uh, we have a uh, now, after the transition and functions…, so the contractual relationships with the RIR to provide that function.

51:29
BZ: So talking back like the ICANN`s transfer uh last year. Um, that's like to compare your work, you watch out the whole process there. Well, you know, ICANN`s work got much easier or? How? I understand you you definitely adhere to the principle like the multistakeholders and approach to this kind of governance issue. That`s get things easier or? I wanna continue my my sort of, I think that, you know, ICANN`s work need a lot of trust by this kind of stakeholder. So I just assume, after US government and transferred all just kind of things to ICANN itself and the whole function. I'm sort of believe, it's much easier for you folks as a stakeholder. Or, well, I'm wrong?

DC: So, um, in some ways, it's, um, easier. Uh, it`s much easier to, um, answer questions from the community about, um, ICANN`s, uh, you know, who ultimately controls ICANN. Um, however, pragmatically speaking, ah, it`s actually much harder In the past, uh, when we were under contract to the US government, um, it was very clear, um, sort of the the chain of responsibility, right? They, if uh, people were unhappy with, ICANN, they can yell at the US government and the US government could slap us around and threatened with hold the IANA contract .Um, now with the community, instead of having one boss, the US government, you can think of this, you know, sort of metaphorical. We have an entire community of awesome. We have um, to to replace the US government, uh, for things like accountability. Um, we have, uh, the community has created a whole series of new structures, um, a new reporting mechanisms. Uh, so instead of reporting to, um, uh, bureaucrat within the US government, we now report to multiple committees, um, each of which have their own requirements on their own requests. Um, you know, ultimately, it`s a much better structure, uh, because it`s um, not, it doesn't provide a special relationship for a single government, which is always complicated. Um, but it has made the day to day work that we do a little more complicated. Um, we uh, frequently have, um, multiple folks requesting multiple things from us, uh, and with the same resources, uh, where in the past we were uh, providing responses to a single set of requirements.

54:25
BZ: As as far as I know, like the United Nation, IGF, all those kind of things here, the conference is dragged very long. (Yes). So I just expect like after ICANN`s transfer, ICANN officials will get into much longer conferences than before, because so many

stake holders.

DC: So we're um, right now, the community has defined our meeting structure. Um, it has a meeting structure has evolved over time. Initially, we had 4 meetings a year, um, and then we moved to 3 meetings a year, but they were all about a week, eight days. Um, uh, but they started to grow, uh, in terms of a side meetings and and associated meetings. Uh, so the community, um, couple of years ago decided to change the structure. So now we still have three meetings, um, but they're broken into a a community form, uh, which uh, is about about a week; a policy meeting, which is 5 days, much shorter and intentionally smaller; and then the annual general meeting, which is uh, larger and longer. Um, and uh, there is a a strong effort to ensure that that structure is maintained that we don't run into the same problem that we had before of meetings expanding to meet, um, you know, all available time and all available space. Um, but it is a continuing effort. Uh, we, because ICANN has a very limited mission. We don't have, um, as some of the risk that other organizations other, uh, groups have in terms of expanding scope, our scope is extremely tightly limited, um, and that provides for some benefit in terms of of limiting, uh, you know, sort of function creature during the meetings. Um, but they are getting longer, um, particularly the annual general meeting. And there's a lot of stuff going on during the meetings.

BZ: Do you also have regional offices?

DC: We have uh, a a bunch of different offices, we have hubs, we've got a Singapore hub, uh, and in Istanbul hub, headquarters is here. And then we have, what we call engagement offices. Uh, we have an engagement office in Beijing. Uh, we have Nairobi, Brussels, Washington D. C., Montevideo. I think I'm probably forgetting some. Um, but yeah, we have, their their uh, not necessarily regional in the sense of focusing on particular geopolitical regions, but there are more, um, engagement with communities of different stakeholders, uh, different interests within, uh, you know, uh, geopolitical regions.

BZ: So that's good. So you're…

FXD: tell more stories about Postel.

DC: Um, so the very first time I met Dr. Postel, I was working at APNIC. I I obviously heard of him forever and he's sort of a legend on the internet. Um, and I, because I was working with APNIC, I was, I had to come and meet him to talk about getting the address allocations for APNIC. Um, so I came here Um, and uh, he, met with him in his office, uh, and we decided to go to lunch, um,

FXD: office is in UCLA?

DC: yes, just for uh, Marina del Ray, the ISI building, um, Marina del Ray. Um, and

uh, so we we went and had pizza, uh, and after meal had a globally discussion, and and you know, everything went fine. Um. After that meeting, I met with a friend of mine who happen to work in the same office. And uh, I was, my friend told me that uh, Jon was actually very nervous to meet me, because he didn't know what he would say. And and it was just very bizarre, this legend, um, and me just being this young guy. Um, but that was Jon. Uh, he was uh, uh, very unassuming, um, could be very stubborn, very stubborn. Um, he was also very sharp. Uh, his uh, I had a meeting with him one time, just the over, actually coffee. Um, uh, and this was in the middle of when the domain name was was, when domain names became a very big political thing. And it was really um, sort of unpleasant arguments going on back and forth. And I asked Jon, you know, if he could do anything, uh, what would he do? And his favorite activity associated with the internet assigned numbers authority was actually reviewing RFCs, drafts just read the protocol document is, just going through the protocol document is making sure that they made sounds that the protocol was supposed to do what it did. He had no interest in the domain name stuff. He had no interest in even IP address allocation stuff. His focus was more on making sure that the internet protocols actually worked. Um. And then sort of the the last story, that was uh, I came and visited him one time associated with APNIC .Um, and it was just before he's about to go on vacation. And Jon used to like going out to the sierras, uh, hiking and camping on sierras. And about a week before, uh, I came over, um, there had been an attack of a bear attack up in this here is because there are a lot of black bear up there. Um, and I I jokingly told Jon that, you know, if you know you got eaten by a bear, I mean I would take over on <mark>IANA forum um,</mark> and just you know, a sort of a joke. And he said, yeah, you do that. Um, so a few years later a uh, unfortunately passed away uh, and um ICANN operate um was not doing so well and I uh decided to accept me of that responsibility that I had made jokingly to Jon and came to ICANN, you know, trying to make the uh, the IANA better. So that's how actually how I ended up coming to ICANN, it`s sort of a joking promise I made to Jon.

1:01:20
BZ: do you know, Jon went to China or not?

DC: Yes, yeah. Um, I I forget the year, but um, yeah, uh, there actually a couple of times, with Vint and Jon. I think at least one of those trips I was asked to to help out in some of the logistics because I knew folks at Xing li at um (Li Xing) in Qinghua. Qian Hualin and the sports guys. I mean I was helped to make um, some uh, informal contacts, so just you know, researcher to researcher kind of discussions.

BZ: since you know Asian so well, what is it, you know, um, general trend of how those in initial years and Asian countries and get connect to the internet? (so…)I believe Japan will be the first and then Korea.

DC: so, my recollection is, when when I joined, um, a Packon in a way, um, New Zealand, Australia, Japan, Korea, Hong Kong had already been connected. Think, um,

probably Japan was first, but I'm not not absolutely positive. Um, might also have been Australia. Um, but, um, yeah, one of the, uh, uh, way back when the internet was first connecting, um, Hong Kong actually took the lead in terms of connectivity, um, because they were funded by the Hong Kong Jockey Club. Oh, right. Um. And the environment in Hong Kong was crazy in terms of the number of ISP. They just really got excited about it. And there were, um, more ISPs in Hong Kong than, um, probably almost all of Asia Pacific combined, this was back in `94, `93, `94 time frame, um, a very small ISPs. But they really engaged. Singapore, uh, got connected, but they, uh, did not go through Packon, um, they actually drew there, they actually took a line directly to uh, uh, the John von Neumann center in Princeton, um, which we had Packon thought was sort of crazy, because it was very, very expensive. Um,uh, I guess southeast Asia connected after ==sort of the big five== .Um, Thailand, I remember, uh, was um, had a complicated situation because of the uh, telecom regulations. There were two universities, um, Chulalongkorn. Ah, I'm forgetting the other one, but they were really there relatively close within five miles of each other. They were not allowed to interconnect. So they actually entered connected via Falls Church, Virginia to exchange email and had to go to the US in order to come back. Um,

BZ: how about Taiwan?

DC: Um, Taiwan? When did they join? They joined fairly early. Um, but I don't recall exactly time.

BZ: Before the mainland China?

DC: I'm sorry?

BZ: Before the mainland China?

DC: Yeah, yeah, believe so yeah.

1:04:50
BZ: he got very interested in the fact that when the whole country comes with the internet you don't have to go through the government. (Right, Yes) is that like every country?

DC: not every country. Um, uh many countries, uh you know, this was um after, one of the triggers all this was a uh, uh, judge green and uh, the US and broke up AT&T and changed a number of laws domestically within the US, that the US government then took into the ITU world and said, look, there's, you know, basic telecom service and then their enhanced service, the basic telecom services are regulated, enhance services, or should be unregulated. And that created a a window of opportunity for non regulated services built on top of telecom services, uh, to be able to, uh, sort of uh, explode. And you know, initially, uh, it was limited to um, experiments and academic

related networks, you know, costs were extremely high. Um, but the, uh, you know, the research networks that were beginning to be established, um, initially using S&A, some of us IX 25, and all sorts of different protocols began to show such uh, benefit that that um, sort of created a snowball effect of reducing telecoms regulation. At least that's how I remember it was, it`s been quite some time ago. You know uh Dr. Chon, Dr. Kilnam Chon has put together a book on the internet, the history of the internet in Asia have you ever seen that book?

FXD: Yes

BZ: he`d like ask you, how did domain name became a business ==smart==?

DC: So that actually is ==totally a==ttributable to um, the National Science Foundation. Um, uh, back in when was it? `93, `94 or something like that. Um, they created uh, the internet. Um, and the idea was to try to get, uh, more traditional industry, uh, interested in the internet. So they actually created three functions. Um, there was the registration function is provided by Network Solutions; Um, the database services are provided by AT&T; and then another services provided by a company called General Atomics. AT&T and General Atomics, uh, didn't do so well on their portions of the contract, but Network Solutions did quite well. Um, but the internet was growing very quickly. At the time, the domain name allocations were at no charge. They needed a network solutions as for, uh, domain name, and they would grant it to you. Um, that wasn't scaling very well .As an internet became more and more popular, more and more people and domain names. So Network Solutions went to uh, the US government networks, the the uh, the National Science Foundation said, we need to charge, we need to be able to scale this, we need to be able to charge, uh, they uh, came up with an initial uh, number of a hundred dollars for 2 years, so 50 dollars a year, of which uh, 15 percent uh, was going to give to an infrastructure fund that would help, you know, NSF build out the uh, the the network. Um, when that happened, uh, people uh, on the internet said, wow, Network Solutions is making a very large amount of money. Um, and ICANN make a very large amount of money. So I will um, I want to do the same thing that Network Solutions is doing. Uh, and that created something called the uh, Internet Ad Hoc Committee for the domain names, uh, what's known as the IAHC, um, which uh, came up with a proposal on how to create more top level domain so that other people can do the same thing the Network Solutions was doing. That triggered, um, the US government, uh, to sort of response a well know we need to come up with a more structured way of doing this, uh, which eventually uh, led to the creation of ICANN, um, and the registry registrar split, created the registries like wholesalers, the registrars that would be the retailers, uh, and that created this uh, domain name industry. Um, it`s, I don't think anyone, uh, who was involved at the time and I had a very small involvement, um, ever anticipated the the end result, the amount of money, the uh, the size of the domain name market. I don't think anyone ever guessed, uh, that we would see, you know, 300 million domain names. uh, but that's that's sort of how things evolved. Um, and

you know, we're continuing to see growth, people are asking ICANN uh to have a second round of new gTLDs, um, and we'll see how that that involves moving forward.

1:10:16
BZ: So ICANN actually also design this. I'm not sure maybe you know, is begin to from the .org .net nowadays, like an NGO .ngo? You know, so create also by ICANN right?

DC: Well, the um, what we did in the 2012 new gTLDs around, as we said, um, you know, here is the applicant guidebook. So its set out a set of rules. Um, and uh, if you have a business idea, if you have a, what you think is a way of of creating a sustainable namespace, you know, apply. And there were about 2000 applicants. Um, the the applicant guidebook was, uh, it's about 300 pages of rules, uh, because it was developed within the community, uh, with um, trying to make sure that public interest was served, that um, people wouldn't get confused, that other businesses were viable, so very elaborate set of rules. But we did not actually come up with what the names would be. That was for the community to uh, to decide for people who have good ideas or even bad ideas to uh, go on and propose as long as they they went by the rules and they would be allocated. So the end result of that was uh, 1200 new top level domains.

BZ: He`s asking how much and ICAMM charge for one domain names per year

DC: for, uh, for the creation of the top level domain. There was an application fee of a 185,000 us (dollar), and then, there is uh, fees that must be paid based on the number of registrations. Uh, so I believe it works out to about 20-30 thousand dollars a year, um, in sort of ongoing payments.

BZ: how you think about, like, you know, you actually know the whole history of ICANN so well, how do you comments on the contribution ICANN made, plus maybe and your comments on the CEOs and your work with,

1:12:44
DC: um, so I think ICANN uh, was sort of a purpose built solution to a problem that was created, um, by uh, unintended consequences. Yeah. I think uh, the engineers and research scientists, um, didn't fully understand the implications of the internet as we were developing it. Um, and ended up creating a um, a very strange situation, um, that couldn't easily be solved in pure technical uh means. And as a result, um, ICANN was created, um, as I mentioned, a sort of a meeting place where folks outside of the technical can come in and provide their input and push their agendas and interests, uh, so that it would actually meet the needs of multiple entities. So from that perspective, I think, um, because I need uh, existed, I think ICANN ultimately as a as a beneficial contribution to the growth of the internet. Um, you know, obviously, it has its own

pluses and minuses. There are many people who think that service that ICANN provides is not a service that anyone actually needs. Um, but there many of those folks are also very unhappy that, uh, uh, that there exist monopolies, and they would like those monopolies not to exist. So there is a um, a balance that I think ICANN is on the positive side of um.

Yeah, with regards to CEOs, um, all of the folks I've known from now, uh, four of the CEOs for the 7, 6, 6, or the 6 years. Um, and they've all had strong points. Uh, they've all had their weak points. Um, I think all of them have been, um, ultimately, their interests were trying to make the internet better. Um, you know, the current CEO Goran Marby comes from uh, both a private sector as well as the governmental background, uh, was the regulator for, um, Sweden, uh, for some for some number of years. And he is, um, he expressed his interest is, you know, he believes the internet is important and he wants to help ensure that it continues to grow. Um, and I think all of the CEOs has sort of a similar viewpoint. Um, that's, um, our way of seeing the internet. Oh, um, you know, they all have their quirks. Um, some more than others. But uh, I have tremendous respect for all of them. Uh, and I've been very lucky to have been had the opportunity to actually work under under the ==force of years==

BZ: how do you think China can participate in ICANN better? You know, in coming years, income five ten years.

DC: Well, I think um, first of all, the fact that China has been uh, engaging with ICANN, within the ICANN community, I think it's been tremendously important. And uh, the the size of the internet market, the number of people that are connected in China sort of works pretty much every every other place. Um, and a lot of innovations are being driven of China right now. You know, I think one of the the um, ongoing issues is how best to enable end users to obtain the information that they need, uh, to do what they need to do, at the same time that uh, governments can, uh, provide some level of control, um, to stop bad actors from doing bad things. Um, and that's not unique to China. But, uh, China has taken one particular approach. Um, there are are lessons that can be learned both positive and negative of that approach. I think, um, you know more engagement, uh, more involvement of uh, particularly um, folks with expertise in internationalized domain names, um, and business models, um, I think would be um, particularly beneficial. Um, you know, in the end, you know, I think, uh, if we are ever to reach sort of full connectivity, we need to be able to um, address both the internationalization concerns as well as security concerns, as well as privacy concerns. Now, at all of those, I think, um, uh, China has a uh, an interesting viewpoint that uh, can be provided to the community.

1:17:49

LY: just couple of more quick questions from here. So, um, um, in in in many people's eyes, like like you mentioned, domain names and registration and address space allocation seems to be very lucrative business. Do you have like detailed, um, financial reports for that economic gains and to keep the public full informed about it?

DC: So, um, not so much, ICANN is not um, a regulator. (not a listed company?) Yeah, we're not a listed company and we don't, um, yeah, that ICANN has no role in setting prices for domain names. Um, that's entirely up to the the registries, uh, to to find their own pricing structures. Um, there have been requests from the community for a sort of pricing surveys, uh, to understand what, you know, how, the 2 million addresses, uh, oh, sorry, uh, 2 billion addresses. Um, and that's uh, an increasingly interesting world, um, that are large number of players that are now buying and selling IP addresses. Um, um, that's an area that ICANN is um, not directly involved in, ==those more in== RIR community, they are involved there. Um, but it is an area that we are are watching to ensure that at least we have some idea what's actually going on.

LY: You were aware of what's going on?

DC: yeah, exactly

LY: which countries, um, like designate designate department to do with domain registration and establishment. How do you incorporate international?

DC: So so ICANN has a government advisory committee uh, that is populated with, um, uh, folks from the governments, um, either ministry of communications or equivalent, or ministry of foreign affairs or equivalent. Um, and that's one way in which we interact with governments, that say it's an advisory committee. So they can't other governments can tell us what to do, but they do provide advice to the board on topics related to public policy and public interest. Um, so that's one way in which we uh, we engage with governments. We also have, um, this, as I mentioned, the global stakeholder engagement teams, in which we do quite a bit of uh, outreach capacity building with governments. Uh, one of my team's activities is to actually provide training, uh, on the issues related to to abuse, um, and how to mitigate that abuse, rigidly within the domain names fear. Um, and we do that for um,uh, anti abuse organizations within countries, also a law enforcement within countries, just trying to help people know what abuse of the identifier system is, and how to how to ==make it that.==

1:21:00
LY: Sure. And my last question, when we talk about multi stakeholders, like it is a very uh, crucial part of ICANN`s entire architecture. So I'm assuming when we talk about multi stakeholders. It comes from a wide range of actors, not just national governments, both the civil society, maybe some individual representatives? How do you ensure those kind of minority communities can speak up their concerns and get enough attention? ==And ease their concerns there==.

DC: So we have with them ICANN structure. Um, it`s actually very complicated. It is

a byzantine structure that has mechanisms by which civil society, um, uh, contributes into, uh, what's called the uh, the Global Names Supporting Organization. Uh, there's the At-Large Advisory Committee that works to try to represent the interests of individual users on the internet. Um, and all of these these are called the Supporting Organizations and the Advisory Committees um, provide input into policies uh, that are then ratified by ICANN`s board. So, um, anyone, uh can participate in these communities .Uh, some, for example, the uh, CCNSO the Country Code Names Supporting Organization, um, is designed to provide support for the country code TLDs. Um, but the ALAK is open to anyone the um, various or call the non contracting party house within the GNSO which typically represents the civil society and business interests. All of those provide input into the development of the policies. Um, so ultimately, uh, in order to get the policies uh enacted, there has to be, um, a rough consensus among all the stakeholders who are involved in the discussions.

BZ: He`d like to know any other people you would recommend for this program. For o==ur our things are in Washington DC== especially. Anyone we can go to

DC: So I'm not sure where Steve is located any more.

BZ: Steve Crocker?

DC: Steve Goldstein. Talk about sort of historical international connectivity there internet, (right), be very good. Um, Dr. Stephen Wolff, um, he was the director of the National Science Foundation during through the growth period in the early `90s.

BZ: he already agreed to be interviewed but we haven`t finalize the time.
First, can I spell it out? The first person

DC: Steve Goldstein, I always get the I and E the backwards. gold. S T E I N. if you haven't spoken with Dr. Jun Murai or Dr. Kilnam Chon, um, both of them are uh, in the Japan. Uh, that was a chance.

BZ: Yes. You know what? And we really need your help on identify some Asian (sure), especially Japan and Korea

DC: Yeah

BZ: I will send you email

DC: Yes, please do

BZ: Anyone in Washington DC?

DC: Rick Adams. He was the CEO, founder CEO of UUNET, which was the, one of

the uh, first, if not the first <mark>commercial ISP</mark>, um, and provided a lot of connectivity to Asia Pacific. Um, uh, let's see, Washington DC…Well, uh, send me email. I can think some folks.

BZ: Good, good. Thank you very much..