North American Numbering Council
Meeting Transcript
Thursday, June 20, 2019 (FINAL)

I. Time and Place of Meeting. The North American Numbering Council Meeting (NANC) held a meeting commencing at 10:00 a.m., at the Federal Communications Commission, 445 12th Street, S.W., Room TW-C305, Washington, D.C. 20554.

II. List of Attendees.

Voting Council Members:

1.	Honorable Karen Peterson	NANC Chair Designee (NARUC – MA)
2.	Susan Gately	Ad Hoc Response Information Service, LLC
3.	Jacquelyne Flemming	AT&T
4.	Jacqueline Wohlgemuth	ATIS
5.	Glenn Clepper	Charter Communications
6.	Beth Choroser	Comcast Corporation
7.	Courtney Neville	Competitive Carriers Association
8.	Matthew Gerst	CTIA
9.	Craig Lennon	Google
10.	Carolee Hall	NARUC - ID
11.	Honorable Crystal Rhoades	NARUC - NE
12.	Jerome Candelaria	NCTA
13.	Julie Oost	Peerless Network
14.	Richard Shockey	SIP Forum
15.	Scott Freiermuth	Sprint
16.	Paul Nejedlo	TDS Telecommunications
17.	David Casem	Telnyx
18.	Bridget Alexander White	USConnect
19.	Mike Saperstein	USTelecom
20.	Dana Crandall	Verizon
21.	Robert McCausland	West Telecom Services
22.	Professor Henning Schulzrinne	

Special Members (Non-voting):

1.	Chris Drake	iconectiv
2.	Ann Berkowitz	Somos

Commission Employees:

Marilyn Jones, Designated Federal Officer (DFO)
Michelle Sclater, Alternate DFO
Carmell Weathers, Special Assistant to the DFO
Kris Monteith, Chief, Wireline Competition Bureau (WCB)
Pam Arluk, Chief, Competition Policy Division, WCB
Ann Stevens, Deputy Chief, Competition Policy Division (CPD), WCB
Heather Hendrickson, Assistant Division Chief, CPD, WCB

William Andrle, Attorney-Advisor, CPD, WCB
Celia Lewis, Attorney-Advisor, CPD, WCB
Jordan Reth, Attorney-Advisor, CPD, WCB
Robert McConnell, Telecommunications Accessibility Specialist, Disability Rights Office,
    Consumer & Governmental Affairs Bureau (CGB)
Josh Zeldis, Attorney-Advisor, Consumer Policy Division, CGB
Myrva Charles, Contracting Officer Representative (COR) CPD, WCB
Darlene Biddy, COR-Alt/Management Analyst, CPD, WCB

III. Estimate of Public Attendance. Approximately 10 members of the public attended the meeting as observers.

IV. Documents Introduced.

(1)   Agenda
(2)   NANC Meeting Minutes – May 8, 2019
(3)   Numbering Administration Oversight Working Group's Contract Oversight
       Subcommittee Report
(4)   NANP Fund Budget And Contribution Factor For October 2019 To September 2020
(5)   NANC Interoperable Video Calling Working Group Preliminary Recommendations
(6)   North American Portability Management LLC (NAPM LLC) Report to NANC

V. Table of Contents.

VI. Summary of the Meeting.

<u>**WELCOME REMARKS/ANNOUNCEMENTS/APPROVAL OF TRANSCRIPT**</u>

    Karen Peterson: Good morning. I'd like to welcome you

all to the North American Numbering Council meeting. As you

can tell, I am not Travis. Travis unfortunately is unable to join us this morning. He reached out to me a number of weeks ago and asked if I would fill in, and I thought about it and thought about it. I'm just joking. I said, absolutely, I would do anything I can do to help. So here I am this morning.

So I'd like to again welcome everyone to the NANC. We actually have -- it's a special day. It's a special NANC meeting. Ann Stevens is retiring. Her retirement party and celebration will be this afternoon here in the Hearing Room at 12:00 noon. I actually want to say a few words for Ann. You know what, Marilyn, I can't really see her beautiful face. I do want to say a few words regarding Ann Stevens. It's with mixed feelings that we announce the retirement of Ann Stevens, the Deputy Chief for the Competition Policy Division. It is difficult if not impossible to sum up Ann's achievements over her 40 years of dedicated service.

She started her federal government career with the Office of the Federal Register National Archives and Records Administration in 1977. She joined the FCC in 1979 as general attorney in the Private Radio Bureau. She moved to the Common Carrier Bureau's Mobile Services Division Legal Branch the following year, and then to the bureau's Tariff Division Legal Branch in 1982. Ann became an assistant chief in the Tariff Division in 1984 and has served as an assistant chief and

deputy chief in the Policy Division since 1996. I'm just going to interrupt myself, Ann what haven't you done?

Ann Stevens: I just want to say that I was ten years old when I started.

Karen Peterson: That's right. That's right. In 2006 Ann started work overseeing the NANC, thank you very much for that, and other numbering issues throughout the years and has been responsible for everything - from local number portability to toll-free numbering, to number resource utilization and conservation, to the competition aspects of this nation's numbering policies as the existing public switch telephone network transitions to IP communications making her one of the agency's leading experts on numbering policy. If you have a question about numbering, Ann is your go-to person I would say so.

In addition to her substantive expertise on numbering policy and other communication issues, Ann is extremely well regarded throughout the commission and the telecom community for her wise counsel and her generous spirit. She's never too busy to say a kind word or to offer a kind gesture. Her thoughtful caring nature is valued by all who have had the pleasure of knowing and working with Ann.

Ann, on behalf of the NANC, thank you for your 42 years of public service. Your leadership has made a true difference to helping the NANC accomplish its mission and your friendship

has been invaluable. Thank you. Ann, if you wouldn't mind, we'd love to hear a few words.

Ann Stevens: I just have a few. Thank you, Commissioner, for those very kind remarks. I'm not used to sitting at the adult table. I usually kind of sneak in at the back. And I've been known to be on my phone sending emails at the same time. But I did just want to -- I have a few very brief remarks today. Mainly I just wanted to take the opportunity to say how much I've enjoyed working with the NANC and working group members over the past 13 years. I wanted to say thank you to all of you for your incredible contributions to the commission and the numbering arena both during the current charter and, for many of you, during past charters.

I know that you guys have spent many hours helping the commission on numbering issues and that it's an addition to the day jobs that you hold in your companies and your organizations. I also know that you've helped the commission work through some of the most difficult technical and policy issues in numbering that are out there. We simply could not have achieved what we have in numbering without your help.

I would be remiss here if I didn't also acknowledge and thank the NAPM and the numbering administrators for all your efforts as well. Your close work with the NANC has also helped the commission resolve many of these difficult issues that have been before us. I greatly appreciate your contributions as well.

Those of us who did numbering at the commission are fond of saying, to coin a very old phrase, we were numbering before numbering was cool. The same applies to many of you in this room today. With numbering's newly found coolness though comes a lot more attention and, therefore, a lot more work for the NANC to do in the upcoming charter.

To kind of borrow a phrase from our friend Amy Putnam, numbering, not just pooling, numbering is fine. I have every confidence that in your very capable hands that will continue to be the case. Thank you for our time working together.

Karen Peterson: So Ann, we wish you the very best in your retirement. And we'd like to offer you the opportunity to join us this afternoon. So there will be a celebration here in the Hearing Room at 12:00 in your honor.

Ann Stevens: It is at 1:00.

Karen Peterson: Oh sorry, 1:00. We're going to end hopefully before 12:00 so folks can come in and set up the room. The celebration is at 1:00. We would love for folks, if you're still around and available, to join us in celebrating Ann. So this is special.

Ann Stevens: I'm looking forward to seeing any folks who can stay.

[Inaudible side conversation]

Karen Peterson: With that, we will just jump right in. I'd like a motion to approve the minutes please.

Robert McCausland: I'm Bob McCausland. I'd like to make a motion to approve the minutes.

Karen Peterson: Do I have a second?

Female Voice: I second.

Karen Peterson: Thank you. Any discussion? Any changes? Hearing none, all in favor?

Voices: Aye.

Karen Peterson: Approved. Thank you very much. Okay. We will start with an update and discussion of the Numbering Administration Oversight Working Group.

UPDATE AND DISCUSSION OF THE NUMBER ADMINISTRATION OVERSIGHT WORKING GROUP (NAOWG) REPORT ON THE TECHNICAL AND OPERATIONAL ISSUES FOR THE REASSIGNED NUMBERS DATABASE; AND DISCUSSION AND APPROVAL OF THE NAOWG RECOMMENDATION OF A PROPOSED NANP FUND BUDGET AND CONTRIBUTION FACTOR

Carolee Hall: Can you hear me?

Karen Peterson: Absolutely, Carolee. How are you?

Carolee Hall: I'm doing well thank you. Commissioner Kjellander is out of the country. So you get me today.

Karen Peterson: Perfect. How are you?

Carolee Hall: I'm doing well, thank you. The NAOWG and the COSC working groups had been very, very busy for the last charter as we dropped to the end of this one and I thought I'd just recap everything that we've been working on.

On September 24, 2018 the NANPA, PA, and RNA were combined in the TRD submitted to the FCC. We're awaiting the

FCC's RFP issuance and contract on that. In December 2018 the technical requirements document for reassigned numbers database is underway. We requested on April 30th a letter asking for an extension of time to complete this project and on June 12th the extension was granted by the FCC to September 13th with a status update report due July 12th.

In May of this year the National Suicide Prevention and Mental Health Crisis Hotline feasibility report was submitted. It was approved by the NANC. It was revised on the 23rd of May at the FCC's recommendation. On the 24th of May it was also revised again and it is currently out for comments.

The Contract Oversight Subcommittee report will be presented with the review of the current RND technical requirements document. Then the B&C Agent's report will be presented with some of the challenges facing the budget because of some of the unresolved outstanding issues before the FCC. And with that, I'm going to turn it over to Phil Linse, the co-chair of the Contract Oversight Subcommittee group.

Philip Linse: Thanks, Carolee. My name is Philip Linse with CenturyLink. I co-chair the Contract Oversight Subcommittee with Betty Sanders who unfortunately isn't here today. But Glenn Clepper [phonetic] is sitting in her place. Thanks Glenn. I also wanted to pause here for a second. Folks may know this but many may not as a spotlight hasn't really been placed on it. But Carolee is actually planning on

retiring at the end of August and I wanted to extend my deepest appreciation for all of her help. I don't think I could have done this at all without her. She's been a tremendous help. So thank you so much, Carolee, for all the help you've provided me personally. As well as I know you've got a lot of history with the working groups on the NANC. I want to thank you so much for your leadership.

Carolee Hall: Thank you, Phil.

Philip Linse: So we can move on into the report. Just as a summary, since the last NANC meeting we've gone through our normal monthly reviews for the B&C agent as well as the NANPA and PA vendor and the administration of those contracts. We've also have been working diligently with the reassigned numbers database, a technical requirements document that was delegated to us. Then we also recommended the approval of some change orders around the combination of the NANPA and PA guidelines, if you will, from the INC that require some system modifications to make sure that the references were correct and help facilitate that.

We also then have developed the contribution factor for the up and coming fiscal year. The FCC Contract Oversight oversees the billing collections agent, which is Welch. The North American Numbering Administration, which is the NANPA, and the Pooling Administration are two bridge contracts that are currently being fulfilled by Somos.

The fourth page of this report talks about the reassigned numbers database and the work that we've been doing for the reassigned numbers database kind of gives a chronological outline of kind of the work that's been going on. There was an initial order in December. Due to Christmas and the government shutdown early in the year, we didn't get our kickoff until February. But since then we've been meeting twice a week in two-hour meetings for a total of 27 meetings since February.

Then, as Carolee also indicated, we applied for an extension and received that extension through September of this year with an interim report due next month. So that's out there as well and we continue to work on that. We continue to be very focused on that as well.

I'm going to move on to the contribution factor. I'll turn it over to Heather Bambrough from Welch who's sitting here next to me. Thank you, Heather, for coming in. She'll go through kind of the numbers and the detail. Then I'll wrap up with a summary after that. So thanks.

Heather Bambrough: Good morning. I'm Heather Bambrough from Welch. We're the B&C agent for the NAPA. Today we're going to be showing you the budget for the next 12-month funding period which runs from October 1, 2019 through December 20th. We have estimated that the total projected cost before deficit recovery and contingency allowance will be $9,178,803.

I will go to the third page which shows the numbers.
I'll go through that. For NAPA administration, we've based
our cost on the current Somos contract of which only one month
will be an actual contract in this funding. The remainder,
we're just using that as a basis for an estimation of costs.
In addition to that, we've included two months of costs for
anticipated transition cost so that we're not caught in the
same position that we were this past year.

The international participants, Canada and Caribbean
countries, contributed $196,000 towards those costs leaving
the net amount of $3,204,766 to be covered by the U.S.
carriers. The 1,000 block pooling, again it's currently with
the Somos contract which ends at the end of October. We again
used that contract as the basis for the numbers in this
budget, again, with a two-month transition cost attitude of
about $629,170.

Carrier-wise we've allotted $200,000 as directed by the
FCC. The billing and collection agent, which is ourselves, is
per contract at $340,800. The data collection agent who is
USAC, who collates the information from the 499 for us, is
estimated at $78,000 per their input. Per annual operations
audit, which we're required to have, is $49,000 based on a
history of an increase of a $1,000 per year.

Main charges are estimated at $38,000 again based on past
history. The bad debts, which is carriers who do not pay the
annual fees that we bill to them, is estimated at $40,000.

The cost were then reduced by the anticipated interest income of $30,000 and by the late filing fees for those carriers who do file their form 499's late or incomplete. That's, again, estimated at $80,000. That number is based on history. Total protected cost before contingency allowance and deficit recovery is $8,304,756.

Due to unforeseen items this past year, with Neustar no longer being the NANP administrator and the change to Somos, the cost for NANP in pooling were much higher than we had budgeted for. In addition too, there were transition costs that were not budgeted for in the prior year. That cost of deficit, which is paid to deficit on this year's budget, leave out $934,000. Essentially Somos has agreed to delay the payment of their August and September payment until the funds are recovered through this budget. Of that $934,000, approximately $60,000 will be funded from the international participants - Canada and the Caribbean countries. So net deficit to be recovered from U.S. carriers is $874,047. That brings us to the balance to be funded before contingency allowance of $9,178,803.

We present to the subcommittee, on the next page, three options for contingency allowances - option one, two and three of $1 million, $1.5 million, and $2 million. That resulted in contribution factors respectively 0.0000827, 0.0000867, and 0.0000908. We did provide a breakdown this year of the

component of what makes up that contribution factor just more for your information.

The estimated revenue based on the Form 499-A's which were due in April, filed to date is $123,000,000. I will open it up to see if anybody has any questions on just the numbers. If not, I'll pass it over to Phil to explain the recommendations.

Philip Linse: Thanks, Heather. So just in summary of what Heather went through, just some points that I want to make sure people are aware of. When we did this calculation of course there were some things that were a little if not as normal as they have been in the past. One of the things is that deficit that she mentioned, about the transition that basically took us into a deficit situation. So that's being recovered in this contribution factor.

It also anticipates, since we've got this experience of that transition, the potential for a transition in this upcoming year. With that, then we also included a $2,000,000 contingency fund on this as well. A matter of fact, an amount of $2,000,000 for contingency purposes. That's based on just the potential change orders in the uncertainty of the bridge contract and how that's going to have to be dealt with in the upcoming year.

With that, the contribution factor is based on an $11,000,000 budget with a contribution factor of 0.0000908. As you'll see at the bottom of page 5, I provided you with a

little bit of historical information on what that looked like last year.

A couple of factors because you'll notice that it's actually more than double what that factor was last year. So along with the deficit that we had to make up for as well as these additional transition cost, you will notice too that the revenue base has also decreased significantly as well. And with this contribution factor, when that revenue base goes down that contribution factor, everything remains the same. It would still go up just because there's less revenue base to cover that. That's an inverse correlation there.

On page 6, I also wanted to point out too that this contribution factor takes into consideration many elements that we know. That was very intentional because on page 6 it really kind of let's you understand what we don't know but what we expect we will be seeing here in the next year or so. So first of all the cost of the reassigned numbers database. That cost is unknown at this point until we receive or until we see what kind of bids will be provided associated with future RFP on this.

Additionally, the actual new contract or the new NANPA/PA arrangement is expecting to consolidate or combine both the NAS and the PAS systems that administer the NANPA and the PA. So that cost, as far as the actual combining of those two systems, is also unknown. We do have the knowledge, as I explained in the previous page, the actual transition which

would be the transition of those two systems from a previous vendor to a vendor under a new RFP. The expectation would be that they would then move forward with combining those systems. So we know that cost or we have a good idea what that cost is based on the current contract rate, but we don't know what that cost will be in order to combine those two systems. We haven't tried to estimate or guess what that cost will be until we see what those costs will be percent to an RFP.

In addition to that, the cost of combing that, of transitioning and the ultimate cost of the NANPA/PA arrangement, we expect or would expect to be less than what the combined systems are today. So that's also kind of an assumption here as well.

Finally, there is a percentage that is allocated today around what the U.S. carriers pay for administration versus what the Caribbean and Canadian countries, what their portion is. When we do this transition and that system is combined, those percentages will not be valid percentages. There will need to be some sort of a cost study in order to determine what that new factor would be as far as what allocation of the vendor cost would go to the Caribbean and Canada versus the United States. So that's another element that again we don't know what that's going to be. That will have to be determined based on the results of an RFP.

On page 7 is just kind of a historical look at the contribution factor since 2004. So just for your information. Then we'll move on to slide 8, which is the status of the contracts - the NANPA and PA contract, the bridge contract. Well, those contracts have transitioned from the previous vendor to the new vendor. They will also expire in November of this year. Then the B&C agent is on a five-year contract. That was established last year, in April.

On slide 9 is just a list of the Contract Oversight Subcommittee voting members and non-member participation. I want to extend my appreciation for those that contribute to this effort. I must say that my experience has been very positive and I appreciate those contributions in those meetings.

Finally, we've got two meetings left in this charter - July 25th and August 29th. That's kind of the status of it. I will turn this back over to Carolee to see if we can -- unless there are questions. Let me open it up for questions first. Are there any questions?

David Casem: David Casem from Telnyx. I just want to clarify the expectation. It's that once transition is complete as a result of combining the NAS and the PAS, the total expenditure will go down. Is that correct?

Philip Linse: I think the overall run rate for that contract. It would be my expectations since you're combining those systems. The purpose of combining those systems is to

create some synergies and some efficiencies there. Today there are some certain exchanges between those two entities because they're seen as separate at this point. There's like seven-day certain intervals that take place in the interaction between those two. So the idea would be that those would be streamlined. It would be much more efficient and then also the systems themselves. We would have some efficiencies there as well.

Dave Casem: Thank you.

Philip Linse: Any other questions? With that I'll turn it over to Carolee.

Carolee Hall: Thanks, Phil. The NAOWG recommends that the NANC chair move to accept the B&C agent's budget and contribution factors.

Karen Peterson: So moved. Do we have a second?

Male Voice: I second.

Karen Peterson: Any discussion? Hearing none, all in favor?

Voices: Aye.

Karen Peterson: Approved. Thank you.

Carolee Hall: Thank you.

Karen Peterson: We are moving on to an updated discussion of the Interoperability Video Calling Working Group.

UPDATE AND DISCUSSION OF THE INTEROPERABLE VIDEO CALLING WORKING GROUP REPORT

Matthew Gerst: Hi. My name is Matt Gerst. I'm with CTIA. I've been a member of the NANC for a while now. I am the co-chair of your Interoperable Video Calling Working Group. My co-chair is David Bahar who is seated to the right, next to Marilyn. We are going to be giving you our working group's preliminary recommendations today.

We've been working diligently since the bureau directed the NANC to create this working group and set out the goal of identifying recommendations for facilitating interoperable video calling through the use of telephone numbers. We've met weekly almost since, for the last nine months. Albeit when the government was closed, we weren't meeting during that time. So we appreciate the extension that the bureau and the NANC provided us to deliver our preliminary recommendations at this meeting rather than three months ago and we have used that time to the best of our ability.

Before we get started, I want to say a few words about the working group and wanted to thank the North American Numbering Council and the chairman for the opportunity to co-chair this working group. You put together a working group that is diverse and knowledgeable and charged us to consider a very challenging issue, and that is whether telephone numbers can be a catalyst for interoperability in the video calling market.

We worked diligently, as I said, since last October to learn about the issues from each other particularly from

people who are representatives of the deaf and hard of hearing community and respond to the commission's charge. What we will present today demonstrates that we were unable to find consensus on specific recommendations that respond to the commission's questions, but we have identified a path forward on issues that warrant further evaluation and discussion.

We expect these further discussions will shed more light on whether telephone numbers can help to facilitate interoperability among video calling services. My co-chair David and I will present an overview of our findings today. Our working group expects to follow up with a final report before the NANC's charter expires in September.

Before we begin, I just want to express my appreciation to my co-chair, David, for the excellent leadership he's provided over the last nine months. We had a very diverse group but I think we've set the right tone of collaboration from the beginning.

We do have a slide deck that was provided to you ahead of time. I don't know if we're going to be able to provide it on the screen. Is that being put up there or should we just -- hopefully everybody will follow along.

Female Voice: I guess Carmell is checking on it now.

Matthew Gerst: Okay. We should have it, so we'll just go from there.

We're on slide 2. Thank you. Just to give you a sense of our working group membership who is co-chaired by myself

and David Bahar. Our members included representatives from AT&T, Bandwidth, BlueJeans Network, Charter in the city of Los Angeles, Comcast, Convo, Gallaudet University, Google, N-A-S-R-A NASRA, N-E-N-A NENA, Professor Schulzrinne, Somos, Sorenson, Sprint, and Purple Communications. We have a pretty diverse group of people knowledgeable on video relay services we'll hear about a little later in our presentation.

We have folks who are representatives of network operators and people who are representatives of people with disabilities as well as technical experts. We had technical advisors from MITRE, M-I-T-R-E. Brian Rosen who's an individual and the FCC's chief technology officer Eric Burger. And our liaisons from the FCC are from both the Consumer and Governmental Affairs Bureau and from the Wireless Competition Bureau.

To give you some sort of sense of what we spent our time working on, we first had to understand ourselves what we were being asked to do with respect to what is video calling and what is interoperability. I think it's safe to say that, thanks to smartphones and laptops with cameras, we're all pretty familiar with video calling services today. But we still have to figure out exactly what it is that we are scoping ourselves to do.

The video market, the video calling market that is, is very much evolving today both technically and from a consumer perspective. For the most part video calling is probably a

secondary communications service for most people, most

consumers. Primarily we are still using voice calling and

text messaging. But for people who are deaf and hard of

hearing, video calling services are maybe their primary method

of communication. They are very much reliant on video calling

services. So first we identified some attributes of common

consumer video calling communications, and then we also tried

to consider what would be the demand for interoperability.

A couple of the attributes we identified include the fact

that all video calling services and applications are Internet

protocol-based technologies. They primarily operate through

mobile wireless handsets and computers. Most are one-to-one

or peer-to-peer although some offer group communications.

Most video calling applications may utilize telephone numbers

for a variety of purposes, including addressing identity

authentication, but some applications use other forms of

identifiers for identity and addressing. So video calling

applications do not use the public switch telephone network

for call routing. This is important given the context of the

use of telephone numbers traditionally.

We also tried to answer the question of what is the

demand for interoperability among consumers who are using all

these different video calling services today. What we found

in our discussions was most video calling services only offer

the ability to make video calls within the same service, i.e.

they are non-interoperable. You can't call from one service

to another. As a result, many consumers maintain accounts

with multiple video calling services and platforms to be used

to communicate with other individuals across different

services and platforms.

We didn't have access to information that provided the

level of demand. We used basic anecdotal evidence at this

point of consumer usage. We didn't necessarily find that

consumers are unsatisfied with the current system where they

use multiple accounts but the working group recognize that,

specifically for people who are deaf or hard of hearing,

they've noted the social and public safety benefits of

interoperability. So it's very apparent why interoperability

is an important issue even if it's not clear yet what the

market demand is worth.

So with that, I want to turn things over to my co-chair,

David, to talk a little bit on the next slide about video

relay service market – how that differs from the general video

calling market. We'll go to the next slide and then, David,

go ahead.

David Bahar: Thank you, Matt. Thank you. So just for

your awareness, I first want to thank all of you for allowing

me to work with Matt first and foremost. I know perhaps

you're a bit puzzled. I met Matt for the first time about ten

years ago and quite ironically when the two of us were both

working on something that was called the 21st Century

Communications and Video Accessibility Act, the CVAA. The

reason I called that ironic is because in that actual bill
there was advanced communication services which was
established as a category, and that advanced communication
services actually includes interoperability of video calling.
So I think it's sort of ironic and interesting that later on
we're finally working together to establish something that
relates to IVC. That's really cool. So thank you, Matt.
Thank you for your great work. I'm going to talk now about
video relay services.

Female Voice: If anyone is speaking in the room, there's
no audio on the bridge.

David Bahar: Testing. Okay.

Matthew Gerst: This is Matt. Sorry. We are using
audio. Is this microphone hooked up to the conference bridge?
It should be. Can you hear them now? If the interpreter can
speak.

Female Voice: Yes.

David Bahar: Are you able to hear the interpreter now?

Female Voice: Yes.

David Bahar: Okay. Great. This is David. You may be
familiar with telecommunications relay services which is
provided to deaf, hard of hearing, speech-disabled
individuals, deaf-blind individuals within the community which
allows them to make phone calls using an interpreter.
Historically, after the establishment in the 1990s under Title
IV of the ADA, relay service was provided through TDDs or

TTYs. TDD devices later had additional components. Different types of relay services were added. One of those relay services was video relay services.

In the beginning of the naissance of VRS people were able to communicate with each other through IP addresses. So like 192.68, whatever the IP address may be. People were able to use their IP addresses for phone calls. To call a person who was not deaf, who was hearing, a relay company would first be contacted. They would sign the number 2, the relay operator, and they would make the phone call from there. So a bit of an archaic approach.

By 2008 it was realized that there were severe drawbacks to that particular approach. The primary drawback in that case was a lack of 911 accessibility. You may know that if you call 911 from your home telephone line, the call will be routed to a PSAP based on your home address. So you may be familiar with that addressing system. However, for VRS users who were dialing using IP addresses or who had no phone lines connected to their particular addresses or devices at home, the calls were not able to be routed directly to a PSAP. That was a big gap and a big drawback for the deaf and hard of hearing community.

So in order to address that, the FCC in 2008 established a rule that provided VRS devices must comply with ten-digit numbers, must use a ten-digit numbering system. That allowed deaf and hard of hearing individuals who are relay users to

directly call 911 and then they would then be routed to the appropriate PSAP in their area. In reality there were several problems that went along with that approach because it was not really directly connecting to 911. It was actually being indirectly routed to another location first, and then the relay location would then route it to the PSAP.

That was really the first system that we use today in which deaf people were able to call each other through ten-digit calling numbers through video calling. That was part of our discussion initially. We invited several experts to come and present to our group, to discuss a ten-digit numbering phone system and how those calls worked in the VRS environments. Essentially how that works is something called the Interstate Telecommunications Relay Service database, or the iTRS database.

That database is quite simple. There is a directory, a list of numbers or devices, in the database that includes apps and phone numbers. Then there are URIs, Uniform Resource Identifiers, that are associated with each of those numbers. So when you call a number, it connects to a particular URI and then routes the call to the appropriate place. That's essentially how it works. I may be oversimplifying it, but that's basically how the approach works.

Recently, a couple of years ago, the FCC passed an order that mandated all VRS providers that their devices and apps must be interoperable. They must interoperate with each

other. That was called the Relay Users Equipment profile or

the RUE, R-U-E, profile. Now that profile enabled all users

of relay services to be able to call one another regardless of

which device or which app they were using or which company for

that matter they may be using. That is the model that we

initially started off within our discussion and that is the

basis of our work at the get-go.

We're moving on to slide number 5. By the way, if you

have any questions, please feel free to raise your hands and

interrupt at any point. The task from the NANC was to explore

and facilitate IVC on a voluntary basis. We believe that will

allow for additional users of video calling, not just for

people who are not deaf or hard of hearing but also for people

who have hearing or speech disabilities. Those people who are

currently using VRS services for those purposes, to also have

access to video calling.

The working group members were diverse and several

stakeholders were part of the process. Several were policy-

focused. Others were regulatory-focused. Others were tech-

focused. But we brought the skillsets together to discuss and

redefine the development of recommendations for how we can

accomplish our goal of interoperability for video calling and

to create an IVC environment that works for everyone. We are

committed to maintaining and continuing after our

recommendations, and the report is distributed to continuing

the work.

As Matt mentioned a bit earlier, we've met weekly for the past nine months. At the beginning of our meetings, we met one hour a week. Then soon after we realized that we needed a lot more time than just one hour because of the complexity of the subject matter that we were discussing and also the amount of information that we really had to digest and synthesize in our discussions. So we added an additional hour creating two hours a week of meetings I think for the last – was it seven or six months, Matt, that we met? For about six or seven months until the end of our meetings.

Our report in its final form will discuss a variety of options for changes; how we change the number management that would allow the deployment of ten-digit phone number-based IVC calling to include any changes that may affect the FCC's rules, any modifications or changes that may affect migration or consolidation of existing numbering resources. That includes numbering directories. That includes for example the iTRS database, which I mentioned, that actually supports IVC calling in the VRS environment.

Our report will describe recommendations developed by technical standards' operational requirements to facilitate and support the deployment of a TN-based database that will include and incorporate IVC in cooperation of NG911. We will recommend steps that the FCC can take to support and promote IVC environments.

A bit about our scope here. We wrestled with this for quite some time in terms of what should be covered in our report and then, the inverse, what should not be covered in our report. So what we came up with is that we would focus on four elements, the first being addressing. Essentially addressing refers to how we find the device, these IVC-enabled devices. How do we locate them, how do we know that they are video capable.

The second element is signaling. So how does that communication occur between devices over the networks, how will the information sharing take place, what capabilities are available, what media is supported for these devices. The third element is media exchange. That's defined by the codex that would be used, what transport protocol would be used. Then the fourth and final element is NG911.

So those four elements were included in our scope. Those are the high level categories that we focused on in our discussion within the working group. We determined that the scope would include the ability to make point-to-point calls between one person to another. That calling would cross a variety of different video services, different products and apps. Again that would be on a voluntary basis. But multi-group calling would not be a part of our scope. Also screen sharing was determined to be out of scope.

We focused on three possibilities for video calling. The first one was the selection or discovery of which contacts,

the discovery of contacts that are able to accept video calling. So if I for example wanted to send a text to somebody, if I have an iPhone or a certain type of phone – other people may have an android phone – as soon as I text you, I will be aware if you have an android phone or an iPhone. The reason for that is because I will see the text message as being either green or blue. So the same concept applies to discovery of which contacts can actually receive video calls or not. That would be made apparent at the beginning.

Secondly, the ability to initiate and facilitate calls with other individuals who use different services, different products, and different apps.

Thirdly, the working group after several in-depth discussions and collaborations determined that in the report we would avoid the discussion about whether or not all devices that create calls, that make calls should be able to support video calling. So that was not a part of our scope. And whether or not all devices should in fact be able to support calls using ten-digit phone numbers. We also discussed whether all video call services should use phone numbers. So those are the main elements that we discussed and did not discuss in our meeting. Back to you, Matt.

Matthew Gerst: This is Matt. Great. We've already gone through the timeline, so I don't want to spend too much more

time on this one. We can move right to the next slide where
we start to talk about our preliminary recommendations.

As David outlined, to facilitate interoperability, you
really need three key technical elements. That is how do you
do addressing so that you know which device it is. Because
even though most of us in this room probably are carrying
smartphones, it doesn't necessarily mean that every device
that is associated with a telephone number can support video
calling. So how do you know when you initiate a video call
whether that person you're trying to reach at that particular
telephone number is going to be able to receive that call and
process it? So that became our core focus for most of the
time that we had within the working group, and that is going
to be the majority of our recommendations on next steps.

There are other technical elements, like signaling and
media, in terms of how you actually establish the
communication and how you exchange the video content and the
audio content as part of the communication. In some cases
maybe text as well. But those need further study. We were
not the group necessarily to address those issues because we
were part of the numbering, just because we focus on numbering
issues and those are technical issues.

We also recognized that there are other issues beyond
just the simple thoughts about addressing signaling and media.
There are business decisions to be made about how you actually
set up interconnection between different companies. So it's

not as simple as just, well, it can be done. There are also

operational business contractual considerations. We did not

consider those in our evaluation. So there are a lot of

different moving pieces and parts when talking about how you

facilitate interoperability. We're looking at a very narrow

issue as, well, how could telephone numbers possibly help to

address one aspect of that.

So we identified two potential approaches but we're

unable to achieve consensus on which particular approach to

recommend. Each approach has certain advantages and

disadvantages. We think that there's further study that we'll

talk about that's necessary to help us potentially provide the

NANC with a more concrete recommendation. Those two

approaches would be based around a database similar to the

database approach David described with iTRS. That would use

an existing number database that might be out there or expect

that a new database would have to be developed that would

contain telephone number information to be able to translate

that information to Uniform Resource Identifiers, URIs, and

then allow video service providers to tap into the database to

be able to identify which numbers have or are associated with

a device and a service that will support the video calling

capability.

The other approach that was presented to us was a

platform-based approach where there are existing network

capabilities particularly in the mobile wireless space that

would support video calling potentially today without the need for creating any new database for resources. A few comments on this. The database approach would allow both over the top folks like BlueJeans, or Zoom, or Google who are on our working group to directly route amongst network providers and they could route to each other. This is limited to routing. This is not a complete solution, as I said, on the database just because there might be a database that might house numbers potentially that support video calling services. It doesn't mean that is the end of the discussion on how do you support interoperability. As I said, there are a number of technical and business decisions that have to be made. But this is one way to potentially facilitate that among various video service providers.

The other way was a platform-based approach that builds on the existing video over LTE standard. That would provide a path for and does provide a path today for network operators, like AT&T or Comcast or Charter, to interoperate video calling amongst themselves but it does not support routing to or signaling or media with the OTT providers.

So our working group recommends that we do that further study by numbering and technical subject matter expert of the two primary approaches to addressing then facilitate whether video calling can be supported and, interoperable of the two listed approaches, to determine which option is more viable for achieving broad interoperability of video communications.

We go to the next slide. I'll continue on what our ask is of the NANC. We would like to further study the numbering database approach. This working group requires additional input from experts before recommending changes to numbering or numbering administration, including the iTRS numbering directory, to allow and encourage the deployment of telephone number-based interoperable video calling. We recommend that the NANC identify the appropriate numbering experts to develop and provide advice to the working group on the use of existing numbering databases and commercially available interoperability databases for the purpose of facilitating a database approach to interoperable video calling. A designated entities should provide recommendations on technical and operational feasibility of using existing or commercially available databases to support the database approach to telephone number-based interoperable video calling.

As an example for the council to consider is if we were to use an existing database under the North American Numbering Plan. That raises a host of operational questions that we weren't able to answer. For example, is it within the scope of the current databases to support this capability for interoperable video calling by having URI or something that would identify services that would support video calling associated with the telephone number? Who would be able to access and use that database? How much would it cost and who

would pay for it? We didn't have the expertise to answer

these questions so we weren't able to recommend that an

existing database would be the right approach. We're asking

that if this is something that the NANC so chooses and that

the FCC would like to see further development on, we would

need a little bit more detail and expertise to answer those

questions.

David, do you want to take the next slide?

David Bahar: Any questions so far?

Chris Drake: Chris Drake, iconectiv. My question is do

you envision businesses using their telephone number to be

either discoverable that they can engage in a video call with

their customers or, in reverse, that they may find customers

to engage in video calls? Is that in the scope if they use a

phone number?

David Bahar: This is David speaking. Discoverability

was something that came up early in our conversations, whether

or not that should be included in scope or not. It appeared

that that would require -- it's technically very complicated

to implement something like that so we didn't actually

incorporate that into our recommendations.

Matthew Gerst: This is Matt. If I could add, I would

say that the understanding is that anyone who would want to

initiate video calling should be able to do so through the use

of a telephone number. That was the concept that was put

before us. So yes, I think the expectation is that it would

both be consumer and enterprise telephone numbers that would
be potentially part of this environment in this use of
interoperable video calling services.

Karen Peterson: Henning.

Henning Schulzrinne: Henning Schulzrinne. Just to maybe
tease in part. I have two issues namely, one, as you said
this is not restricted to consumer applications. Indeed I'm
speaking personally that probably one of the largest initial
uses might well be enterprises because interconnecting various
conferencing systems such as some of the members on the
working group today is challenging and essentially requires
coordination through IT departments and all of that making
video calling between organizations rare and error prone and
difficult to implement.

The second aspect which I think was referred to is the
equivalent of white pages or yellow pages where you are giving
the name and you would be able to look up a phone number and
maybe the video capability. As was mentioned, that was out of
scope in that. We have that capability to some limited degree
for regular phone numbers so one could imagine that that would
be extended to video, but that was certainly not part of a
database for example given that none of the existing numbering
databases support a name or a business to phone number look
up. That's handled and I think justifiably so given privacy
concerns and business models and what have you. As something
which would exist outside the classical numbering database, we

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did not discuss that. Others can try. I mean I may be misrepresenting what I think was roughly the discussion.

David Bahar: Thank you. Thank you, Professor Schulzrinne.

So I'm going to slide number 11 at this point. Our recommendations for further study are several. We have several areas we discussed. The first is, because the IVC is asking to provide capabilities which do not currently exist, we will need to look at implementation of new or modified technical standards to encourage the development and utilization of telephone number-based interoperable video calling for either a database or a platform approach - whichever is decided to be pursued.

We recommend that the working group take a look at ATIS IP NNI that they work with this group, as well as the IETF, and as well as the ATIS ESIF. We think that those three groups would be ideal to evaluate the technical and architectural details of either approach, whether it'd be a platform or a database approach.

Now, in the IVC environment, the ability to invoke a VRS in the middle of a call is something that we believe would be beneficial. An example of such is the ability to use the same ten-digit phone number for texting, for phone calls, and for IVC calls. That would also support the improvement of NG911 routing.

Now let me expand on that just a bit. Currently VRS users who have a video phone would have one phone number that connects to one device. If there were an additional device or additional apps that were used, then they would have two phone numbers. Three devices would mean three phone numbers. So there's no way to share those phone numbers amongst several devices. That's becoming a bit of a problem especially when you consider deaf and hard of hearing people who use cellphones. It becomes unwieldy to consider having a cellphone and then a different device for a different phone number depending on which phone number you wish to be called.

We're hoping for the consolidation or being able to use the same phone number on multiple devices. So the same phone number for various apps or IVC-supported devices. That's quite a big deal for our community because one phone number means that somebody could call all of those devices that of course support IVC and that all of those devices would ring at the same time. Meaning having to keep track of maybe perhaps six or seven phone numbers. Which phone number has been assigned or given to which friend or relative that we have to keep track of? So it's become a bit unwieldy. This is quite a big step in the future and an advancement for the community in several different ways.

Our working group also recommends further study into the technical and operational feasibility of interoperability with video relay service. Now video relay services as they

currently stand, and as I explained just earlier, are such
that they have some limitations in terms of 911 routing.
Within our group, we spent quite a bit of time discussing how
that could be improved upon in the IVC environment.

One element that we discussed was the possibility to
invoke a VRS interpreter mid call. Essentially what that
means is if I am calling a person using video, so if I as a
deaf individual for example were to give Matt a call who's a
hearing person, I don't know if I can call. Suppose that I've
never met him before, I mean suppose that I don't know him,
I'm saying hi Matt for the first time. I sign but he does
not. He will be able to invoke the relay interpreter at any
point during the call and the relay would continue to be
supported during that call going forward.

The same benefit could be applied to 911 routing. Under
NG911 standards, one would be able to have a 911 hosting
bridge in which there will be three participants. There will
be the deaf caller, the telecommunicator, and the relay
interpreter. That is a huge improvement over the current
system as it currently stands in which VRS is actually the
bridge in this situation instead of the 911 telecommunicator.
And VRS companies today stand as the bridge to facilitate
those calls.

There are several drawbacks to that approach. One such
drawback for example is, if one were to call 911 on a landline
or a cellphone, anything that was stated during that call will

be recorded by the 911 operator. That's a standard amongst

various practices. However, for relay callers, because it is

the VRS company or the VRS relay operator that's hosting the

call, 911 would only be recording the interpreter's voice and

what the interpreter says. So that of course has several

drawbacks. In that situation there's no audio coming from the

deaf person's side. There is no video being recorded from the

deaf person. The only audio is coming from the interpreter

which may or may not be entirely accurate and representative

of what the deaf person is actually stating, okay? So in the

IVC environment, that would provide the opportunity and

ability to address and fix that issue.

We recommended as well further study by the appropriate

working groups, as were mentioned, into the feasibility of

ensuring that people with disabilities can communicate with

PSAPs in the most efficient and appropriate way as possible.

Moving on, limited users of relay services. Limiting

user registration of telephone numbers under VRS providers is

likewise not functionally equivalent and does not fulfill the

needs and desires of the community for having one common phone

number for multiple services such as voice, texting, and video

calling. To expand on that just a bit, today VRS users give

out phone numbers to VRS users. So my phone that you see

here, I can't use this phone number for a VRS call. I have to

actually get a number assigned to me from VRS companies. I

cannot use that phone number that I've been assigned with any

other device. I can only use it with the VRS device that's been assigned.

In the IVC environment we're discussing the possibility of having a phone number that would be assigned to one cellphone, for example, that would also connect to other IVC devices, other IVC supported apps or devices that are out there using the same phone number. So quite a different approach than as it currently is which we believe to be much more functionally equivalent. That experience also lends itself to the same experiences that hearing individuals have, being able to use one phone number over multiple devices.

We also recommend the exploration and evaluation of whether or not and which existing number databases can and should be used to support IVC calling including evaluating issues such as performance, security, legality, operational issues and cost - cost associated with of course various elements. Then also making sure we're in line with the FCC's rules.

By way of example, one database that we looked at was the numbering portability database. We felt that we were qualified to make the decision whether or not that was actually *the* appropriate database for the purposes of our discussion to use for IVC and what possible operational security or cost drawbacks may exist. We feel as though it may be even more appropriate for subject matter experts to

make those recommendations as opposed to us despite our various qualifications.

In summary, we are asking for an extension of our charter -- oh, I'm sorry. Matt, I'll turn it back to you.

Matthew Gerst: Go ahead if you want to. No? Okay. This is Matt. So yes, just to summarize, we're asking that if the NANC and the FCC so chose to allocate or ask these other entities to provide us with this guidance, then we would be perfectly willing to continue on as a group.

As we got a question, before we do, we got two other slides that I'll just point out to you. The first one, if you go to the next slide and then the slide after that, the next slide, this is just a diagram of the database approach. Then the next slide is a diagram of the platform-based approach. So that is our presentation. I see we have a question from?

Richard Shockey: Could you go back to slide 11 please? First of all, for clarification, it is the ATIS/SIP Forum NNI Task Force. It's a joint venture between ATIS and the forum. I'm really not sure what the ask is here to a certain extent. I think you know that we're working literally every week on the robocall spoofing problem and I'm just talking about I don't think the members of the task force have any bandwidth to be able to tackle something like this.

On the question of interoperability, we actually did a report which we filed with the commission four years ago on interconnection using multiple databases one way or the other.

So I would encourage you to at least sort of look at that. I mean I certainly know what the options are. You're either going to use the NPAC or you're going to use RFC 6116, which is SC ITRS database by the way. It's based on 6116 which Henning and I know extremely well since I spent ten years as the co-chair of the IETF Working Group to develop it. So I would be very cautious and hesitant to ask the NNI Task Force to try and take on some of this stuff. Besides, again, I'm deeply worried we don't have the bandwidth.

Henning Schulzrinne: Henning Schulzrinne. Just following up a little bit on that. The SIP Forum/ATIS IP NNI Task Force did not consider video. That was not part of the mandate at the time. So their work can certainly, I believe, be useful as a framework since largely only the media component significantly impacted or is really new compared to all the other issues and some of them were challenging.

As Richard pointed it out, there was a lack of agreement in the IP NNI Task Force as to what it means - this intercarrier discovery I guess would be one way to phrase it. It was namely how do I find out in some common way, besides mutual sharing of information, as to how do I connect Carrier X to Carrier Y. It would be interesting to see whether after four years more consensus has emerged in terms of -- and I'd say that would be interesting in the usual air quotes.

The other one timing-wise, and this is a general comment, is I think one of the underlying issues that the IVC group

struggled with. It was the notion of a timeline; namely, is there something that the commission sees as short-term? Get it done now possibly for a limited-user group such as VRS users on one side versus this is a strategic ten-year objective which would, one would hope by that time, either robocalls have been solved or they have killed the phone system so we don't have to worry about phone numbers anymore.

That I think would be useful guidance, since you mentioned re-chartering, just to get the notion of a lot of things the NT does that are tactical as in these tight deadlines after we're done within a year or whatever and others tend to be more strategic and so on.

The final comment I would make in terms of a numbering database is, as with other numbering related issues such as national number portability, it is becoming clearer at least to some of us I would say that we're all straining the existing numbering databases that dates to a very different era. A TDM era based on a 1000 number or 10,000 number blocks with a very small relatively speaking number of carriers offering a very simple service, voice only, in operated environment where databases could host a number of records that we're looking at - 800 million or so - were expensive and complicated to an era which is much more multicarrier where OTT providers have a much larger share of the actual video traffic. I would say probably well above 90 percent at the moment. And where multiple devices per users are not an odd

exception but are common, as was pointed out. It's already common not just in the VRS community. All of us are in that situation essentially.

I would say having a more strategic look as to whether the existing numbering databases should essentially be declared as a legacy database where a lot of the new functionality would move including IVC, including possibly number portability, including some of the security-related function related to robocalls would migrate to a more IP-friendly modern database in that particular circumstance. So if I'm going to make an additional kind of more organizational recommendation, it would be for a future NANC to take a broader look at this as a more long-term objective as opposed to saying we can't modify the database because we designed it in 1980-1990 when Oracle databases were a hot new commodity.

Richard Shockey: Let me just have a follow-up to that to a certain extent. When we did the IP interconnection report in 2014, to Henning's excellent point, that was part of a broader idea as part of the technology transitions docket which has been open for many decades now and still hasn't formally concluded.

I do want to echo a number of things that Henning said here. This does get very complicated. Certainly on the question of ENUM databases, I would not have designed ENUM the way I did knowing what I know now. Just don't say blockchain or anything like that. Actually there is a certain

jurisdiction on the other side of the Atlantic that is seriously looking at distributed ledger technology as a potential replacement for numbering databases, but we certainly don't need to go there. So it's just a question of caution. We're trying to at least solve one of the American people's problems very, very quickly which is the robocall spoofing problem. I'm sure I'm going to see all of you here on July 11th when we reconvene again for that subject matter. So if there was a way, it's not simple and there's no one silver bullet either.

Karen Peterson: Do you want to jump in, Matt, before I--

Matthew Gerst: Yeah. This is Matt. I think all the points you're raising are exactly the issues that the working group ran into, which was we were given a very broad scope. It wasn't necessarily limited to looking only at numbering issues. There were a lot of technical issues that we were asked to look at. What we came to was it's very complicated. We don't necessarily have all the answers. We need other folks to contribute who are the experts on some of these things and can bring it to the working group so we can evaluate if that's what we're being asked to do.

But as it relates to the issue of numbering and numbering resources and how can numbering help facilitate interoperability, there I do think we came to a bit clearer picture which is you could do it through some database approach or you could do it through existing resources and

platforms. But all of those have positives and negatives and we couldn't come to a consensus on one particular issue.

So it was an interesting project I would say for the working group to be tasked with and for the NANC to be tasked with because it does run up against some of the limitations both of you have recognized while recognizing that there is an important public need potentially for interoperability. That needs to be better understood, about how to facilitate that. So I would say at the end of the day what our final report will do, what our recommendations do is a little bit more of specific issue spotting for anyone else who comes after to take a harder look at some of the things that we've discussed.

Karen Peterson: Thank you for that, Matt. I do want to say that your question to the commission in terms of extending the working group to look at those additional issues, I am not the chair but I will absolutely bring this to the chair. I know that we will have further discussions internally in terms of how best to address your needs, so the questions that you raised. Because you're right, it's a very important issue. I think the work you have done thus far is just tremendous. It's awesome. We can't thank you enough for all of the issues that you looked at, both of you. So thank you so much.

Also the work of the NNI Task Force, the work that you're doing is equally as important and critical and we're all anxious for a solution. They all weigh the same. We want to make sure that we find answers and were able to provide you

with the technical support that you need to continue this work. So I will absolutely bring this to the chair and to the commission, and we'll take it from there. So thank you. Thank you so much, David. Are there any additional questions? I'm so sorry, I just can't see. Go ahead.

Jerome Candelaria: Hi. Jerome Candelaria, NCTA. I'm following up on Henning's observation. The question comes up with whether we should treat NPAC as a legacy entity at some point. Regardless of whether we get there, I would think an issue for spotting here would be to ask the question of the NPAC on the impact on the life of the North American Numbering Plan. We heard in the presentation that there was an effort to ascertain demand for this and that that was not successful. I would think that's a very valuable undertaking though if we're going to try assessing the various solutions and specifically what happens to the NPAC.

Karen Peterson: Thank you. Go ahead.

David Casem: David Casem from Telnyx here. Thank you for you work. I guess as an IPES we love the NPAC. We dip it for every phone call in order to identify where we should deliver a call and it works really well for us. In the hope of being pragmatic here, I would like to ask a question. Have we thought about potentially just adding a field to the NPAC that suggest whether a number is video capable and then how to deliver that video call to that number?

Richard Shockey: It's already there. It's the NANC 400 series of additions to the database. We've had them there for 15 years or something else like that. With limited deployment, but they're actually there.

Matthew Gerst: So yes, this is something that was discussed among the group and was one of the issues that we couldn't reach consensus on - as to whether that would be the recommendation, was to use the NPAC in its current form to help to facilitate this by recognizing its capabilities. And again we couldn't reach consensus on that because it raises a whole host of additional issues that we couldn't answer, which is why we're asking for additional questions.

David Casem: Could you speak to that though, what was the opposition and why couldn't you reach consensus on that in particular?

Matthew Gerst: Yeah. I think we've identified that in our preliminary recommendations where we're noting that there are questions about costs, there are questions about security and privacy and all of these questions that we didn't have the answers to that we needed to address.

David Casem: So I guess, just for clarity, the issue here is for OTTs in terms of cost, right, because everyone else is already paying for the NPAC.

Matthew Gerst: Again I think it's probably a little bit broader. My understanding in our discussions was it's broader than that. In terms of the cost issues, it's not just who

pays but what are the additional requirements there and
resources necessary to support this capability. Those are
questions we couldn't answer as a group.

     Henning Schulzrinne: Maybe just to elaborate a little
bit on that. Henning Schulzrinne. If I may. There was a
concern, and this goes back to my previous comment, that the
NPAC as is and not a new or particular one is seen as -- and
this is my take on it. I don't think that's the working
group's consensus necessarily. It is seen as sufficiently
brittle in terms of the interfaces to it. That any changes
would have unknown consequences to other users of it which in
my mind is, once a system reaches that state, essentially it
has declared its self-legacy. But that's a separate issue.
If you can no longer modify a system, it's no longer
operational in a technical environment. But a separate issue.

     The other one which I think is a more substantive one --
and a picture of a database that was flashed briefly alluded
to that. This goes actually back to some extent also to the
IP NNI discussion; namely, in the voice context. Namely, what
information about interconnection points which URLs would
indicate should be made available to whom and under what
circumstances.

     So one discussion which we did not dive into great detail
for lack of time was a model which the NPAC could indeed
support, that it would be offering since it already indicates
the carrier anyway. That would indicate a second database

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that would actually provide on a possibly more restricted
basis the actual IP address or URL for a gateway that could be
used to reach that particular phone number. It would be a
two-step lookup as opposed to one-step lookup, but we were
unable in the time available to do that.

I will just briefly point out that one thing that made
this hard, and again this is similar to other working groups
that I've been participating in, in many cases PowerPoint
engineering only gets you so far in drawing diagrams and all
that. It would be really helpful to have the ability for
interested technical or engineering groups to experiment on a
replica of a system in that. I think to some extent robocall,
the ATIS type of testbed, at least endeavor to do that. So
many of these questions turned out to be much easier in
practice than they turned out to be in PowerPoint because lots
of problems just don't exist.

So one recommendation - this is my personal one that I'm
working on now - would be if the commission can facilitate
efforts that allow interested parties and support such effort
to test out ideas so that the commission can have a more fact-
based and engineering-based record on what actually is a real
problem and what turns out to be not a real problem or
conversely to discover problems that are hard to anticipate, I
think that would actually move the discussion forward. Again
I say that we have the same kind of unknown unknown issue in
the number portability debate and in other context as well.

So that might be more middle [sounds like] recommendation is that we currently don't have a good [indiscernible] of other parties except by talking to Telnyx and others to make that happen and facilitating kind of a sandbox that people can play in and get encouragement and possibly support in some cases through grants that might be available to academic and technical institutions that don't have their own funding to do that would be most helpful to answer those type of questions.

Karen Peterson: Thank you. Charter. Yes.

Glenn Clepper: Hi. Glenn Clepper with Charter. I just want to reiterate that the two approaches that are discussed on the report are theoretical frameworks for interoperable video. I say theoretical because in reality neither one of them is in place today for that particular function. And just a word of caution. When we talk about the NPAC and its current use and implications of its future use, I think that there's a lot of possibilities there. However, one has to be cautious that again these are theories. Without having specifics as to what the impact is going to be, one has to be cautious. Because making broad statements can be premature as to the use of a current database, using it for a different purpose.

I'll only add or close by saying that another group, I'm not sure it was implied but maybe not specifically mentioned, was the North American Portability Management LLC who has the responsibility of managing the NPAC would want to weigh in

heavily and use the NANC working groups and subcommittees as they have in the past to vet any technical changes to the NPAC. I think following that process of engaging of those groups would be important as well.

Karen Peterson: Thank you.

Glenn Clepper: Thank you.

Karen Peterson: iconectiv.

Chris Drake: Chris Drake, iconectiv, administrator of the NPAC. That wasn't why I put my tent card up, but I'll make a remark about that first. The NPAC is a brand new system made of modern components. It has a 20-year-old interface. It has also has a very new interface as an option which is much more agile. The LNPA team would certainly be willing and happy to engage and be informative about the possibilities of the NPAC in whatever problem we're trying to solve here. So you can take that step with us and we'll move accordingly.

I do want to say I don't think it's appropriate for anyone at this table, especially someone who's not a user of an interface, to coin it as brittle and should be put in a box and up on the top shelf and move on to other technologies. I don't think that's an appropriate type of commentary to make when uninformed and also in all probably. I think that's out of bounds.

Why I put my tent card up was to say that I'm also chair of the ATIS Technology and Operations Council. Prior to that

position I was co-chair of an interoperable video calling project where we studied many things that you talk about here which may prove to be useful material and certainly developed by experts in the field. One thing I will acknowledge is that was 2014 and the OTT dominance, which has been pointed out, was not really in the scope of that study. It was much more carrier-centric. But nonetheless, it's probably a helpful piece of work and helpful insights to bring in to the table and modernize it along with the nature of applications people use for video calling in addition to traditional telco-based capabilities. So I just wanted to offer that that exists. That was done and we could explore that via the ATIS representative.

Karen Peterson: Thank you. David.

David Casem: David Casem, Telnyx. I just want to put it out there that Telnyx is prepared at any time to work with any other carrier to testbed using the NPAC for interoperable video calling, whether that be using the existing LSMS interface which we'll be happy to modify or the new interface that Chris just mentioned. To echo his comments, we think the NPAC is in good shape and we think numbering is in good shape.

The second thing that I sort of want to bring up is around OTTs. I looked at the referral letter and there was very little mention of OTTs. And while I appreciate their dominance with respect to interoperable video calling, it's hard for me to understand whether or not they should

necessarily have a voice in the working group. By their very
nature, they are over the top of the carrier infrastructure.
What we've seen work well historically is when those OTT
providers partner with a carrier to be able to facilitate
interoperable calling with the public telephone network. That
happens today for voice. I'm not sure why it wouldn't be able
to work for video. Then if for whatever reason they want
direct access, obviously the FCC 1570 order is available to
them just like it is available to anyone else.

Lastly, in the absence of a working solution, what we've
seen in the SMS and messaging world at least is the creation
of commercial solutions like NetNumber's Override Services
Registry. So I think that's probably a more appropriate forum
for those that are not necessarily contributing to paying for
the NPAC. Thank you.

Karen Peterson: Thank you. So Matthew and David, any
other thoughts before we move on? If not, I would like to
thank you for your presentation. That was fantastic. And the
discussion was very helpful, so that's great. Moving on to
the discussion of the North American Portability Management
LLC.

DISCUSSION OF THE NORTH AMERICAN PORTABILITY
MANAGEMENT LLC REPORT

Teresa Patton: My name is Teresa Patton. I'm with AT&T
and I'm one of the co-chairs for the NAPM LLC. Since March
we've approved one statement of work. Within that statement

of work we have two change orders. NANC 525 which documents the layout of forms used in the mass update mass porting processes and also expanding that process to include the ability to perform mass pooling and de-pooling. NANC 536 allows multiple email addresses to receive notifications associated with processing MUMP jobs.

We're currently analyzing another statement of work, number 23, which is a new service that iconectiv is looking to offer. It's for the purpose of protecting against account takeover fraud.

The Contract Implementation Committee reviewed seven finding reports to validate the need for NPAC data use. In May the NAPM LLC visited one of the data centers that housed the NPAC. The NPAC actually celebrated its one-year anniversary on May 25th. We wanted to acknowledge the tremendous work that iconectiv has done and just to give you a few statistics.

The NPAC performed over 244 million routing updates from pooling and porting activities. They maintain 811 million telephone numbers which is an increase of 39 million or -- and the report should say 5 percent, not 20. So we'll correct that. We have not experienced non-scheduled system-wide outage. It currently supports 8,000 users including approximately 1,500 service providers. The first annual user survey returned a user satisfaction score of 4.08 out of 5,

and the first annual NPAC disaster recovery exercise was successfully completed in February.

Finally, the contracted cost of the NPAC will be reduced by $30 million beginning with the June billing period. Any questions?

Karen Peterson: Hearing and seeing none, thank you very much for your presentation. Moving right along, the discussion of the Secure Telephone Identity. Brent Struthers.

DISCUSSION OF THE SECURE TELEPHONE IDENTITY – GOVERANCE AUTHORITY

Brent Struthers: Good afternoon. I'm Brent Struthers with ATIS, the Secure Telephone Identity Governance Authority director. That's the short version of the title. That is my update today.

Very quickly, we've had a couple of important things to go on. After a thorough process of review, the STI-GA board chose to select iconectiv to service the Secure Telephone Identity Policy Administrator. So we're excited about that. The decision was announced on May 30th. We are now working diligently with iconectiv and remain on track to have the STI-PA and the SHAKEN ecosystem operational by, as Chairman Pai has called, the end of the year. So we will have that operational. We're on track. That's the update. Any questions? All right. I'm glad I could help get the meeting back on track.

Karen Peterson: Wait, Brent. We actually have one question.

Brent Struthers: Oh, darn it.

Richard Shockey: This is Rich Shockey. It's not a question. It's an observation.

Karen Peterson: Sure.

Richard Shockey: Chairman Pallone and Greg Walden just dropped the bipartisan House bill. So we're going to see something very, very quickly.

Karen Peterson: Thank you for that.

Henning Schulzrinne: I do have a question. I don't know if you can answer it at the moment. So we are basically in kind of step two out of step three, if you'd like, in that. Namely, we've get the GA with PA and now we've got a critical operational component. One or more CAs that need to be established. Is there, as part of a PA contract or as part of a general discussion in the GA board, a timeline for RFP or whatever mechanism will be chosen to get that one? Because that's probably the one component that is an operational necessity. Not just a kind of organizational entity that meets and discusses policy.

Brent Struthers: So by that component, you mean the CA as the certificate authorities?

Henning Schulzrinne: Yeah, certificate authorities which would issue certificates to carriers and possibly other entities and ensuring the operability or simplifying the

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operability between carriers. I assumed that, if I recall correctly, one of the PA roles is to manage that. I mean the process. So I wonder if there's a timeline for that.

Brent Struthers: Yes, there's a timeline for that. Yes, you're correct that it is the PA's role to create what's called the policy management authority. That's the authority that creates the certificate policies, which is the rules that the certificate authorities have to follow in assigning certificates to carriers. That process is underway. I can't give you today a timeline that says here's when it will be complete but, yes, we've started that process with iconectiv.

We will be working with them, the carriers within the STI-GA. Board membership will be working directly with iconectiv on that. And yes, the plan is to get the PA and the CAs all up and running by the end of the year. Subcarriers can be assigned certificates. Like I said, I don't have a specific timeframe to give you now. Maybe in the future I'll have that, but at the moment I don't have it.

Craig Lennon: This is Craig Lennon from Google. I think Henning raises a good point. Even just in the way that you answered the question around carriers getting certificates, I think the intent potentially is that other entities besides carriers can become certificate authorities. I believe that's something that the technical committee within the STI-GA is looking at at this point. Is that something that you feel can be resolved within the STI-GA or is that something that might

need to be come back, that kind of guidance may need to come back to this forum?

Brent Struthers: That's a good question. And when I say carriers, I apologize. It's kind of a broad generic term for whatever is decided. So there is a decision that needs to be made by the Secure Telephone Identity Governance Authority, and that is who gets access to a certificate - be it traditional service providers, be it the OCN holders, be it companies that have access to telephone numbers, be it something else entirely.

You're correct in that the technical committee that advises the governance authority board is now looking at that issues in terms of making sure that we have the proper security within the system. So we're not giving access to folks that would compromise the security of the system. That recommendation will go from our technical committee to the board hopefully at some point this month. Then the board will make the policy determination as to who should get access based partly on the security concerns of the technical committee but also based on that making sure that the folks who need access to certificates can get them and consign calls. So the GA board will actually make that determination at some point in the very near future.

Craig Lennon: I think that's great. I think that's the type of timeline especially as you've talked about how the chairman wants this by the end of the year. The one comment

that I'd make to that extent is what we would like to see is something that is in place by the end of the year has sufficient security on who can obtain certificates as you mentioned but also is comprehensive. Right? That doesn't somehow disadvantage some. While not meaningful percentage of the overall calls are happening, that could be certified and are not because of the kind of decisions that are happening around who can obtain certificates and who cannot. I think both of those needed to be balanced as to speed of implementation but also comprehensiveness of the solution not to disadvantage service providers.

Brent Struthers: Yes. The best part is that Google is represented on our technical committee as well as our board, most of the other folks in the room, by and through an association or directly through a carrier. So you'll have an opportunity to give us lots of input on that. Thank you.

Karen Peterson: Seeing no additional tents up, I want to say thank you to Brent for your presentation. Thank you.

PUBLIC COMMENTS AND PARTICIPATION

Karen Peterson: Now I would like to open it up to the public for any public comments. If there are any comments, questions, concerns.

Seeing none, I would like a motion to adjourn the meeting. Oh, I'm so sorry. Please.

Male Voice: No, I'm not ready for a motion to adjourn yet.

Karen Peterson: That's fine.

Male Voice: One general question if I may. Madame DFO or whoever is appropriate, it's my understanding that the White House has indicated that it wants to see a reduction in the number of federal advisory committees. Do we have an understanding yet of the potential impact of that thought process to the NANC, or CSRIC, or any other federal advisory committee that's relevant to us?

Marilyn Jones: This is Marilyn, DFO. As far as the NANC is concerned, we just recently released the public notice of the commission's intent to re-charter the NANC. So we are currently seeking nominations. I'm not sure about the other advisory committees under the commission.

Henning Schulzrinne: I think it did not apply to independent regulatory agencies.

Male Voice: Yes.

Marilyn Jones: Thank you Henning. And we're an independent federal agency.

Male Voice: And now I'll make a motion to adjourn unless there's --

Karen Peterson: Do I have a second? All in favor?

Voices: Aye.

Karen Peterson: Meeting adjourned. Thank you everyone.