

UNITED STATES FEDERAL COMMUNICATIONS COMMISSION

DOWNLOADABLE SECURITY
TECHNOLOGY ADVISORY COMMITTEE MEETING

Washington, D.C.

Monday, February 23, 2015

1 PARTICIPANTS:

2 Designated Federal Officer:

3 BRENDAN MURRAY

4 Alternate Designated Federal Officer:

5 NANCY MURPHY

6 Chair:

7 CHERYL TRITT
8 Of Counsel, Wilkinson, Barker, Knauer
Special Government Employee

9 Members:

10 DR. AHMAD ANSARI
11 AT&T

12 BRANT CANDELORE
13 Sony Electronics, Inc.

14 JOHN CARD II
15 DISH Network

16 MATTHEW CLARK
17 Amazon

18 BOB CLYNE
19 Cablevision Systems Corporation

20 ADAM GOLDBERG
21 Public Knowledge

22 MARK HESS
Comcast Cable

BRAD LOVE
Hauppauge

KENNETH LOWE
Vizio

1 PARTICIPANTS (CONT'D):

2 JOHN MCCOSKEY
Motion Picture Association of America

3
4 BRUCE MCCLELLAND
ARRIS

5 MILO MEDIN
Google

6
7 ALAN MESSER
Samsung

8 JOHN GODFREY
Samsung

9
10 JAY ROLLS
Charter Communications

11 SIMHA SETHAMADHAVAN
Special Government Employee

12
13 BRENT SMITH
Evolution Digital

14 DR. JOSEPH WEBER
TiVo, Inc.

15
16 ROBIN WILSON
NAGRA

17 Also Present:

18 TOM WHEELER
Federal Communications Commission,
19 Chairman

20 ALISON NEPLOKH
Federal Communications Commission

21
22 PAULA SILBERTHAU
Federal Communications Commission

1 PARTICIPANTS (CONT'D):

2 SCOTT JORDAN
3 Federal Communications Commission

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1 P R O C E E D I N G S

2 (10:00 a.m.)

3 MS. TRITT: Good morning. Welcome to
4 spring in Washington and the first session of the
5 Downloadable Security Technical Advisory
6 Committee, which we will fondly call DSTAC. We
7 have a couple of ministerial things to get through
8 here. Let me call the roll, make sure everyone's
9 here.

10 Dr. Ahmad Ansari with AT&T?

11 DR. ANSARI: I apologize for not being
12 able to be there in person.

13 MS. TRITT: Good morning, Dr. Ansari.

14 DR. ANSARI: Good morning.

15 MS. TRITT: Brant Candelore -- I hope
16 I'm not butchering these names -- with Sony?

17 MR. CANDELORE: Yes, hi. Hi, this is
18 Brant, and yes, again, I regretfully say that I
19 can't be there today, but I'm very, you know,
20 interested and excited to be part of the working
21 group.

22 MS. TRITT: Thanks, Brant. John Card

1 with DISH.

2 MR. CARD: I'm right here.

3 MS. TRITT: Hi.

4 MR. CARD: Hopefully in the right seat.

5 MS. TRITT: Matthew Clark with Amazon?

6 MR. CLARK: Yes, hi. I'm here on the
7 line, pleased to be with everyone.

8 MS. TRITT: Good morning. Bob Clyne
9 with Cablevision Systems.

10 MR. CLYNE: I'm here.

11 MS. TRITT: Hi. Nice to meet you. Adam
12 Goldberg with Public Knowledge?

13 MR. GOLDBERG: I'm right here.

14 MS. TRITT: Hi. Good morning.

15 MR. GOLDBERG: Good morning.

16 MS. TRITT: Mark Hess with Comcast?

17 MR. HESS: Right here.

18 MS. TRITT: Good morning. Brad Love
19 with Hauppauge.

20 MR. LOVE: Right here. Hauppauge.

21 MS. TRITT: I knew I was going to
22 butcher that. Kenneth Lowe with Vizio.

1 MR. LOWE: I'm here.

2 MS. TRITT: Good morning. John McCoskey
3 with MPAA?

4 MR. MCCOSKEY: Here.

5 MS. TRITT: Good morning. Bruce
6 McClelland with ARRIS.

7 MR. MCCLELLAND: Hey, good morning.
8 Bruce here from down under in Australia this
9 morning. Good morning.

10 MS. TRITT: Good morning. Wow. Milo
11 Medin with Google.

12 MR. MEDIN: Here.

13 MS. TRITT: Good morning. Did I say
14 your last name right?

15 MR. MEDIN: Close enough. Medin, but
16 that's fine.

17 MS. TRITT: Okay.

18 MR. MEDIN: There's only one of us.

19 MS. TRITT: Alan Messer with Samsung.

20 MR. MESSER: Hi, yes, I'm here on the
21 line and my alternate, John Godfrey, should be
22 there in room.

1 MS. TRITT: Okay, good. Jay Rolls with
2 Charter?

3 MR. ROLLS: Good morning, Cheryl.

4 MS. TRITT: Is it Rolls or Rolls?

5 MR. ROLLS: Rolls.

6 MS. TRITT: Simha Sethumadhavan? Simha?

7 I don't hear him. Brent Smith with Evolution --

8 MR. SETHUMADHAVAN: Hi, this is Simha
9 here. I'm on the line.

10 MS. TRITT: Hi, Simha, I'm sorry I
11 butchered your name.

12 MR. SETHUMADHAVAN: Oh, no problem.
13 Simha is fine.

14 MS. TRITT: Brent Smith with Evolution
15 Digital?

16 MR. SMITH: Yes, I'm here and my name is
17 not butcherable.

18 MS. TRITT: Okay. Dr. Joseph Weber?

19 DR. WEBER: I'm over here.

20 MS. TRITT: Oh, hi, Dr. Weber. Nice to
21 see you. And Robin Wilson with NAGRA?

22 MR. WILSON: I'm here, thank you.

1 MS. TRITT: I think that's it. It's
2 pretty good attendance, I'd say. And did you want
3 to say some --

4 MR. LAKE: Yes. Good morning. I'm Bill
5 Lake, the Chief of the Media Bureau, and on this
6 cold morning in Washington I just want to extend a
7 very warm welcome to all of you who've agreed to
8 serve on this committee and thank you in
9 particular for your cooperation as we rescheduled
10 the meeting as we were forced to do in deference
11 to the weather gods. This rescheduling was a
12 one-time event and we pledge that our subsequent
13 meetings will fit easier into your travel
14 schedules.

15 Most of all, thank you for donating your
16 time and your tremendous talents to develop a
17 common security approach for video service that
18 consumers across the country can use. A common
19 solution will be win-win-win. It will allow
20 consumers to choose to lease or buy a device
21 easily. It will allow MVPDs to activate devices
22 and prevent theft easily. And the solution will

1 allow companies to build devices with confidence
2 that they can be used with an operator's services.

3 I'm optimistic by nature and my optimism
4 is bolstered by the interest that you and others
5 have shown in this committee. It shows that
6 everyone is eager to fulfill Congress' vision of
7 developing an industry-wide solution to
8 downloadable security.

9 Thank you again very much and we look
10 forward to seeing your report.

11 MS. TRITT: Thanks, Bill. Brendan, did
12 you have some housekeeping things you wanted to
13 talk about?

14 MR. MURRAY: Sure. So, the restrooms
15 are, if you go straight through this door, to the
16 left, there are restrooms. There's a cafeteria on
17 the courtyard level. Lunch will be at noon.
18 There are also food trucks in front of the
19 building although you'll have to go through
20 security again. So, plan on that.

21 We do have Wi-Fi here. If you need the
22 Wi-Fi password it's FCC (Federal Communications

1 Commission) 23771. That's FCC23771.

2 And for folks on the phone, it sounds
3 like you're doing it, but if you can mute your
4 phone unless you're talking, that would be very
5 helpful to us so we don't get feedback. And for
6 everyone in the room, if you can talk into the
7 mic, I don't think every single person has a
8 dedicated mic, but if you can talk into it
9 closely, it will help us for everyone here and to
10 get it down on recording.

11 I think that's it. So, I'll throw it
12 back to Cheryl.

13 MS. TRITT: Okay. As I said earlier,
14 I'm Cheryl Tritt and I've been tasked to chair the
15 committee and to facilitate, on a fair and
16 impartial manner, the preparation of a statutorily
17 mandated technical report. I am a special
18 government employee for this purpose and I
19 represent no other interest.

20 I also should note that Simha and I are
21 both the only government employees or special
22 government employees on the committee and we have

1 a vote, we will be voting members of the
2 committee.

3 I've been on the telecom side of the
4 industry for 30+ years and my focus and my
5 practice has been on the wireline/wireless
6 satellite and spectrum side. So, I can assure
7 you, I bring no predisposition on these issues to
8 the table at all.

9 Our directive, as articulated by the
10 STELAR legislation with mind-numbing specificity
11 is to produce a report that identifies and
12 recommends performance objectives, technical
13 standards and capabilities for not unduly
14 burdensome uniform and technology and platform
15 neutral software based downloadable security
16 system, that it's designed to promote the
17 competitive availability of navigation devices.

18 STELAR expects that the availability of
19 a downloadable security system will further the
20 aims of Section 629 of the Communications Act.
21 We're not here to debate whether Section 629 of
22 the Act is a good provision or how it should be

1 interpreted, rather the legislation makes clear
2 that the committee focus should be on the
3 technical aspects of the issue.

4 The committee, as a general matter, is
5 not invested with responsibility for policy
6 issues, so let's not waste time trying to resolve
7 issues outside the scope of the committee. Any
8 technical issues that can't be resolved here, and
9 some policy issues, may be rolled into an NPRM in
10 the future.

11 I have spoken briefly with almost all of
12 you, I think, on the telephone before this meeting
13 and I've been very impressed with the broad and
14 varied knowledge base and skill sets represented
15 by the group. I've also been heartened by many
16 members' stated desire to try to reach a consensus
17 view on the report, so if this committee can't
18 produce a first rate report, I really don't know
19 who can.

20 One of our mutual tasks will be to keep
21 the committee and its discussion on track and
22 moving forward we have very little time to produce

1 this report, terrifying in my mind, it's due
2 September 4th and we're going to have to stay very
3 focused to get the work done.

4 In that vein, let's be mindful that
5 while we're here to share and to advocate our
6 views, our audience likely would appreciate
7 hearing those views stated very succinctly and to
8 the point. Another reminder that probably isn't
9 necessary, but I'm going to say it anyway, these
10 issues are very difficult and over time, as I
11 understand it, have generated heated discussions
12 and deeply held views.

13 That's all good and well, but let's
14 remember to keep our sense of humor as we go
15 through this process, and while we take the work
16 very seriously, let's not take ourselves so
17 seriously.

18 Our goal is to produce a report which
19 enjoys consensus among the committee, but if we
20 can't achieve consensus, we will take a vote and
21 the majority view will prevail. Those members
22 holding minority views will have an opportunity to

1 draft an opposing report.

2 I note that the written work product
3 must be completed by the committee, not the FCC,
4 the committee and so you should be thinking about
5 who has the capabilities and the resources to do
6 the drafting. We may think about forming drafting
7 committees or a single committee or multiple
8 committees during our discussions this afternoon.

9 So, that's all I have for now. Let's
10 get to work.

11 MR. MURRAY: The good news is, were
12 ahead of schedule. We'll start the discussion now
13 of the scope of the report. Alison is going to
14 give a brief overview to help frame the
15 discussion.

16 MS. NEPLOKH: So, good morning. So,
17 being mindful of the short timeframe with which we
18 have to complete this report and hopefully create
19 a solution to this problem, we're going to get
20 right into the substance of what it is we're here
21 to do. And with that, I'm going to kick off with
22 a discussion of the proposed scope of the solution

1 and ultimately how we're going to get to a point
2 of actually defining what that solution is.

3 So, first there are two main areas of
4 discussion that I think are important to
5 determining the scope of the report. First, we
6 should talk about use cases, what is a navigation
7 device and what fits into that category, and
8 second, what it is that we're actually trying to
9 accomplish. Ultimately what we're looking for is
10 a replacement for the CableCARD system that is
11 going to provide the downloadable, you know,
12 software-based security system to provide that
13 replacement.

14 Second, I think we should talk about
15 what kind of content and services, and as John
16 Card pointed out, there's some amount of flux in
17 that within our walls, in order to come up with
18 the appropriate scope of content to be discussed.

19 After I get through that then I'm going
20 to talk about defining the solution in terms of a
21 black box model. And then from then until lunch
22 we'll open it up to discussion from members of the

1 committee.

2 So, for use cases of navigation devices
3 we think about those traditionally as television
4 sets, at the time, VCRs were in usage now we think
5 about DVRs and things like that, but also things
6 like streaming sticks or game consoles or PCs or
7 mobile devices or tablets of any kind, and so when
8 we think about the types of devices to consider,
9 we should think about different use cases.

10 There may be additional devices that I
11 haven't listed there and it may be useful for us
12 to talk about that in a little bit.

13 Another point to point out is that we
14 understand that networks are in varying stages of
15 upgrading to IP but it seems that most of the
16 video delivery networks are in the process of
17 getting there and by the time this solution can
18 really hit the shelves, we expect that most, if
19 not all, networks are IP, so an IP-centric
20 approach may be useful here.

21 Another thing, when you start to think
22 about some of these use cases, maybe tablets and

1 mobile devices could be served by an HTML-5 type
2 of interface whereas others, such as DVRs, may
3 want a lower level access to the content, and so I
4 think it's important to be mindful of different
5 types of use cases for that reason.

6 Again, the goal is a software-based
7 replacement for the CableCARD that will allow a
8 manufacturer to build a functional equivalent of a
9 CableCARD device that works with any MVPD, any
10 software in a platform and technology-agnostic
11 way.

12 As far as content to be included in
13 scope, certainly we want to think about any kind
14 of linear content, but also on-demand delivery of
15 content, which is increasingly becoming part of
16 the content ecosystem. There may be certain
17 aspects to the on-demand delivery that fall
18 outside of the scope, like how a customer would
19 order that content, but at the very least I think
20 we need to discuss the basic building blocks
21 necessary to allow secure delivery of on-demand
22 content as well as linear content.

1 So, finally, this idea of discussing
2 this in terms of a black box, that is essentially
3 thinking about this downloadable security module,
4 the replacement for CableCARD module in terms of
5 what are its inputs and outputs and capabilities.
6 So, we need to think about the communication from
7 the retail product into the black box, how you
8 would request content, how you would authenticate
9 a subscriber, think about the communication from
10 the black box to the retail product, if it's going
11 to be outputting video, in what format, what meta
12 data, what encryption technologies that it may be
13 using as its output technology, and then we need
14 to think about how the device is used, how the
15 security module authenticates content, not
16 necessarily how it works on the operator side, but
17 if it needs to authenticate that the product that
18 its embedded in is a valid product, how it's going
19 to authenticate, how you're going to have a
20 certificate chain or whatever mechanism by which
21 to authenticate the device, and finally, how you
22 authenticate the subscriber, you know, that's -- a

1 big feature is how is a subscriber going to get
2 hooked up onto the networks, so, are they going to
3 provide some subscriber credentials, are they
4 going to call up the operator, is there going to
5 be some kind of a unique ID, and those are
6 probably the main features that, I think, at
7 least, need to be considered in developing a
8 successor to CableCARD.

9 And so, with that, I think, I'm ready to
10 open it up to other people around the room to have
11 additions or subtractions, either to the scope or
12 to the inputs and outputs of the black box.

13 There are a lot of people here. You
14 must have opinions. Yes, John?

15 MR. CARD: I'm John Card. Before I get
16 started, I'm here -- I work for EchoStar, I'm here
17 representing DISH, but I want to call out one
18 person in the peanut gallery, I guess, Steve
19 Dulac, from DirectTV, and I have been talking
20 quite a bit. I think the two DBS service
21 providers share a lot of common technologies and a
22 lot of similar kind of requirements. So, my hope

1 in representing DISH is not to leave DirectTV
2 stuck in a backwater where they're unable to
3 perform their job.

4 We've gone back and forth and talked
5 quite a bit before this committee meeting and
6 developed some ideas and some positions.

7 Alison, I think your idea that systems
8 are moving towards IP may be accurate, but it's
9 unlikely to happen in the DBS industry, at least
10 for the satellite delivery. Those systems are
11 likely to remain transport-stream based, kind of
12 in perpetuity. Both companies do use IP delivery
13 in the home. We've both got devices that attach
14 to home networks and we support customers bringing
15 tablets and their own kind of mobile devices
16 already into the system, so IP is certainly a part
17 of the systems that we understand.

18 I think in looking at trying to treat
19 the system as a black box, the downloadable
20 software security system as a black box, I think
21 DBS has a couple of interesting characteristics
22 that probably will become evident at the DSTAC

1 continues on, the primary one being that most of
2 our customers run in a unidirectional environment,
3 even those customers that have a bidirectional,
4 say, a broadband or sub broadband communication
5 path, don't actually have a reliable -- in the
6 sense of a security -- reliable communication
7 path.

8 By way of example, let's say if I'm home
9 and I've got broadband from, we'll say AT&T,
10 although I'm gesturing towards your chair, Dr.
11 Ansari, let's say I have AT&T as my broadband
12 backbone, I can't, as DISH Network, rely on that
13 backbone being up 100 percent of the time because
14 I don't have any control -- I have no input into
15 those operating characteristics.

16 Furthermore, if there's any kind of
17 usage patterns that I as a customer, I might want
18 to pay graduated fees, you know, the more
19 broadband I use, the more I pay -- some of the
20 systems are like that -- for DISH Network then to
21 come along and take over some of that broadband
22 bandwidth for its own security seems to be

1 problematic, at least from a commercial
2 standpoint. And, again, I think we may get into
3 some commercial requirements as we go forward.

4 Secondly, I think, is a question of
5 cloned devices. More than a decade ago the DBS
6 industry was faced with one of the avenues of
7 piracy that was prevalent on the DBS devices would
8 be to authorize one box and have that
9 authorization signal that flows over the
10 unidirectional broadcast get to multiple boxes so
11 that, in essence, I could subscribe to a bundle of
12 services and the 2,000 other boxes that were built
13 the same as mine would get that same authorization
14 message.

15 That's something that both companies
16 have successfully been able to overcome, partially
17 in conjunction with our smart card vendors. NAGRA
18 happens to be represented on the committee and NDS
19 is now part of another structure, but I'm sure
20 they continue to do the same for Direct TV.

21 So, I think, again, DBS is going to be
22 the problem child here and bring in some unusual

1 challenges if we're looking at trying to write the
2 requirements for a downloadable system that runs,
3 truly, everywhere.

4 I think that's probably enough for now.
5 I'm done speaking. I have a feeling I won't be
6 silent for the rest of the day, but you never
7 know. Thank you.

8 MS. NEPLOKH: Excellent points. Anybody
9 else have anything to add?

10 MR. ROLLS: I don't know if you can hear
11 me? This is Jay Rolls with Charter. So, I might
12 add, you can go down to a lower level, and I'm not
13 going to get into some of that, we probably will
14 later, but at a high level I might suggest that we
15 need to worry about some forms of renewability
16 just for having a hardened security system. So,
17 that needs to be in the back of our head and just
18 high quality. We always talk about quality, we
19 talk about -- you know, you talked about encoders
20 or decoders, that's the fast moving space. We
21 have HEVC and 4k, of course, on the cusp here, so
22 we have to be mindful of that too.

1 MS. NEPLOKH: So, you're talking about
2 high quality in terms of the video delivery?

3 MR. ROLLS: Correct.

4 MS. NEPLOKH: And I think renewability
5 goes to John Card's point as well there.

6 Anyone else?

7 MR. HESS: Yes. Some clarity, just
8 making sure, because everybody hears different
9 things when they hear stuff, so I just -- I always
10 seek to understand first and then try to
11 understand what's going on.

12 But when you say black box I guess
13 you're kind of actually talking about a piece of
14 equipment? Is that how I should think about that?
15 Or -- I'm a little -- just want to make sure I'm
16 not -- don't go off the reservation too early for
17 you, Alison.

18 MS. NEPLOKH: Oh, no, Mark. No, that's
19 a very good point. So, I think -- I'm thinking of
20 black box in the abstract concept sense, in the
21 logical black box, although in reality we may be
22 talking about an actual black box in the sense of

1 a secure microprocessor in which these things
2 happen, but I think at least for the purposes of
3 our initial discussion, thinking about it in terms
4 of more the logical concept black box rather than
5 physical concept black box is where I was headed.

6 MR. HESS: Yeah, I guess I -- I think
7 one of the things we'll have to be thinking about
8 -- and I think it's going to be really, really
9 important, because I understand my network pretty
10 well, I don't understand John's very well, I --
11 you know, we all use different forms of
12 modulation, forms of distribution.

13 I kind of agree with John that while we
14 all are moving quickly towards IP, there will be a
15 one-way broadcast for quite a while as well, we
16 need to consider that. You know, there's a lot of
17 system information that's involved with this, EAS,
18 you know, two-way connectivity to make things
19 happen, advertising inputs. You know, I just read
20 this thing the other day, one of the biggest
21 complaints around TV everywhere is the fact that
22 the advertising payload kind of stays the same

1 through the whole show. Very concerning for
2 customers. So, as we get more sophisticated with
3 that, being able to get that data back, cable
4 companies specifically are regulated very heavily
5 on how they can use the data, what that data can
6 be used for, so those types of things have to be
7 considered.

8 So, you know, I think one of the things
9 I'd like to put out there is that, you know, at
10 some point in time some type of raising of
11 education about all different MVPDs, how that
12 works, including, I suppose, you know,
13 over-the-top video providers as well. I mean,
14 everybody's using different distribution methods,
15 different security methods, have different system
16 information aligned with their services, so it's
17 pretty complicated stuff. So, I think raising our
18 education probably is an important part for the
19 whole committee.

20 MS. NEPLOKH: And that's certainly a
21 very good point. One thing I would point out is
22 that the statute actually charges us with coming

1 up with a platform and technology-agnostic
2 approach to this, and I think that may be where
3 our biggest challenge is, is trying to figure out
4 how to make that work.

5 So, Adam?

6 MR. GOLDBERG: Yes. I think that the
7 sort of black box way of looking at it kind of
8 abstracts away a lot of the difficulties Mark was
9 just talking about. If we can describe a system
10 where I can go to the store and buy a box, a TV,
11 whatever it is, bring it home, plug it in, and it
12 works, the consumer doesn't really care whether
13 there needs to be, you know, a box in the house,
14 outside of the house, if it's just an IP
15 connection to the universe or what, they really
16 don't care at all. What's important is that
17 they're able to buy and own a device and that it
18 works, kind of no matter what they -- what service
19 they subscribe to, whether it's John's or Mark's
20 or whether they want to buy a TV from Ken or a
21 TiVo from Joe, it's all the same to a consumer in
22 that respect.

1 So, I think that looking at things from
2 a don't care so much about all the internal
3 intricacies of the delivery network and look at
4 things from a, you know, what needs to be supplied
5 to a device that a consumer purchased and how that
6 works.

7 MR. MURRAY: And that's something we're
8 going to talk about this afternoon about kind of
9 what the expectations from each of the interested
10 parties here is, you know, what each party needs
11 in order for this report to be fruitful.

12 MS. NEPLOKH: Milo?

13 MR. MEDIN: Yes. I think you raise an
14 interesting point about the role of IP and the
15 different evolution paths that operators are
16 taking to get there. I think one of the questions
17 is timing because I think if we're going to
18 replace CableCARD, and the implication is that a
19 CableCARD is not necessarily long for the world
20 from a timing perspective, then that says that we
21 may not count -- we should not count on IP
22 transport being the dominant mechanism.

1 So, I think the issue is not all
2 operators move in the same timeframes, so we need
3 a solution that we can migrate from CableCARD to,
4 I think, without a multi-year gap in the middle.
5 I think that loses momentum. I don't think
6 anybody here really would like to see that.

7 MS. NEPLOKH: What do you think the time
8 horizon is under which -- if not all networks, and
9 perhaps not the satellite delivery -- but at least
10 the wire line based networks would get to IP
11 ubiquitously, if not 100 percent?

12 MR. MEDIN: Other people should chime
13 in, but I think, you know, the fiber guys
14 obviously are IP pretty quickly, though even
15 Verizon uses RF over glass and that's not a
16 standard sort of QAM transport in that mechanism.

17 I think when I look at smaller operators
18 -- smaller cable operators -- they may take a very
19 long path to get to full IP transport replacing
20 their standard QAM transport with IP over QAM and
21 so I think that's one of the challenges. I don't
22 know if the cable guy should say that. A little

1 long in tooth on that topic.

2 MS. NEPLOKH: I see Jay nodding. Jay,
3 do you have a rough projection?

4 MR. ROLLS: Well, the hard part is it's
5 going to be an evolution and there's going to be
6 piece parts, they're going to go IP before other
7 parts do, and so when the definitive end of that,
8 I have no idea, but it's happening already, of
9 course, with the consumer owned device apps that
10 we have and it will expand and it is moving fast,
11 but I'm at a loss to actually give you a date of
12 when that transformation is complete.

13 MR. MEDIN: I think we would all agree,
14 in the home, IP is not a problem at all. I think
15 the issue is on the transport side, getting to the
16 home, that's going to be -- that's where the delta
17 in time and architecture happens.

18 MR. CARD: And as your delta approaches
19 infinity, then that's true for satellite. But
20 you're right, Milo, within the home and for your
21 over-the-top services, IP is absolutely -- I
22 suspect there will be no strong disagreement that

1 IP is a part of the solution for most content
2 delivery systems.

3 MR. GOLDBERG: But again, though, I
4 mean, on the consumer side of whatever the black
5 box is, I mean, inside someone's home network, if
6 we can all agree that that should be IP, then a
7 lot of the stuff maybe gets a little easier about
8 the differences between networks and how long
9 conversion from QAM to whatever is next or
10 whatever it takes becomes easier to deal with, I
11 think.

12 MS. NEPLOKH: I note that the consumer
13 electronics companies have been kind of quiet
14 during this discussion.

15 MR. LOWE: One thing that I'd like to
16 say is, during this evolution, depending on how
17 long it would take, we would prefer that the
18 sunset period for a CableCARD overlaps greatly
19 with the next step so that we're not left with a
20 span of a few years when we cannot be selling any
21 devices or that everyone that we have sold a
22 CableCARD device to all of the sudden has no

1 option.

2 MS. NEPLOKH: And I think that's a good
3 point. In general, I think we're going to try to
4 keep the discussion to the technical aspects of
5 the future solution and not any sort of policy
6 concerns. But, Joe?

7 DR. WEBER: This is Joe from TiVo. I
8 appreciate the discussion on the scope, Alison. I
9 think you did a good introductory summary and we
10 heard some of the other complexities. Just the
11 discussion, as you said, the black box, whether
12 that's inside the consumer electronics device,
13 outside, I think the only thing that matters to us
14 that want to build devices is the complexity and
15 how many of those there are. And, again, I'm
16 thinking more of their internal, as you said, SOC,
17 downloadable condition access system. In short,
18 we want to build boxes and get them to consumers
19 and if there are 14 different versions of this
20 black box I have to build into a TiVo device, you
21 know, that is not feasible.

22 And so, in terms of scope we'd hope that

1 -- I think it's actually one of the words in the
2 scope definition, that it's feasible to build and
3 sell at retail, meaning it's economical as well.
4 So, just in terms of that how many of these black
5 boxes, to use your terms, there are, hopefully
6 it's a finite number that we can manage.

7 MS. NEPLOKH: And I mean I think we've
8 heard from a couple of operators that they're not
9 confident that their systems are necessarily
10 compatible but could we get to a point where
11 there's a single chip that could work across all
12 of these platforms for the security components or
13 are we inevitably in a future in which there are
14 multiple different chips?

15 MR. ROLLS: I'll take a swag at that. I
16 think that that will be a lot of the discussion
17 here early on. I think we really need to probe at
18 that and see if we can get an answer to that
19 question. It is kind of a key question.

20 I think you know this, but for the
21 benefit of others, if we were starting greenfield
22 I think the answer would be, absolutely yes, we

1 could easily do that. I think the tough part is
2 not only the transport that we talked about, we
3 have these different transport systems, we all
4 have different security systems and we have to
5 have compatibility because otherwise we would be
6 doubling the bandwidth that we would need on our
7 network for a new security system. That, of
8 course, is the really hard part, having just been
9 working on this for the last two years.

10 MS. NEPLOKH: Let's get to Bob Clyne.

11 MR. CLYNE: Along with what Jay had
12 mentioned, we also have different types of
13 interfaces where I need more processing power than
14 somebody else, and if we were to pick a chip that
15 could not do what I needed to do as far as
16 rendering my UI or any of the services that I was
17 offering, that would also lead to major problems
18 because that one box would not be able to work on
19 all systems or that one SOC.

20 MR. MESSER: This is Alan from Samsung.
21 I don't know if you can hear me, but hopefully.

22 MS. NEPLOKH: Yes.

1 MR. MESSER: I have a comment that is
2 related and I think the problem is -- well, one of
3 the problems, one of the concerns we may have is a
4 discussion of a chip. I think we have to consider
5 ourselves the hardware and the software solutions
6 and a big concern on our part on having to put
7 potentially a particular piece of hardware that
8 might pose significant (inaudible) costs in the
9 wide variety of devices that we make from phones
10 to tablets and, you know, it could be anywhere,
11 refrigerators or DVRs, et cetera, I think we need
12 to consider perhaps that thinking of this as a
13 chip might not be the right mindset.

14 MS. NEPLOKH: I'll let Adam react to
15 that.

16 MR. GOLDBERG: I'm confused maybe a
17 little bit, Alison, why we were talking about a
18 black box and then we're talking about a chip. I
19 think it's -- if we're focusing the discussion on
20 is it possible to have "a chip", I think that's
21 quite different from looking at things from the
22 perspective of a black box because in the black

1 box we don't care -- I think we shouldn't care
2 whether there's one chip or many or different
3 chips or what or whether there needs to be any
4 chips at all in the box, right?

5 MR. MESSER: Absolutely.

6 MS. NEPLOKH: Actually, that's a good
7 point. Perhaps that discussion should be saved
8 for later, but I think at some point this is the
9 issue that lots of companies have raised every
10 time the downloadable security question has come
11 up is how do we do this without having a piece of
12 hardware we can trust.

13 So, I think you're -- sure.

14 MR. WILSON: Just from our experience
15 from the content suppliers and owners, there's a
16 vast range of security requirements from very
17 little to extremely high and I don't think that's
18 going to change. The whole scale may slide
19 upwards over time, but the value proposition sort
20 of stays the same.

21 So, I just don't see -- today there's
22 not one solution for all. There's low resolution

1 signals in open devices, which are done with
2 abstract software, basically, then there are 4K
3 signals, LE release windows, which are -- well,
4 they're almost impossible to be released right now
5 because there aren't enough hardened devices out
6 there. Those are the two ends of the spectrum.

7 There's many things in between and I
8 think, because we're not all talking about 10 ATP
9 or 4 ATP, or whatever the -- there's a whole gamut
10 from half that resolution to 4K and what comes on
11 beyond 4K. So, there's many levels of solution.

12 There's a concept, which I think I hope
13 we'll get to called robustness, which is a sort of
14 a -- the term of the trade for the hardness as far
15 as how it matches the value of the content.

16 MS. NEPLOKH: Yeah.

17 MR. SMITH: Alison, this is Brent from
18 Evolution. I think it's actually kind of
19 important that we take a good look at where we've
20 come from. This industry, from an MVPD
21 perspective, with the CableCARD the intent was
22 absolutely, you know, laudable, the idea of

1 having, much like what Adam's saying, there's a
2 device that goes in, I go to Best Buy or wherever
3 and I buy this device, I plug this in, and the
4 security is addressed.

5 And with the exception of really TiVo,
6 the retail market really has not progressed.
7 That's the reality of it. Yet there's been
8 billions of dollars invested in having these
9 devices bolted in to every set top box with
10 security screws. So, the idea of separable
11 security is a bit of a misnomer in that respect.

12 Again, the intent was there, laudable,
13 but the fact is that we cannot associate security
14 and tie that to a service. The problem is that
15 taking a security module -- and let's say that
16 we're going to replace this CableCARD with
17 something else, a black box, virtual or otherwise,
18 still we're going to repeat the same behavior,
19 which was, okay, we've associated security as the
20 only means for which we tie this together.

21 Well, the fact is, it's a service. A
22 cable operator provides not only security of that

1 signal, but he provides a program guide, he
2 provides interactive services and so forth, in the
3 case of Dish and DirecTV, there's other aspects of
4 their product that they bring along with it aside
5 from just security.

6 So, the idea of just simply saying,
7 okay, we're going to get a black box and we're
8 going to do the same sort of behavior of saying,
9 okay, we've fixed this security issue, well, it
10 still doesn't address the fact that MVPDs have
11 their own customized content, customized delivery
12 of interactive services and so forth.

13 So, I think we need to be really
14 cautious not to, again, repeat the same behavior
15 and expect a different result. And the final point
16 I'll make here is that the landscape has changed
17 dramatically from when CableCARD regulations
18 initially were put into effect. At that time,
19 there was no Netflix, at that time there was no
20 really high speed broadband that allowed streaming
21 and content that we see today from Amazon and Hulu
22 and others. It was a managed service and the

1 cable operator took all those services in from the
2 programmers, packaged them, scrambled them, sent
3 them down the pipe, and then there was a singular
4 device that descrambled it.

5 Well, let's look at today's world, and I
6 think we all experience this at a personal level,
7 there's maybe one or two, maybe three set tops in
8 the home, but there's five or six or seven video
9 consumption devices which are mobile. Those are
10 unmanaged video services. The cable operator has
11 no control -- virtually no control over how the
12 service is encrypted, delivered, the type of
13 player they use. There is no aggregation point.

14 So, I think it's important that we look
15 at, when we come up with a plan here, is to take
16 into consideration that we cannot maybe burden an
17 MVPD on the type of security mechanisms that he
18 uses when the unmanaged services -- and I'll even
19 point to CBS, HBO, all wanting to go direct to
20 consumer -- how are those issues going to be
21 addressed in terms of an overall security
22 mechanism that we want to employ here?

1 MR. ANSARI: This is Ahmad Ansari with
2 AT&T and I agree with everything that was just
3 said.

4 So, as (inaudible) service provider
5 (inaudible), what you are providing is
6 significantly more than just delivering a plain
7 audio and video stream. We provide a number of
8 different applications and value added services so
9 that allows us to innovate and offer a really
10 valuable service so we can compete in the
11 marketplace. This is something we need to take
12 into account.

13 MR. MCCOSKEY: This is John McCoskey
14 with MPAA. I think from a content perspective I
15 think we have to remember that content is licensed
16 to MVPDs on an individual license basis, and often
17 those licenses have technical requirements and
18 those technical requirements are changing, to
19 Robin's point, particularly as we look at higher
20 quality content and the needs to protect that
21 content.

22 So, we need to have something that

1 doesn't forget that these licenses on top of this
2 system have to respect that relationship between
3 content providers and distributors.

4 MS. NEPLOKH: And, again, as I said
5 before, I mean, I think that it's important to
6 keep all of these things in mind, but we're trying
7 to focus the -- this working group, given the
8 extremely limited timeframe that we have, to the
9 technical issues needed to meet the goals of the
10 statute, and, again, with the main goal being to
11 replace the downloadable security system and the
12 -- replace the CableCARD itself, and that is the
13 charge that Congress has given us.

14 Yes, John?

15 MR. CARD: Well, given your immediate
16 statement that we're trying to focus the work on
17 the committee, I guess I'm not going to hesitate
18 in asking this question, but I'm going to ask --
19 understand the ramifications of it.

20 I think there is a proceeding before the
21 media bureau right now that is envisioning looking
22 at the -- changing the definition of MVPDs, and I

1 sent an email -- just to let the rest of the
2 committee know -- sent an email off to Cheryl and
3 the FCC staff asking this question on Friday and I
4 got back a, gee, that's a good question answer,
5 which is fine.

6 The question is, should we consider
7 over-the-top services? At the moment, they are
8 not considered to be MVPDs, but within the
9 lifespan of the DSTAC, they might well be, some of
10 them, considered to be an MVPD service and if we
11 need to do a comprehensive job, what does that
12 mean for the scope and the boundaries of our
13 considerations?

14 The three ideas that I asked and put
15 forward, one is to recognize that that decision is
16 pending and imminent and over time there are going
17 to be more MVPD services, so, yes, we probably
18 ought to start considering over-the-top right now.
19 DISH Network launched the Sling TV service --
20 announced the Sling TV service at CES and has
21 launched it, so we believe we have an over-the-top
22 MVPD service already going.

1 Number two would be to wait for that FCC
2 decision, make sure that it's indeed going to read
3 into what we do and then add that to our scope
4 halfway through. And number three is, decide not
5 to address it and note in very clear, bold type,
6 by the way, we chose to ignore over-the-top
7 services in our recommendations.

8 The feedback I got back, at least from
9 Brendan was, you know, choice one or choice three,
10 either incorporate those fully or clearly note
11 that we are not considering them would seem to be
12 best for not disrupting the group. Waiting until
13 that decision is made seems to be the worst of
14 those three alternatives.

15 So, you know, from DISH's perspective,
16 we like certainty more than anything else. We
17 don't particularly want to throw out or include
18 over-the-top services. We believe over time
19 consumers are going to find the service in the way
20 they need and if the software security is a part
21 of that, it's going to come in because of content
22 requirements. So, I would like to ask the other

1 members of the committee what they think about the
2 inclusion of over-the-top services into what we're
3 deliberating today, whether those are important or
4 whether they should be explicitly left out.

5 MS. NEPLOKH: Milo?

6 MR. MEDIN: I think what you mean by
7 over-the-top changes quite a bit over time and I
8 think the -- just to keep the work of this
9 committee reasonably bounded, trying to
10 incorporate everything by somebody's definition of
11 over- the-top would be quite a boil the ocean
12 exercise.

13 I think the core thing, I think, we're
14 trying to address here is a successor for
15 CableCARD. A CableCARD doesn't deal with
16 over-the-top content today, and I think in general
17 we see lots of consumer devices out there that
18 have over-the-top, from a variety of different
19 sources on them. That doesn't seem to be a
20 problem in terms of finding consumer devices that
21 could talk to a variety of things. What we don't
22 have is consumer devices that are easily usable

1 that talk to linear video and VOD, which is, I
2 think, where the committee's focus is.

3 So, I think, try to be a little bit
4 arrow, given the timeframe we have, would be a
5 little helpful here and not trying to solve
6 problems that don't exist.

7 MS. NEPLOKH: Yes.

8 MR. CLYNE: Just to get a little
9 clarification on that. If an MSO takes all of its
10 content, puts it out as an IP over a DOCSIS
11 channel, its IP going into the home, is that
12 considered an over-the-top?

13 In Cablevision's instance, we're
14 planning on going all IP as quickly as possible.
15 Now, am I an over-the-top provider? And what if I
16 did away with my QAM?

17 MS. NEPLOKH: I think we're starting to
18 venture a little bit into the policy discussion
19 rather than the technical discussion, but I think
20 that at the very least we should consider the
21 possibility of an operator using IP to deliver its
22 content to the home and hopefully if we do our job

1 and do something in a platform and
2 technology-neutral way, it doesn't necessarily
3 matter whether it's over-the-top or provided over
4 a managed platform or some other means.

5 MR. GOLDBERG: So, if the network on the
6 consumer side of the black box is IP, or whatever
7 we decide it should be, I think IP is a good
8 choice, it kind of doesn't matter at all whether
9 the MSO is delivering things over a managed IP
10 network or whether Sling TV is coming over-the-top
11 as part of a service that comes from somebody who
12 is also -- or is an MVPD, or whether it's coming
13 from some completely alternate, over-the-top that
14 may or may not be an MVPD based on whatever the
15 outcome of the proceeding is.

16 I think that if we're able to describe a
17 single interface to the black box, a lot of these
18 problems just go away, it's just a black box.

19 MR. MURRAY: Can I interrupt with a
20 ministerial thing first? For the benefit of folks
21 on the phone, and perhaps for the transcribers,
22 can we identify ourselves before speaking?

1 Thanks.

2 MR. HESS: This is Mark Hess with
3 Comcast.

4 MR. MURRAY: Sorry, this is Brendan
5 Murray. Sorry about that. Thank you.

6 MR. HESS: I wanted to get back to
7 John's question, because he asked the whole
8 committee and only Milo kind of answered, but do
9 we include him in over-the-top, is that an MVPD?
10 I agree, Milo, there are so many that where do you
11 start doing it, but, you know, once again in my --
12 I always like to understand what we're trying to
13 accomplish, even by who's here, so -- and Matthew
14 is not here -- but Amazon is here, who provides an
15 over-the-top video service, Google is here, who
16 provides an over-the-top video service. You know,
17 John kind of just announced his -- I don't know if
18 that happened before or after the whole thing
19 happened, but certainly there's an over-the-top
20 video service.

21 I'm not sure how you cannot include it
22 in the discussion in some meaningful way as we go

1 forward. And, yeah, there are problems that are
2 being -- it's maybe from a consumer standpoint, as
3 Milo said, that they're able to get on other
4 devices, that's true enough, which kind of shows
5 that the marketplace -- the innovation around the
6 marketplace is happening so rapidly it's going to
7 -- that's one of the hardest problems we're going
8 to have as a committee, to find a point in time
9 and come up with something as this innovation is
10 bubbling up so quickly.

11 The other thing I just wanted to
12 mention, you know, Comcast specifically -- and I
13 think Charter would agree and I know Bob would --
14 you know, we do deliver a lot of our services,
15 both linear and on-demand, to customer owned and
16 managed devices, and so in a sense that that
17 problem is also being solved for, as Milo said,
18 it's happening for ourselves.

19 So, once again, the innovation in the
20 marketplace is going quickly. I guess I wanted to
21 make that point. But the other thing, is there a
22 way to clarify? Can the FCC clarify that since

1 there are over-the-top people here, did you intend
2 to have that as part of the discussion? Because I
3 certainly think it should be, as John said.

4 MR. MURRAY: That's a really good
5 question. I think from our perspective, if
6 everything was harmonized, that would be great. I
7 think it would make things a lot easier in, say,
8 10 years. We're trying to future proof. I don't
9 think we were trying to signal any way what's
10 going to happen with the MVPD NPRM.

11 Actually, I can make that a more solid
12 statement. We were not trying to --

13 MR. HESS: Yeah, I kind of assumed you
14 weren't. But that just goes to the -- you know,
15 overly burdensome, common, those are the words
16 that are in the description too. If we don't
17 include them, you've got a problem down the road.
18 If you do include them, you've got a problem at
19 this moment in time. So, it's just something the
20 committee's going to have to grapple with over the
21 next, as Cheryl said, very short time period.

22 MS. NEPLOKH: Thanks, Mark. This is

1 Alison. That's a really good point, but I think
2 that's an inevitable feature of sitting here in a
3 government agency discussing these standards for
4 something that is going to happen several years
5 down the road that we're going to run the risk of
6 not entirely predicting exactly where things go.
7 But I think we need to do the best job that we can
8 on that right now.

9 MR. LOWE: This is Kent Lowe from Vizio.
10 We definitely, definitely should consider
11 over-the-top and smart TVs because that is the way
12 the market is going. So, if we choose to ignore
13 it, we'll be sitting around this table in two
14 years time trying to take care of it again. So, I
15 think it is an error to ignore it.

16 MR. MCCLELLAND: This is Bruce
17 McClelland here with ARRIS. I agree with that
18 completely --

19 MS. NEPLOKH: Can you speak up a little
20 bit?

21 MR. MCCLELLAND: Sorry, can you hear me?

22 MS. NEPLOKH: Yes.

1 MR. MCCLELLAND: So, I would concur with
2 that. It seems a little odd to me that, you know,
3 given the way I understood the scope of the
4 committee to, at this stage, kind of redefine it
5 to be solving the CableCARD problem, you know,
6 with the way the networks have evolved, the way
7 the delivery mechanisms have evolved, it just
8 seems to be solving the wrong problem at this
9 point, and, you know, I guess I understood the
10 scope of the committee to be focused on, you know,
11 assuring this retail market for video navigation
12 devices and kind of by definition would need to
13 address the broader scope of MVPDs, including
14 over-the-top delivery.

15 MS. NEPLOKH: I thought I heard someone
16 trying to say -- yeah, Milo?

17 MR. MENDIN: I was just going to say,
18 you can be, you know, running an IPTV plant as
19 Google Fiber does, right, it's an all IP network
20 yet it's not considered over-the-top, it's a
21 managed transport service, and so a lot of times
22 you can get confusing about what it exactly means,

1 because when -- just like Comcast, I know Tony
2 Werner has made some comments about the services
3 you deliver via IP as being video services, right,
4 they aren't over-the-top services, per se, so I
5 think I would just say, whatever we do, we should
6 have a clean definition of what's in scope and
7 what's not because engineers have a hard time
8 building things that don't have solid requirements
9 behind them.

10 MS. NEPLOKH: Well, and I think you
11 point out, there are definitely IP networks that
12 are, without a doubt, MVPDs and without a doubt in
13 scope. I think we have another one on the phone.

14 MR. MEDIN: Yes.

15 MS. TRITT: I feel free to ask stupid
16 questions. Has the commission defined
17 over-the-top? Is it defined anywhere?

18 MR. MURRAY: I won't be able to do it
19 off the top of my head, but I believe, yeah, we
20 did -- the commission came up with a definition.
21 It's in a footnote, I believe, in the MVPD NPRM.
22 I can come back with that in the afternoon session

1 if folks want.

2 MR. GOLDBERG: Isn't it described as an
3 online video distributor or something in an
4 earlier document as well?

5 MR. MURRAY: Right. This is Brendan
6 again. Online video describer is used in a lot of
7 the accessibility rulemakings, but I believe -- in
8 the MVPD NPRM we used over- the-top and defined
9 it, not in the commission's rules, but for the
10 purposes of that NPRM.

11 MS. NEPLOKH: So, with that, I think
12 we've spent a lot of time on the scope. Perhaps
13 we should turn to the black box discussion and
14 really start to dig down into what inputs and
15 outputs from the black box, and again, I think we
16 aren't necessarily talking about a piece of
17 hardware and certainly not necessarily a piece of
18 hardware that exists fully outside of the retail
19 product, but just this idea of there is a device,
20 there is a component, there is a logical feature
21 that will provide the services necessary to have a
22 platform and technology-agnostic system to let

1 retail devices access MVPDs.

2 What do the inputs and outputs from that
3 black box need to look like?

4 Yes, John.

5 MR. CARD: John Card from DISH. Well, I
6 suspect for nearly all of the MVPDs concerned,
7 those inputs and outputs don't include a satellite
8 dish. However, that's a necessary part of a
9 customer's install in the case of DVS. The two
10 DVS delivery systems in the U.S. deliver our
11 content from different orbital locations using
12 different modulation systems, currently completely
13 different security systems. Touching on something
14 that Jay brought up on renewability, each of the
15 DVS providers has more of an evolution of smart
16 card security involved in its deployed system over
17 time. In other words, the smart cards that I'm
18 building and putting in set top boxes at this
19 moment are not the same ones as I did last year,
20 nor would they likely to stay the same for the
21 rest of the lifetime of the DVS platform.

22 DISH has gone through a couple smart

1 card swaps, so we have completely removed the old
2 security system and replaced it -- the hardware --
3 at its heart with a completely new piece of
4 hardware. And DirecTV has, I believe, gone
5 through a smart card swap as well. Steve Dulac is
6 nodding.

7 So, from a customer experience, what
8 this black box looks like for a satellite customer
9 has this weird wire running up to the roof or up
10 to something that can see the southern sky. While
11 it is certainly possible, for example, in Europe
12 the DVB has got some standards written that enable
13 retail devices to be built in that market.

14 I hesitate to suggest to anyone wanting
15 to get into the retail space they want to learn
16 the inordinately complex details of both DVS
17 platforms and be able to track what we do. It is
18 not impossible, but the EchoStar hat that I
19 brought with me says we can build set top boxes,
20 we obviously can, but the consumer experience, if
21 you're expecting to plug into a satellite dish
22 with your black box, is going to be challenging at

1 best.

2 There are some further challenges that
3 I've given some thought to that we can talk about
4 as well, but I would like to propose that it's
5 probably not practical for retail devices to
6 understand DBS complexity. Again, I'm interested
7 in hearing feedback from others on the committee
8 if I need to make a stronger case and describe the
9 joy that you're about to get yourself into, I'm
10 happy to do so and I will be supported in that on
11 the DirecTV side as well.

12 So, for your inputs, my hope is that's
13 not a DBS signal directly, but let's see what that
14 is.

15 MS. NEPLOKH: Adam and then, I think,
16 Joe.

17 MR. GOLDBERG: Adam Goldberg, Public
18 Knowledge. I think we might get all tripped up
19 with the differences between the various
20 distribution networks and inputs to the black box,
21 but I think in terms of outputs from the black
22 box, you know, maybe this is an incomplete list,

1 but it seems like it needs to include at least the
2 ability to discovery available services, tune to
3 those services for services which are available
4 but not to purchase, be able to purchase them, and
5 be able to receive some other -- some, sort of,
6 other required, maybe ancillary things that we're
7 all familiar with, like emergency alert
8 information, closed caption, and parental controls
9 information.

10 MR. MURRAY: This is Brendan again. If
11 it would be helpful, we have a white board here
12 that I could write things down. We're also having
13 a transcript, so if you'd prefer to just keep
14 talking it's up to the group. Anybody want the
15 white board? No. Okay.

16 MR. GOLDBERG: Sorry, and one last thing
17 -- the one last thing -- this is Adam again --
18 that maybe fell off that because it's kind of
19 implicit is the audio and the video as well and,
20 you know, that's not sort of a flip comment
21 because you've got to know how that's going to
22 come in order to build something that can do it.

1 DR. WEBER: This is Joe Weber at TiVo.
2 To your original question on the inputs and
3 outputs I think furthering some of what Adam said,
4 there's an existence proof today in terms of the
5 CableCARD and what that offers consumers in retail
6 devices, and so I think we have that as a baseline
7 and then we should build on top of that. In terms
8 of the outputs, as listed, the basic audio and
9 visual data that comes out and what's critical
10 here is that it comes out of a CableCARD in a
11 uniform way regardless of if it was delivered by
12 this cable operator with their conditional access
13 system or by Verizon with their own conditional
14 access system. So, the point is, it terminates
15 whatever was on the network, for satellite we hear
16 that it's quite more complex, but regardless, the
17 output of this black box should be the same.

18 And as for the content, some of the
19 others, of course, is portability. CableCARD
20 output, because it is uniform, gives us that
21 portability, so those two go together as something
22 that has the same output.

1 CableCARD regime, whatever this black box would
2 also have is the intellectual property
3 requirements along the outputs, so this should be
4 public standards, they should be a single place so
5 that a consumer electronics company, Vizio or
6 others, can go to and, again, as I said before, I
7 don't -- we can't have something where I have to
8 go for 14 different companies to learn about the
9 outputs. They should all be uniform in a single
10 place independently.

11 MS. NEPLOKH: So, is what we need
12 something to replace both the set of SET standards
13 that define CableCARD as well as the role of cable
14 labs that is sort of a clearing house for the
15 licensing and certification?

16 DR. WEBER: Again, (inaudible) what we
17 think the output should have, and this actually
18 goes to -- Brendan maybe could start putting them
19 on the white board or list -- but, again, its
20 existence proof point of what CableCARD has, let's
21 not go backwards. Let's maybe add to these things
22 that we already have today. Finally, sort of, Bob

1 -- this actually goes something (inaudible) goes
2 to one of his comments. The other thing the
3 CableCARD gives us is a retail user navigation,
4 that is, I am able to access HBO and others and on
5 demand through the Vizio or TiVo or other user
6 interface and not be mandated to use the
7 operator's user interface.

8 MS. NEPLOKH: I'll go to Bob and then
9 Milo.

10 MR. CLYNE: Bob Clyne. Are we talking
11 about a separate piece of equipment that is
12 outside of our existing cable boxes? And if we
13 are, it should not have to do video processing,
14 audio processing, it should just do decryption and
15 pass the video through back into the cable box.
16 That's -- you know, think about what the CableCARD
17 does today. It's a piece of equipment we've
18 inserted into our cable boxes. Are we just
19 replacing a black box for a CableCARD?

20 MS. NEPLOKH: I mean, I think that's a
21 good question and perhaps something that
22 ultimately will get discussed and debated in

1 working groups. I don't think we're necessarily
2 talking about some kind of physical conversion
3 device that takes in John's satellite signal or
4 your QAM signal or whoever's IP signal and then
5 converts it into a standardized, uniform IP output
6 with a standardized encryption. I suppose that's
7 one approach to a solution. I don't think today
8 we want to get into that question. I think we're
9 trying to figure out what it is that needs to come
10 out of the system in order to enable the retail
11 products to be made.

12 Yes, Milo and then we'll go to Mark.

13 MR. MEDIN: So, Milo Medin from Google.
14 So, I would just echo what Joe said. I think
15 that's a good baseline to start with, it's a
16 useful -- it's really useful to understand kind of
17 what basic functionality we're expecting out of
18 the solution. It's instantiations may look
19 different on different networks, you know, a cable
20 network might have QAM decode, an IP network like
21 ours might just be -- it might just be straight IP
22 through, but I think that's the right approach to

1 take and I think it's imminently workable.

2 MS. NEPLOKH: Mark?

3 MR. HESS: As the chairman of a
4 voluntary set top production of energy committee,
5 hopefully not talking about another device on this
6 point, just throwing that out there, since we're
7 all trying to limit our power, as it is, in the
8 home.

9 The other thing I'm worried about is,
10 you know, in an IP world, especially, you know, we
11 use the IP protocols -- you know, you don't need
12 hardware, so that's another kind of argument to
13 that.

14 What I actually wanted to talk about is
15 I think Adam just said that at least it can
16 discover the MVPD's services, which is -- that's a
17 good description, and Brent brought up very
18 eloquently, I think, our services are not just
19 video. When 629 happened, and we certainly aren't
20 here to debate policy, I'm just trying to
21 understand, again, what the definition of services
22 is and what we're trying to accomplish. So, when

1 629 happened I don't think, you know, digital TV
2 was just beginning at the time, the fact that EPGs
3 were kind of rudimentary, maybe people thought
4 they weren't important. I mean, that user
5 experience is now a key part of our service.

6 I think people saw last night an ad we
7 put out where, you know, our EPG actually has an
8 audio portion to it so that disabled can use it in
9 a more ready way.

10 So, I'm trying to make sure we get a
11 good definition from the FCC on what they believe
12 services mean, because our service now is an
13 interactive service, it includes a guide, it
14 includes discovery, it includes recommendations,
15 it includes interactive applications, caller ID, a
16 number of things that really make it a retail
17 product, not a wholesale product as the gentleman
18 from MPAA said.

19 So, I mean, I think -- and then if the
20 service is defined as that entire service, then I
21 need an understandable execution environment and a
22 lot of other things to make that service work

1 holistically. So, once again, I want to have some
2 clarity on what problem we actually think we're
3 solving, because the word "services" is pretty
4 broad and we consider our service to be a
5 complete, holistic service.

6 MS. NEPLOKH: Adam, reaction to that?

7 MR. GOLDBERG: Yeah, Adam Goldberg. To
8 be clear, though that's one way to describe like
9 the service that Comcast provides that's not at
10 all what I meant by service discovery. What I
11 meant by service discovery is, you know, what
12 channels and other discreet things are available
13 and deliverable or tunable, which -- whatever your
14 thoughts on the broader set of -- you know, the
15 service that Mark was talking about, the retail
16 devices do need to know what they can tune to and
17 how to tune to them, whether that's a portion of a
18 service or a service part of Comcast's delivered
19 package of things, you know, is just nomenclature
20 maybe.

21 MR. HESS: I kind of assumed that's what
22 you meant. I was actually wanting the FCC to be

1 able to, at some point, describe to us under 629
2 what service is, because our service is much
3 broader now.

4 MS. NEPLOKH: And I think it may be
5 helpful, perhaps, for a moment or two, to revisit
6 the use case part of my introductory remarks in
7 that there are different use cases for products,
8 people might have a television set that is
9 providing primarily display capabilities, they may
10 have a DVR that's providing some additional
11 services on top of it, people may have a game
12 console that is trying to integrate it into a
13 different experience, or tablets or other mobile
14 devices, and to think about how that necessarily
15 fits into a solution that works across all of
16 these use cases.

17 And perhaps for a moment -- did I omit
18 any important use cases from that list? Cricketts.
19 Okay. Do you want to take a five-minute break?

20 Yeah, let's go ahead and take a five-
21 minute break and we'll be back here at 11:15 --
22 11:16. Okay? Sounds good.

1 (Recess)

2 MS. NEPLOKH: Okay, so I'm glad to see
3 everybody back at the table. We're going to go
4 ahead and for the next 20 minutes or so, we will
5 try to get these black box inputs and outputs onto
6 the white board, and Brendan has volunteered to be
7 our Vanna White and write it down.

8 So, I suppose we should start -- Adam's
9 not at the table, but I think I wrote down his
10 list correctly. I hope he's coming back in in a
11 second. So, he said, service discovery, he said
12 how to tune to services, that term itself might be
13 a little bit antiquated, how to identify what
14 services are available for purchase and to
15 purchase them if they're not already subscribed
16 to. Then I think we heard some of the other
17 features that need to be enabled -- emergency
18 alerts, closed captions -- I'm going to go a
19 little bit more slowly to let Brendan catch up --
20 parental controls, the actual audio and video
21 streams, any kind of copy control information,
22 CCI, and then we heard over here, IP requirements,

1 maybe not as an output from the black box, but an
2 important question that governs all of these
3 outputs is how do you actually license the
4 technology necessary to use the black box.

5 Yes, Brad?

6 MR. LOWE: This is Brad. As in output,
7 and this might be related to service discovery,
8 I'd love to see something along the lines of a
9 guide data, like SET 65 (inaudible), you know, the
10 MGT and various tables -- related tables.

11 MS. NEPLOKH: Okay. And Milo?

12 MR. MEDIN: This is Milo from Google. I
13 would just say, that's especially important when
14 it comes to on-demand content. You know, Tribune
15 carries all our guide data for Google Fiber, but
16 the on demand data typically for an MSO is not
17 available via that mechanism, so we would have to
18 publish that expressly so that devices can gain
19 access to that.

20 MS. NEPLOKH: Okay. Are we missing any
21 outputs? If all of this came out, would we have
22 enough for a product to actually work?

1 MR. ROLLS: Maybe not in terms of
2 outputs or inputs, but I've given this some
3 thought before the meeting about the six elements
4 of a conditional access system, so some of these
5 may rule out, but I (inaudible) want to list these
6 out -- core ciphers is one of them, so that's not
7 really an output or input, it's what is actually
8 inside the decryption, network transport, of
9 course, is a key element, video codecs, number
10 three, number four is what we refer to commonly as
11 systems information and we talk about so that can
12 be channel line up, that can be network
13 configurations, go to this frequency to find this
14 kind of service that's published, program guide we
15 talked about.

16 The fifth one is control channel. In
17 cable we have control channels, the old waves and
18 out of band specific physical carrier on the
19 network for communicating and we're moving more
20 towards IP or in band.

21 And then last is the whole OS middleware
22 applications dimension that does definitely --

1 interlocks in with conditional access.

2 MS. NEPLOKH: That's a different way of
3 framing the problem, but I think that's useful.
4 John had his hand --

5 MR. MURRAY: You said he had six,
6 there's five --

7 MS. NEPLOKH: That's six, ciphers,
8 (inaudible) transport, codecs, system information,
9 control channels, and middleware.
10 John?

11 MR. CARD: So, touching the point that
12 Milo made, and actually something that Joe said
13 that -- in conversation with Steve during our
14 break -- thank you for the break, that was
15 well-timed, I hope -- Joe, when you said HBO
16 should be the same on the Cablevision system as on
17 a, say, DISH system, that may not be true in
18 general. I may -- DISH Network may have done a
19 deal with -- I'll pick on Sony Pictures since
20 Brant's on the phone and at least they've got Sony
21 in the name -- I may have done a deal with Sony
22 Pictures to get an early release window of some of

1 their content that is exclusive and that
2 commercial terms that I've chosen to undertake is
3 available to subscribers to DISH whereas somebody
4 who's looking for that same content on other
5 systems may not find the same kind of content or I
6 may have the director's cut audio. Maybe more
7 relevant and more interesting is some of the
8 networks that are out there, say, ABC Family,
9 because they oftentimes show content that has been
10 syndicated that they've aggregated from others,
11 they may or may not have in their deals, upstream
12 of the MVPD, the rights to have their content
13 delivered over, say, an IP network.

14 So, I don't know, as Milo has run his
15 system, if he's run into some of these subsequent
16 problems where service X can't be the same on
17 delivery network Y because the deal upstream of
18 you doesn't give delivery network Y the same
19 rights.

20 Over time, that's going to get better
21 and better as IP starts to become more and more
22 prevalent it's going to mean that more and more

1 services start to look the same no matter how
2 they're delivered, but for the -- I suspect if
3 we're looking at CableCARD transition lifetime,
4 that will continue to be the case.

5 So, in addition to service discovery, I
6 think there's going to be service identification.
7 Am I watching -- can I get access to the BBC
8 America feed or am I going to be able to actually
9 see the BBC England feed on this service? DISH
10 Network carries foreign language programming in
11 over 100 different foreign languages. That's a
12 large part of what has differentiated our service
13 from day one and many of those deals are
14 exclusive.

15 So, if I want to watch Russian language
16 programming, is that guide data going to actually
17 come in in English or should that be Russian
18 language, if it's describing Russian language
19 programming?

20 So, there is a -- part of the meta data
21 around the guide data is actually what is the
22 language of that guide data. And that is, again,

1 an important distinguishing characteristic for
2 some services.

3 Other than that, in terms of, Brendan,
4 your list of things that need to come from the
5 system, DISH has been vocal, again touching on
6 where Milo came from, when you start talking about
7 what's on the DISH service, that information is
8 most correct as it leaves the Cheyenne or Gilbert
9 uplinks. Up to that point, the data may change,
10 but as we describe what's actually leaving the
11 satellite dish for uplink to the satellite, that's
12 the most accurate point.

13 So, asking Google what's on DISH Network
14 pay-per-view is an interesting choice. It's
15 probably not going to be as accurate as being able
16 to ask the DISH service itself what are the
17 constituent parts of your service. That also
18 starts to reach into the commercial terms where
19 DISH may not want to announce to the world we're
20 about to launch XYZ network, because that's brand
21 new, it's a surprise, and it's supposed to be a
22 surprise. DISH customers get access to XYZ

1 network early. So, I think there are some
2 commercial requirements that start to touch on
3 this.

4 My hope is that as we looked at the
5 outputs of this system, that's not going to be set
6 in stone from this meeting forward because I
7 haven't given a whole lot of thought to -- and I
8 see you nodding, Alison, for folks on the phone --
9 which is good, because I think that's part of our
10 work is to figure out what is it that we are here
11 to describe. And so I think we do need to
12 hopefully reach an agreement on the outputs of
13 this system and what the parts of it are.

14 In terms of Jay's list of components of
15 a --

16 MR. MURRAY: Conditional access --

17 MR. CARD: -- the conditional access
18 system, DBS is faced with a unique challenge in
19 that we operate a broadcast system and broadcasts
20 go where broadcasts go, but we are mandated -- and
21 I'm sorry it touches on policy, but it is vital to
22 our existence -- that we stay within the law and

1 not deliver local channels outside of the local
2 market that they are designated for. So, in
3 addition to the conditional access, there are
4 rights information, certainly for local channels
5 that need to come along. We would love to be able
6 to offer locals everywhere. Somebody in New York
7 ought to be able to see their home broadcast
8 network in Ohio, but so far that's not the way the
9 policy has directed us.

10 So, I think there is (inaudible)
11 information that comes through our current
12 conditional access system that is going to need to
13 show up in the output of this system. So, for
14 DBS, that's another component.

15 For folks who are operating a wired
16 network, if you don't put the signal in, it's hard
17 to get it out at the other end.

18 MS. NEPLOKH: Milo and then Adam.

19 MR. MEDIN: So, this is Milo from
20 Google. I think some of that can be addressed by
21 the identification of the user to the network.
22 Clearly, different users have different rights.

1 You may have some which have sort of less -- more
2 limited channel packages, others that are much
3 greater even for linear, and then what you're able
4 to access for on demand is also different.

5 So, you know, it's not just the outputs
6 of the device, but what are the inputs, some form
7 of subscriber identification that can map into the
8 authorization systems for the provider.

9 MS. NEPLOKH: And I think we'll move on
10 to inputs in a moment.

11 MR. MEDIN: Great. Okay.

12 MS. NEPLOKH: Adam?

13 MR. GOLDBERG: Yeah, Adam Goldberg for
14 Public Knowledge. Sort of two things. First, the
15 core issues list that's on the pad right now, it
16 seems like much of that or maybe even all of that
17 is kind of something that exists in the black box
18 and not -- or maybe that way of looking at it,
19 that perspective is kind of peering inside the
20 black box, and the requirements for what needs to
21 exist as output is sort of better described on the
22 sheet that came off.

1 And then maybe less important, John
2 mentioned guide information in random languages
3 and I think that, you know, Russian services
4 notwithstanding, we certainly need to deal with
5 English and Spanish. So, whatever mechanism we
6 have to deliver whatever meta data, guide data,
7 whatever it is we have, to the extent that
8 languages are involved, you know, we need to deal
9 with multiple languages, and I don't think that's
10 all that difficult nowadays.

11 MS. NEPLOKH: Joe?

12 DR. WEBER: Joe at TiVo. I wanted to
13 just respond to some things that John had said.
14 First, he had promised he wouldn't talk again and
15 that was clearly wrong. I'm teasing, of course,
16 we love to hear from John. But I was referring to
17 what I call the encoding rules, which is part of
18 the CableCARD regime, and we've always felt that
19 that's actually quite beneficial to operators
20 because it prevents kind of -- and it was your
21 words -- the challenge you have with content
22 owners is they want to enforce different rules and

1 different copy control mechanisms, and the
2 encoding rules gave at least this uniformity, and
3 we see this especially with the smaller cable
4 operators that we deal with primarily, it gave
5 them sort of level playing set against the very
6 much larger players that at least HBO could not
7 force them to do copy never, and so often when I
8 present on this, it's a very good analogy you
9 have, is that I draw the black box with
10 inputs/outputs and then the things inside, as Jay
11 had listed, also I put a halo around it, which is
12 like the encoding rules and the regulatory things
13 around it, and I assume it might be out of scope,
14 but it would be good to note again if you have
15 this baseline of CableCARD, you did have this halo
16 of encoding rules and when it has to be deployed
17 and usage, and eventually was added on to that was
18 that operators had to use it themselves, which I
19 think is, again, not part of the scope here.

20 But we have to keep that halo part of
21 the drawing around the block box, I think, of
22 interest or at least noted in what we come up with

1 in the report.

2 MS. NEPLOKH: That's a really good way
3 of describing it. Okay, so we've gotten the
4 outputs. We've gotten the sort of peeking a
5 little bit inside the black box.

6 MR. HESS: Could I give one -- Mark Hess
7 -- kind of warning, Will Smith. You know, you
8 described meta data in a pretty specific SCTE way.
9 Meta data, in a broader way, you know, is again
10 contractual and rights driven. I mean, I have the
11 right to use my meta data. I know, Joe, you've
12 got your own data deals, so I think we need to be
13 really, really crystal clear on what we mean by
14 data.

15 I mean, I can't just distribute data as
16 an output to a device because I don't have the
17 rights to do that. So, anyhow, let's, just as a
18 real point of clarification on data, there's data
19 that might come with the program itself that
20 allows it to be displayed and then there's the
21 type of meta data that is two weeks worth of data
22 that you can search and curate and do stuff with

1 that you have to buy, and I just can't deliver
2 that.

3 So, there's a lot of subtleties. Just
4 to say there's a lot of subtleties to this as we
5 go deeper.

6 MS. NEPLOKH: Yeah, to that I'm going to
7 just channel Milo for a second here, because he
8 brought up when you're talking about the linear
9 program feeds, it's relatively easy to get that
10 meta data, when you're talking about the on-demand
11 program feeds, I think he said earlier, it's a
12 little bit harder to get that data.

13 Do you have anything to say about that?

14 MR. HESS: Yes. We don't have the
15 contractual right to just give it to anybody. It
16 comes with our content.

17 MS. NEPLOKH: So, you can't identify the
18 titles which are available in your on-demand
19 service?

20 MR. HESS: You know, sometimes that data
21 comes separately from the other data. It's
22 interesting. I'd have to get back to you entirely

1 on that, but it's not as straightforward as just I
2 can pass that data through.

3 MR. ROLLS: This is Jay with Charter.
4 The same is true with linear meta data as well.

5 MS. NEPLOKH: Okay. And I'll let Milo
6 finish and then go back to Adam.

7 MR. MEDIN: Yeah, I mean, I think --
8 this is Milo from Google. Part of this is just
9 how you write the contracts, right, and the
10 negotiations with the programmers. So, I think
11 all of the contracts are designed to deal with
12 your subscribers, right. Making that data
13 available just to anybody is a very different
14 animal than trying to deliver it to your users,
15 whether they be on your devices or others. But I
16 think that goes back -- the issue is, really, we
17 need to create the language for being able to
18 transmit whatever meta data is legally available
19 to send to the device, and I think we as an MSO
20 believe it's our job to make sure that data is as
21 accurate and as useful to the user as possible no
22 matter what device they're accessing it from.

1 So, we all have to deal with contractual
2 constraints, but functionality should be the --
3 and a great user experience should be the goal,
4 and then we've had great interactions with
5 programmers about trying to enhance and create a
6 great experience for those users because in the
7 end, that's what they care about.

8 So, I think, the interests are in
9 general aligned, it's just that when you talk
10 about new things sometimes it takes a while before
11 you actually get the exact language (inaudible).

12 MS. NEPLOKH: Thanks, Milo. And you
13 bring up a good point which I don't think I've
14 said quite enough which is that, yeah, we should
15 be focused on the technical capabilities and let
16 somebody else worry about the contracts and the
17 policy ramifications. Adam?

18 MR. GOLDBERG: Yeah, Adam Goldberg from
19 Public Knowledge. Without belaboring the point,
20 Alison, because you made a good point just then,
21 it's certainly true that there are aspects of this
22 is what's on and this is what's available, which

1 is factual and shouldn't be governed by not being
2 permitted to give you that data. It's certainly
3 true, I think, also that there is, you know, pros
4 about programming that may be different, but
5 certainly the fact of what's on is different.

6 MS. NEPLOKH: Are there any other
7 outputs from the black box that need to go on
8 Adam's list? No. All right, so inputs to the --

9 MR. CARD: Alison, sorry, this is John
10 Card from DISH. Something that you said, you
11 asserted something that unfortunately I don't
12 think I can just let stand asserted. In contract
13 discussions to provide services, there's
14 oftentimes -- and we'll use robustness -- but
15 there are requirements and assurances that I need
16 to make to -- for providing content about the
17 security of the system.

18 I don't expect that every programmer I
19 deal with is going to be an expert in DBS or in
20 DISH's particular system. That's my job is to be
21 that expert, not theirs to understand the details.
22 But typically I can come to some kind of an

1 agreement, you provide me this content, I will
2 guarantee its security, and provide that then to
3 my customers.

4 At some point in time it may be that one
5 of my assurances I make about security fails, the
6 system is broken; somebody has hacked it, et
7 cetera, et cetera. Oftentimes you will find in
8 contract language that kind of a clause that says
9 when this happens, the deal changes. Don't want
10 to get into any of those details at all, but when
11 you say that we shouldn't worry ourselves about
12 that impact, I fear that is not true.

13 If we're looking at creating a
14 downloadable system to replace CableCARD, we touch
15 on renewability, what -- we do need to, I believe,
16 during the lifetime of this committee, need to
17 clearly understand what happens when we need to
18 replace either parts or all of this system. What
19 are the expectations? What are the commercial
20 requirements? Because that's what's going to
21 drive some of our timeframes and some of our
22 technical requirements for either replacement or

1 renewability of parts of the system.

2 So, it would be nice looking at this as
3 an engineer to not need to worry about these real
4 world contractual concerns, but at the end of the
5 day, if the system is broken or if features of the
6 system are broken, that will have direct impact on
7 what I'm able to offer to my customers. If we're
8 looking at a uniform system that's available
9 nationwide, that opens up some interesting
10 challenges and concerns for all of us.

11 I don't think we can just set that aside
12 for the lifetime of the committee. For now I'm
13 fine with that.

14 MS. NEPLOKH: Sure. And, John, I do
15 think that things like renewability, which really
16 are core to the security of a system, I did not
17 mean to take those out of scope. I was referring
18 more to whether or not you can make the guide data
19 available pursuant to your contract.

20 MR. CARD: Yes, okay.

21 MS. NEPLOKH: The capability to provide
22 guide data, you know, either is or isn't something

1 that should be in the scope and we can let
2 somebody else worry about whether an operator will
3 be mandated to provide that data sort of
4 separately from the technical discussion.

5 MR. ROLLS: Unless we all are burdened
6 with the same thing. If we all know that we have
7 these restrictions then we're going to have to
8 bring that into the conversation. That could
9 happen sometimes.

10 MS. NEPLOKH: Sure. If it were the case
11 that no operator ever could provide meta data
12 about their programming then I think it could be
13 more instructive, but, yes.

14 MR. MEDIN: This is Milo from Google.
15 Just to beat the horse a little bit more, I think
16 the issue is not providing data. I mean, there's
17 always some data that you can provide. I think
18 what we want is to provide the absolute best data.
19 Many operators like ourselves fuse multiple
20 sources to do that, to provide really good meta
21 data.

22 So, for example, on our system you know

1 when you click on an episode you know what season
2 it was, what episode number it was, all the rest
3 of that. That's supplemented with other meta data
4 feeds that sometimes we license and sometimes we
5 have access to otherwise.

6 But the operator has to go through the
7 process of licensing whatever they're going to be
8 displaying and distributing to their users. I
9 don't think we're talking about providing meta
10 data outside the context of a user who's a
11 subscriber. If we are, then it's a very different
12 conversation, but in that limited context, then I
13 think it's -- you know, you're going to do as good
14 a job as you possibly can.

15 MS. NEPLOKH: Okay. So, I think that
16 pretty well covers the outputs. So, inputs to the
17 black box? And I think I listed a couple of
18 potential inputs. One is a request for content,
19 right, so obviously -- the first input would be
20 some kind of a content request. The retail
21 product would send to the black box, hey, I want
22 this content. Another input would be some kind of

1 an authentication message, hey, here's my
2 subscriber, you know, here's the person using me,
3 do I have access to various content.

4 What other inputs to the black box do we
5 need to build into the system? Yes, Brad?

6 MR. LOVE: Hi. This is Brad from
7 Hauppauge. Along with the content request I would
8 like something like similar to CableCARD where
9 we've got the man-machine interface to where we
10 can query the status of the security module any
11 information that it's got --

12 MS. NEPLOKH: Good point.

13 MR. LOVE: -- to display the end user.

14 MS. NEPLOKH: Okay. John?

15 MR. CARD: John Card from DISH. DBS
16 problem child again. Asking a subscriber to prove
17 who they are is wonderful when you can trust all
18 of your subscribers and when you know where they
19 are. DBS subscribers, we don't know where they
20 are, that's kind of the point. So, I believe
21 that's going to be a part of our further
22 discussions in the DSTAC is what you've captured

1 as subscriber identification and authentication, I
2 think, is the other half of that -- that part of
3 subscriber identification and authentication go
4 hand-in-hand.

5 The content request, presumably
6 generated from the data you've got and saying
7 here's all of the content that's available, can
8 only be generated when you say, here's who I am,
9 because that then defines the rights that I have
10 for the system.

11 So, you kind of -- looking at a black
12 box -- you kind of need to start from the point
13 of, here's who I am, here's the proof that I am
14 who I am. Much of that is hidden from subscribers
15 today in the DBS world at the hardware level. In
16 other words, I don't need to sign in to my set top
17 box today and my wife does not either when she
18 chooses to watch. So, when you talk about
19 subscriber, are you talking about at an account
20 level or at an individual human being level?

21 MS. NEPLOKH: I think that's up for
22 debate and I may be even talking about a device

1 level as opposed to an account level potentially,
2 right, so that's the way it works with CableCARDS
3 today is you authorize a particular CableCARD or a
4 particular host to work with the CableCARD as
5 opposed to -- and then the actual subscriber
6 mapping happens at the head end. That may or may
7 not be the model going forward, but --

8 MR. CARD: Got it, great. So, there are
9 some ancillary protection systems, some agreements
10 that are public that we can point to that start to
11 talk about the difference between device
12 authentication and subscriber authentication, in
13 particular there's a DTCP plus has been announced
14 and talked about from the DTLA that has a limited
15 number of devices, for example, that can be signed
16 up to a household and then receive content under
17 that license, and presumably the N plus 1 device
18 would be denied that access.

19 So, I think there is a message --
20 there's a prioritization that the user is going to
21 find as an input, which is, this is me and this is
22 my real TV, that other TV that you knew about, I

1 threw away. So, there's a maintenance -- an
2 update process, I think, that's going to be
3 required that it maybe touches on the man/machine
4 interface that Brad touched on, but there's a
5 provision -- let's call it provisioning, that's
6 probably a good -- there is provisioning
7 management. Today that's managed for subscribers
8 by the DBS installation. I suspect other MVPDs
9 have other processes in place. I don't know what
10 this black box system is going to have if you're
11 envisioning subscriber self provisioning or if
12 there's a retail manufacturer involved in
13 provisioning or not.

14 But I think the provisioning requests
15 are input. Thank you.

16 MS. NEPLOKH: Are there any other
17 inputs? Yes.

18 DR. WEBER: Sorry, I'm being a little
19 pedantic here. I'm an ex-professor. I guess it's
20 a misnomer a bit about inputs. I think you're
21 talking more about APIs or interactive functions
22 of the black box here?

1 MS. NEPLOKH: Okay.

2 DR. WEBER: Because for inputs I was
3 thinking of the transport stream into it, but --
4 sorry, it's more like the application program
5 interface or the interactive functions of the
6 black box.

7 MS. NEPLOKH: Okay. Yes, Milo?

8 MR. MEDIN: And I would say, there are
9 explicit inputs and there are implicit inputs.
10 So, for example, we know when you plug a device
11 into a user's home that it's where that device is.
12 John does not. So, whereas he might need a
13 specific identifier on his hardware to designate
14 that user, the cable operator or fiber operator
15 may not need that because they've got other data
16 associated with the transport that provides it.

17 So, I think there's a question about
18 sort of not just the input but you may --
19 operators may generate that themselves from other
20 -- sort of implicitly, or you may need some
21 specific piece of hardware or other user data to
22 do it explicitly.

1 MS. NEPLOKH: And that's a good point
2 and I think we're trying to think about what
3 capabilities need to be build in and maybe not
4 every operator can or needs to use every
5 capability. Yes, Adam?

6 MR. GOLDBERG: I'm afraid that -- Adam
7 Goldberg from Public Knowledge -- I think that the
8 problems, at least that John describes about not
9 knowing where the box is, maybe sort of goes away
10 because -- with a black box way of looking at
11 things because I think it's clear that the black
12 box has got to be -- whatever the black box is has
13 got to be, in John's case, connected to a
14 satellite dish and has been professionally
15 installed.

16 So, there is at least some stuff that
17 came from John that he does actually know where it
18 is and he's glaring at me, though, so maybe I
19 missed something.

20 MR. CARD: I'm wondering if Public
21 Knowledge is ready to support this DBS idea of you
22 get your locals no matter which side of the street

1 you live on? Quite literally there are broadcasts
2 that we make that would be unlawful to receive on
3 one side of the street --

4 MS. NEPLOKH: Thanks, John. I think
5 this is definitely --

6 MR. CARD: It is, actually, much more
7 important, Adam, than you describe. We don't,
8 sadly, have the luxury to trust the retail devices
9 when they plug in and say, oh, trust me, I'm on
10 the left side of the street, not the right side.

11 MS. NEPLOKH: I think there was one more
12 comment on the phone and then we need to get our
13 FACA representative to go over some FACA
14 information after this. So, you get the last
15 word.

16 MR. MESSER: Actually, I think we are
17 forgetting our friends with mobile devices and
18 tablets. So, even though I may be a subscriber
19 back in California, I might be in Washington
20 attending a meeting and, you know, I may be
21 roaming all over the country or around the world.
22 Actually maybe subscriber location is not

1 important, although maybe you are subscribed to a
2 particular locale's feed, per John's discussion,
3 but I think we should be careful not to avoid
4 forgetting about roaming uses.

5 MR. MURRAY: Just for transcript
6 purposes, who was that?

7 MR. MESSER: This is Alan from Samsung.

8 MR. MURRAY: Thank you.

9 MR. CANDELORE: This is Brant with Sony.
10 I'd like to make a comment that there's already
11 been quite a bit of innovation and it's in the
12 cable and the satellite industries. You know,
13 it's a very dynamic ecosystem and there's -- I
14 guess there's a definition of what a black box is.
15 Where is the black box? I know we've -- Sony has
16 been participating with the DirectTV, for example,
17 with the RVU project and also with the cable
18 industry, Comcast and others, in DLNA with CPD2,
19 and there -- in some ways, you know, we're -- it
20 seems like there are some interesting aspects to
21 that because, you know, a lot of the very serious
22 issues with adaptation to the network, some of the

1 very serious security issues that, for example,
2 John Card has listed, some of the very -- you
3 know, the ability for the operator to continually
4 innovate, some of that is kind of addressed
5 through that type of a topology, kind of a gateway
6 approach where some of the aspects are managed by
7 the operator and I know John hasn't talked about
8 it, but like for example, a satellite, they have
9 hundreds of spot beams everywhere in the country
10 and, you know, to try to manage that would be
11 somewhat -- it's very complex.

12 And so a lot of that could be handled by
13 a gateway. There's been some significant work
14 with the CVP2 guidelines in the cable area. I
15 know Sony's been participating with others, for
16 example, with HTML5 RUI and the RUI allows a lot
17 of the rendering of guide data and, you know,
18 tuning.

19 There's also a blend. Content can come,
20 you know, from the gateway, but there's a blending
21 where content is also coming from the Internet or
22 from the cloud. So, it seems like it's in a --

1 you know, that type of a -- perhaps as an approach
2 might consider both the cloud and the gateway, you
3 know, kind of in a combined way, you know, it's a
4 combined way to kind of maybe manage both.

5 MS. NEPLOKH: Thank you, Brant, and I
6 think that's a really useful thing to point out
7 and perhaps as the discussion moves forward into
8 working groups, that will be really helpful to
9 drill down into.

10 MR. HESS: Can I just follow quickly on
11 that? I'm sorry. I'm kind of -- I just need to
12 get clarification on a couple of things.

13 MR. MURRAY: Well, so we're going to
14 break for lunch at noon and we have to do a FACA
15 overview. We can either --

16 MR. HESS: What's FACA?

17 MR. MURRAY: FACA is the Federal
18 Advisory Committee Act, to make sure that we don't
19 break any rules and that the report is something
20 the commission --

21 MR. HESS: I'll be really, really fast.
22 I promise. Because I think -- two things, first

1 of all, I'm kind of new to this stuff, so bear
2 with me, but I thought maybe the first hour would
3 be more like show me the next 12 meetings I have
4 to go to, because I've got a really busy schedule
5 this summer. So, I hope at some point in time we
6 actually get to how we'll kind of get this thing
7 done.

8 Second thing is, I think, you know,
9 Brant just brought up a really good bunch of
10 points, like, is there going to be a review of the
11 whole marketplace so we understand what exists out
12 there? And are there things that exist that
13 already we can latch our hands onto? So, that's
14 question three.

15 And then this black box kind of
16 discussion has been enlightening to me. My
17 question, I think, to the FCC folks is, have we
18 already decided the scope has this black box in
19 it, or is that something the committee has to vote
20 on before we actually go down deciding this black
21 box thing is the -- so that's more procedural.
22 Once again, I'm new to this so I just want to make

1 sure I -- so, anyhow, continue with your FACA
2 stuff now. We can talk about that after lunch,
3 but I just thought I'd get that out there since
4 Brant kind of had a really bunch of good points.
5 Thanks, Brant.

6 MR. MURRAY: So, this is the perfect
7 segue to our FACA expert, who will tell us, you
8 know, what the rules of the advisory committee
9 are, what we expect from -- Paula Silberthau from
10 our Office of General Counsel.

11 MS. SILBERTHAU: Thanks so much. My
12 role here is to just give you some pointers so
13 that once you've made really good recommendations
14 we can actually use them and look at them because
15 FACA has -- courts have done various sanctions and
16 (inaudible) that if you cross certain lines,
17 depending on the judge, they will say, you didn't
18 follow the rules and we thank you for working
19 really hard for a year and now we're throwing
20 everything out and the agency can't rely on it.
21 So, that's why I'm here.

22 To start out with, major functions

1 should be coordinated through Brendan and Nancy
2 and your chair, and specifically, the role of the
3 designated federal officer is to serve as the sort
4 of guiding light for all things -- calling the
5 meetings, approving the agendas. If someone can't
6 attend a meeting and you want to send a
7 substitute, call these guys from the agency.

8 I would mention, if you think you might
9 not be able to attend a meeting and you want a
10 substitute, just make sure that the substitute has
11 been cleared, because that takes a little while,
12 so if you don't already have substitute people for
13 your organizations, that's something you should
14 think about so we can get it cleared in advance so
15 there are no last minute log jams.

16 One thing that frequently comes up is
17 what's the difference between a working group and
18 the full parent group. If it's the full group
19 here, as you know, there has to be notice, there
20 has to be publication in the federal register,
21 usually 15 days, although there are snow
22 emergencies, so we have managed to get approval to

1 do less. And everything that's a full meeting has
2 to be public and we make people -- make everything
3 accessible and there's a balance, hopefully, in
4 the group, in the viewpoints, et cetera, et
5 cetera. Very different for the working groups,
6 which do the preparatory work and this may be
7 obvious, but it's really pretty important because
8 the working groups can meet privately, you don't
9 need 15 days notice, you just need to work with
10 our folks and with each other to make sure you
11 pick days and times and methods of meeting that
12 work well for you. That's where a lot of the
13 information gathering is done and those groups
14 are, by definition, a lot smaller than this group.

15 For example, they have to be less than a
16 quorum because you're meeting privately, which is
17 fine under the statute, but if the working group
18 were the same size as the full group then
19 obviously that would be -- we've had these come up
20 with some of our really big FACA, someone counted
21 wrong and we suddenly realized there were, you
22 know, 60 people on a FACA and 45 people on a

1 working group and there was something wrong with
2 that.

3 The reason, also, is that the full
4 parent committee has to eventually approve your
5 recommendations, see them, debate them, modify
6 them, and obviously if you have a majority that's
7 already on the working group, that's a bit of a
8 problem.

9 So, I think that's a key thing and what
10 keeps everything above board is that the working
11 group can't function -- cannot function as a de
12 facto full parent advisory committee, so that's
13 the number of people on the group. The balance
14 has to be the same, it has to be well balanced, so
15 some of you might want to join, you know, a second
16 or third working group and if it would destroy the
17 balance or too many people on one side, then
18 you'll be told, you know, I'm sorry we can't
19 accommodate that.

20 So, when you sign up for working groups,
21 that's something to think about, which ones would
22 be most important to you, because not every person

1 can be on every working group.

2 And in that regard, again, to keep
3 things on the right side of the line, once the
4 working group has come up with a report or
5 recommendations, those go to your designated
6 federal officer and to your chair person, and then
7 they'll be reviewed by everyone, modified,
8 discussed, and it's important that by accident
9 those recommendations not, for example, be sent to
10 the commissioners because it's just the working
11 group's recommendation. We've had that happen
12 too, people really proud of their recommendations
13 and they send it to the chair and to the
14 designated federal officers, and they sort of CC
15 the commissioners. I mean, we almost had that
16 happen, it didn't actually happen, and then it
17 would be as though the working group were
18 functioning for the full parent committee. So,
19 that's one thing to keep in mind, it's still just
20 a working group.

21 And you'll want to leave enough time to
22 have those recommendations distributed and

1 discussed by the parent committee.

2 So, that's actually the most important
3 thing I have to say. The other thing, which is
4 more protection to you individually as opposed to
5 maybe a protection to the agency, is that by law
6 everything that's submitted to this group or
7 maintained by the working group, we have to keep a
8 record of that and it's a record of the agency and
9 it's a record of the advisory committee and it
10 will be, you know, public. It will be kept in
11 some place that people can look at. It would be
12 subject to FOIA.

13 So, therefore, if there is something
14 that your company wants people to know or that you
15 might need to discuss with the group or some
16 report you think is critical but it's truly
17 confidential, it's a trade secret, that kind of
18 thing, you should bring that to our attention and
19 before -- you know, if you really decide it's
20 needed, you really want that perspective shared, I
21 would strongly recommend you bring it to us, not
22 distribute it to anyone, discuss it with us, and

1 then we could show you how to submit that with a
2 request for confidentiality.

3 That doesn't mean that ultimately if
4 there was a FOIA a court would necessarily grant
5 it, but it would give you some assurance that most
6 likely it would be protected.

7 So, just a little bit of a heads up
8 because we've run into that problem before as
9 well.

10 I think you know the other things,
11 probably, the guiding principles of FACA are
12 openness in government, diversity and balance in
13 perspectives, public accountability, and that's
14 why everything done here is at a public meeting.

15 One more thing that's come up in the
16 past year or so is that everyone understand that
17 these are just recommendations and that even if
18 someone, say, is the chair of the full committee
19 or the chair of a working group, that no one can
20 speak for the commission, but also that you can't
21 necessarily speak even for your working group.
22 That seems obvious, but we've had a situation

1 where someone was blogging and was really excited
2 about the activity of their working group and they
3 happened to be the chair and they issued this
4 blog. Well, it turns out the subject was really
5 confidential. They thought they had unanimous
6 consensus on it. They didn't. And before the
7 thing even went to the parent group for
8 consideration, there was all this discussion of it
9 in the blog and was signed, you know, so and so,
10 you know, I'm really excited about this, we've
11 been doing this hard work, signed by so and so,
12 you know, head of the working group.

13 So, that was like wrong on many levels
14 because when people read this they thought it was
15 the view of the commission. The commission hadn't
16 even seen it. They thought it was the view of the
17 working group. The working group hadn't voted it
18 yet. And they also thought it was the
19 recommendation of the full FACA, which it ended up
20 not being.

21 So, if you feel compelled to talk about
22 things that are pending or someone asks you about

1 it, anything you say you should make clear that it
2 would be your individual view. And also if it's
3 going on in a working group and it's not even
4 public yet, I think it's better not to get into
5 it, you know, necessarily at all, but if you see
6 this coming, feel free to talk to your DFOs or
7 your chair, or we could try to work with you to
8 figure out how to -- you know, how to handle it.

9 One final thing, occasionally people
10 want to do -- in their working groups, and I don't
11 know whether this would arise here -- they want to
12 do surveys. They suddenly realize there's not
13 enough information that's printed or that they can
14 gather from their colleagues or other people in
15 the working group. That's not a good idea, and
16 one of the reasons is that you guys, for this
17 purpose, are us and we are subject to the
18 Paperwork Reduction Act.

19 So, if you really feel you need to
20 gather more information on some topic, please get
21 in touch with the FCC staff. I mean, we could
22 consider the request, but we would have to go

1 through the Paperwork Act. And, again, this is
2 just so that you don't do some informal survey,
3 call people up, and then find out you can't even
4 use the information.

5 I think those are sort of the obvious
6 things that have been coming up recently. Anyone
7 have any questions?

8 MR. CARD: I've got two. This is John
9 Card from EchoStar. Two quick questions, I hope.
10 So, you said working groups need to represent less
11 than a quorum. What is the quorum rule?

12 MS. SILBERTHAU: Typically we would
13 treat it as 50 percent. Something that would be a
14 majority -- majority vote.

15 MR. CARD: And there are 19 members of
16 the DSTAC, so, nine or fewer people in a working
17 group would be the number we target?

18 MS. SILBERTHAU: That would be my
19 advice, yes.

20 MR. CARD: So, if a working group were
21 to go off and study subject X and discovers,
22 amongst its nine members, they don't have a

1 particular piece of information, they need to
2 bring in a tenth member of the DSTAC for
3 conversation, how -- can that be made to work or
4 does that need to --

5 MS. SILBERTHAU: What you typically do
6 is not have that person be a member of the working
7 group but you could, for example, just have one
8 day where you're going to address that subject,
9 right --

10 MR. CARD: Got it. Okay.

11 MS. SILBERTHAU: -- and just call -- you
12 know, let these guys know, but you've called the
13 person in to just discuss that issue and give you
14 that information because, you know, the nine of
15 you didn't have it.

16 MR. CARD: Got it. Okay, thanks.

17 MS. SILBERTHAU: Yeah, so you can, for a
18 working group, you could bring in outsiders for a
19 day and it could be someone on this group or it
20 could be, you know, some expert that everyone
21 agrees is just really smart and knowledgeable
22 about that field, but they couldn't be part of the

1 debate, but you could ask them information. So,
2 sort of do research orally, so to speak.

3 That's a good question. Anyone else?
4 Okay, thanks. If you run into roadblocks on this
5 stuff, talk to these guys and then they'll get in
6 touch with me if there's something that comes up.

7 MR. MURRAY: Okay. We'll have lunch
8 now. Try to be back by 1:00. We have a special
9 guest at 1:15.

10 MR. GOLDBERG: Sorry, Brendan. What is
11 the logistics of lunch? If you go to the
12 courtyard you still have to go in and out of
13 security? If you go out the front door, you still
14 have to go in and out of security? What can you
15 do nowadays, because it changes over time?

16 MR. MURRAY: Right, so, because I
17 believe because everybody has the visitor badges,
18 you will be able to go back in at the courtyard
19 level. You will have to go through the metal
20 detector again. The other option is to go through
21 the 12th Street here where there are food trucks
22 parked out in front. Again, have to go through

1 the metal detector.

2 Fortunately, the front security here
3 knows about this meeting, so they're not going to
4 call me to approve every single person coming into
5 the room, so it may be easiest to head out that
6 way.

7 I can escort people down to the
8 courtyard though.

9 MR. CARD: Should I leave my laptop here
10 or should I carry it with me?

11 MR. MURRAY: I would carry it with you.

12 MR. CLYNE: One quick question, can we
13 leave computers or whatnot here in the room?

14 MR. MURRAY: You can, but just for
15 security purposes, which sounds kind of silly
16 because everyone just came through metal
17 detectors, I'd bring it with you. At your own
18 risk, I guess, if you're leaving it here.

19 (Recess)

20 MS. TRITT: Okay. Let's get started for
21 our afternoon session. Brendan, do you want to
22 kick it off?

1 MR. MURRAY: Sure. To start off I
2 wanted to introduce the FCC's Chief Technologist,
3 Scott Jordan, who is sitting in with us. Good
4 technical expertise.

5 The Chairman of the FCC will be visiting
6 in about five minutes, so I'm going to briefly
7 introduce what this session is going to be about,
8 but I don't know that the conversation won't get
9 started until after he gets his remarks, but in
10 this afternoon's section we were hoping to nail
11 down what the ideal experiences for all interested
12 parties would be here, and we've identified,
13 really, four main groups that we think are -- that
14 represent the interested parties.

15 The first is the end user, the
16 subscriber. The second is the vendor or equipment
17 manufacturer, whether that's the retail equipment
18 manufacturer or if it's an equipment manufacturer
19 -- equipment that's built for MVPD distribution.

20 The third main group is MVPDs or other
21 content delivery companies, depending on where the
22 group's going to end up on the over the top issue.

1 And then the fourth is the content owners, the
2 copyright holders, John's group.

3 I'm happy to expand on any of those if
4 you want. Do you want expansion?

5 MR. CARD: John Card from DISH. I don't
6 know that we need to expand it, but I think under
7 your outline of four groups, the vendors for the
8 service provider for the MVPDs, for example, NAGRA
9 or ARRIS would seem to fit in that area although
10 NAGRA might also provide services to the retail
11 equipment manufacturer as well and ARRIS may
12 choose to go and build retail devices. And that's
13 fine. I'm not suggesting we need a fifth group,
14 but I'm assuming that under your alignment, the
15 requirements of the head end equipment
16 manufacturer, for want of a better term, come out
17 because of the MVPD. Is that what you're
18 thinking?

19 MR. MURRAY: Yeah, and that --

20 MR. CARD: Okay, that's fine.

21 MR. MESSER: This is Alan from Samsung.

22 MR. MURRAY: Can we turn up the phone

1 volume in here?

2 MR. MESSER: I'm sorry?

3 MR. MURRAY: I just wanted to make sure
4 we could all hear you in the room. So, go ahead.

5 MR. MESSER: That's great. Actually,
6 I'd like to chime in on what John said. I think,
7 to some extent, the needs of end user devices,
8 particularly retail, which I know has been one
9 item discussed this morning, may be reasonably
10 different (inaudible) a MVPD vendor, so, you know,
11 I think we might want to consider breaking those
12 into two groups simply because that retail kind of
13 requirement versus more of a closed system
14 requirement.

15 MR. MURRAY: Okay, yeah, that makes
16 sense. So, would you like me to expand on kind of
17 what we were thinking the -- these were more
18 questions than they were answers when we were
19 coming up with the experiences that we were
20 thinking about, but I'm more than willing to throw
21 questions out if people have ideas that they'd
22 like to share.

1 MR. MESSER: Is the video back up?

2 MR. MURRAY: I believe it should be.

3 MR. CANDELORE: Yes it is. I can see
4 the video fine.

5 MR. MURRAY: Okay, so, from the user
6 experience position we were thinking it would be
7 nice if everyone could kind of contrast the ideal
8 out of the box experience for consumers with the
9 existing CableCARD regime if there are things that
10 would be better from a consumer perspective than
11 the current CableCARD regime.

12 Earlier this morning there was
13 discussion that, you know, consumers want to be
14 able to take a product home, install it
15 themselves, and not really have to worry about the
16 logistics of what's happening system side, it's
17 just what happens when you get the box home. Is
18 that it? Is there more to what a consumer would
19 want?

20 MR. CARD: For a satellite subscriber,
21 yes, somebody has already crawled around on your
22 roof, put a dish on, aligned it, done the wiring

1 to bring that signal into the house, and
2 terminated into some kind of, you know, currently
3 service provider provided box. So, if the
4 termination point of the MVPD network is at the
5 output of that provided device, I think we may
6 have a similar kind of experience.

7 And then, as you say, under the existing
8 CableCARD regime, we don't -- I mean, we're not
9 subject to CableCARDs so I can't really speak
10 towards that for the end user experience.

11 I don't think it's this meeting, but I
12 can talk about end user experience bringing their
13 Android tablet or IOS device or PC to the DISH
14 service, and I can draw similar analogies to what
15 I understand of the DirecTV service as well. So,
16 for some of the user provided devices, those are
17 already provision, already used on the service.

18 So, maybe I really now will stay quiet
19 because if you guys want to talk about the
20 CableCARD user experience, I'd like to learn.

21 DR. ANSARI: This is Ahmad Ansari with
22 AT&T. While you were talking about this end user

1 experience, I had a question about other services
2 that we provide on top of the delivery of video
3 and audio streams, the large number of
4 applications and additional features and services
5 that make, for example, us unique and allow us to
6 compete. So, how do we deal with those features
7 and applications in that context?

8 Any thoughts? Any comments?

9 MR. HESS: I mean, I had brought that up
10 before. I mean, the definition of service is
11 something I think the committee is going to have
12 to actually vote on because our service once again
13 is not individual streams, it's a collection of
14 apps and everything else.

15 DR. ANSARI: Exactly.

16 MR. HESS: I think -- I mean, it did not
17 get up on that list of outputs, and I think Jay
18 had mentioned apps as one of those, so as a point
19 of order I want to make sure those are correct. I
20 mean, obviously, that's got to be something that
21 we all come wrestle to the ground before it's all
22 said and done. I mean, at the end of the day one

1 of the things the consumer does is subscribe to a
2 service. If he then goes out and buys a set top
3 to augment that, you know, how do we get that
4 installed is interesting, but he or she has
5 subscribed to the service that they -- and there's
6 probably reasons for that. Like I mentioned
7 earlier, we now have a guide that talks. So,
8 someone who has accessible problems like that, you
9 know, they subscribe to the service for that on
10 purpose. I'm not sure how I can provide that
11 through a black box.

12 So, I think, once again, I agree with
13 the comment that we have to make sure the
14 definition of service is something this committee
15 agrees to.

16 MR. MURRAY: So, we'll pause the
17 conversation right now because our guest of honor
18 is here.

19 CHAIRMAN WHEELER: No, keep going. Keep
20 the conversation -- I'll -- at the next
21 appropriate break. But you don't have to --

22 MR. MURRAY: I think that's an

1 appropriate break.

2 CHAIRMAN WHEELER: Well good. Thank
3 you, everybody, for agreeing to do this. The
4 Congress gave us a nontrivial task that you all
5 know so well and we've got to come up with a
6 recommendation back to them by September. I'm
7 particularly grateful to Cheryl for her
8 willingness to step up and be the guide --

9 MS. TRITT: It's not exactly new to me.

10 CHAIRMAN WHEELER: Exactly, it's not as
11 if Cheryl hasn't tackled a whole series of complex
12 issues over your stellar career at this agency.

13 And -- but to say thank you to each of
14 you and maybe just to focus things in, so I wrote
15 down the mandate. "Identify, report, and
16 recommend performance objectives, technical
17 capabilities, and technical standards of a not
18 unduly burdensome, uniform, and technology- and
19 platform- neutral software based, downloadable,
20 security system by September 4th."

21 Now, I'm reading this because -- this
22 was not the mandate that sometimes we see in this

1 town where somebody says, oh, tell us what you
2 think about, kind of a thing.

3 It's not good enough to come back and
4 say, oh, gee, you know, we agree, this is really
5 complex and this is really hard. The mandate from
6 Congress is to deliver a report that identifies,
7 reports, and recommends what needs to be done to
8 deliver on this kind of a navigation device.

9 And so that's why I wanted to come down
10 and say thank you to all of you because this is
11 not a trivial task. This is not something that
12 lends itself to the normal kind of a, well, on the
13 one hand, on the other hand kind of a situation.
14 We've been asked for specific recommendations and
15 they created you for the purpose of bringing
16 together those specific recommendations.

17 I am under -- we are under no illusions
18 about the challenge that that mandate represents,
19 but we've got our message, we've got our
20 instructions, we've got the right team on the
21 field and the right quarterback, and about the
22 start of football season we'll have the answers.

1 So, thank you very much.

2 MR. MURRAY: And now we'll go back. So,
3 Milo?

4 MR. MEDIN: This is Milo Medin from
5 Google. So, two points, one on your point about
6 how can we improve on the basic CableCARD
7 experience today. I'm a cable card user at my
8 house. CableCARD gives me the ability to gain a
9 customized user interface and one that integrates
10 over the top programming along with linear, it's
11 actually quite useful to me.

12 One of the challenges is, on demand
13 services are not supported through it today, and I
14 think that's, as Alison pointed out, something we
15 need to deal with. The provisioning end, operator
16 support sometimes can be really complicated to
17 turn on and not so straightforward. As the
18 engineer who supports everybody in kind of my
19 family and extended family ecosystem, I deal with
20 these kind of questions and so I think we really
21 need to focus on something that, in the end, will
22 be actually very simple for consumers to be able

1 to buy a product, plug it in, and just have it
2 work with a minimal amount of grief.

3 On the point about what set of services
4 that are being delivered, you know, I think most
5 operators, certainly mine, have a variety of
6 devices -- DTAs don't have the same guide
7 interface that higher end devices do. DVRs have
8 other features that non-DVR devices don't. So, I
9 think part of the question here is, as an operator
10 ourselves, not all our users use all the features
11 that we deliver and so a user should be free to
12 not use features that an operator delivers and get
13 those features from other providers or other
14 functionalities.

15 I don't think -- if we believe that
16 consumers are going to be able to pick these
17 devices based on their capability, user interface,
18 and other sets of ways that the commercial
19 industry differentiates, much like the way phones
20 operate, right, we have a huge choice of phone
21 devices today in the cellular industry, all with
22 different user interfaces, radically different

1 capabilities but all supported by a common set of
2 -- by operators today.

3 And I think that's a good model to look
4 at how we do this. Not all phones can take
5 advantage of all the services that a particular
6 carrier provides, but users opt in for what
7 services they want to support by the devices that
8 they choose. Some people pick feature phones,
9 other people pick smart phones, there's a wide
10 range of choices. I think we make a mistake if we
11 want to say that everything has to be supported on
12 every kind of device. That's not the way
13 consumers make decisions.

14 But we want to make sure that we've got
15 interfaces that are capable, that consumers can
16 get at the kind of core sets of services, and
17 operators will continue to be able to offer
18 services on devices of their own. So, I don't
19 think having to have every device be able to
20 support every service from an operator is at all a
21 mandate.

22 I do think it's important that operators

1 be able to message subscribers, so, some form of
2 interface where you can deliver messages to a user
3 from an operator is important from being able to
4 do subscriber maintenance and management.

5 I don't think that's that big a deal
6 compared to supporting EAS, so we already have to
7 have an signaling mechanism to signal EAS data to
8 the device and to the user and I'm hoping that
9 that can be more generalized to send other kind of
10 operator data.

11 But I do think, you know, we want to see
12 a lot more variety in the set top box ecosystem
13 the way we have in handsets today and hopefully we
14 can build a protocol that will support that.

15 MR. GOLDBERG: This is Alan Goldberg
16 from Public Knowledge. I think the sort of two
17 points I want to emphasize in the last couple of
18 minutes of conversation, the first is, the
19 consumer install experience of the way that
20 CableCARD stuff worked, especially in the early
21 days, was, charitably speaking, suboptimal. I
22 think that what we come up with has to be a little

1 more consumer friendly in terms of bringing a
2 device home from the store and plugging it in and
3 making it work.

4 The CableCARD experience, especially in
5 the early days, was very troublesome in that
6 respect.

7 The second thing is that, you know,
8 something that Milo brought up that I want to sort
9 of emphasize a little bit is that I think that
10 it's important that consumers be able to buy both
11 very fancy, all singing, all dancing devices and
12 simpler, maybe less well featured devices that do
13 only what they want it to do and not any more than
14 that. There's a wide range of consumer needs for
15 their television programming and television
16 related services and I think that it's important
17 that what we come up with support the widest range
18 of consumer needs and wants as possible.

19 MR. ROLLS: I think the problem with
20 that -- this is Jay Rolls with Charter -- I think
21 that my sort of visceral reaction to what I hear
22 Milo say is that we are constantly changing and

1 innovating and doing new things. So, I'll give
2 you an example. We now have a thing called a vid
3 grid, which is, you get your video grid but you
4 also get tiles of each little station playing in a
5 little tiny window. That's something that we have
6 -- we didn't introduce new hardware to do that, we
7 evolved our platform to be able to do that.

8 And that's why I think the app model
9 where we're doing all this from a cloud
10 perspective, so supporting this in an app
11 environment is such a good analogy because that's
12 where the rest of the world has gone, where we're
13 living in this app world now and we can embody our
14 service now inside of an app and not -- it doesn't
15 matter -- we're doing this on old DCT 2000 set top
16 boxes. It doesn't matter how capable your
17 hardware is, it's all cloud provided.

18 So, an app environment, I think, allows
19 for the flexibility for us to evolve and keep
20 delighting our consumers what they are paying us
21 for. So, that's -- I wouldn't want to box that
22 out of the equation.

1 MR. MEDIN: If I could just quickly
2 respond to that. You know, at Google Fiber we try
3 and build a user experience, which is really,
4 really compelling. We don't believe that we know
5 all the answers in terms of being able to deliver
6 the absolute best experience to users. And so,
7 mandating a single UI, from our perspective,
8 simply constrains the solution set. That's how CE
9 devices differentiate themselves. That's how
10 Android phones and IOS phones differentiate
11 themselves.

12 And so, while consumers will always be
13 able to take the operator's own devices and
14 interfaces, there's not a requirement for users to
15 take that, and I think we could actually begin to
16 see, if we're successful here, the same kind of
17 innovation we see in the mobile ecosystem in the
18 TV ecosystem in the home.

19 Associated with that means a lot more
20 heterogeneity. And so I think there's valid
21 issues in terms of how operators support that. We
22 just -- maybe our perspective is, we don't believe

1 we know the best. We think the marketplace can
2 build a wide variety of technologies and maybe
3 users like the vid grid, those users will pick
4 devices that can do that. Other users might not
5 care for that, want something else. We should try
6 and build systems that give consumers the maximum
7 amount of choice. And I think it's technically
8 feasible to do so.

9 So, I think that's the heart of what 629
10 was about.

11 MR. MURRAY: So, I think I didn't frame
12 things well enough here. I wasn't really talking
13 more about the UI user experience, I was talking
14 more about the authentication user experience,
15 what happens when you get a device, you bring it
16 home, you plug it into the wall. Do you call your
17 cable operator? Do you type your account number
18 into the first screen that comes up and then the
19 device is authenticated? I was thinking more on
20 that end rather than the user experience that will
21 happen after the device is authenticated.

22 MR. ROLLS: Right. This is Jay again at

1 Charter. I think we're all totally aligned. We
2 want that experience to be a good experience. I
3 think as we develop the work we should be --
4 absolutely, that should be front and center, like,
5 how will this mechanically work? Will you use a
6 serial number? Will there be a trust authority
7 that's part of the equation since these boxes
8 ostensibly need to be able to move around? You
9 know, there are a lot of questions we've got to
10 answer there.

11 I doubt there's a lot or any dissent
12 around the table that we don't want to make that
13 an easy and consumer friendly process.

14 MR. MURRAY: Perfect. Easy. I guess
15 the next issue was vendor experience, unless
16 people had more issues, but it sounded like there
17 was consensus. I'm going to accept Jay's word on
18 that. Again, this is Brendan.

19 The vendor experience, I think most
20 vendors are concerned with how they would build
21 their product, like, what necessary ingredients go
22 into building their product, and going back to the

1 black box discussion, how does the product build
2 that black box in or interact with that black box?
3 Is the black box going to be built into the
4 device? Is it going to be a separate interaction
5 that it has with the system somehow? I guess
6 that's kind of the main vendor. And when I say
7 vendor here I'm talking the retail vendor rather
8 than the independent equipment manufacturer or OEM
9 type provider.

10 Okay, so, what are the specific
11 specifications and how would the vendor, the
12 retail vendor, know how to build its device
13 knowing what the inputs are going to be or what
14 the inputs into the black box are going to be,
15 what the outputs from the black box are going to
16 be? And I guess the -- to go back to the
17 CableCARD example, knowing, you know, what goes in
18 and that DFAST comes out, how do you know what the
19 inputs and outputs are and how do you build to
20 that?

21 MR. GOLDBERG: So, this is Adam from
22 Public Knowledge. I think if we're talking about

1 a black box that a retail device talks to, I think
2 that, you know, the inputs to that black box are
3 kind of, it doesn't matter. And that's maybe one
4 -- that's a little easier to deal with than the
5 case where you consider a black box may be or may
6 also be something which gets internalized,
7 ingested in the -- like a CableCARD, you plug it
8 in and on the input side to the CableCARD, it
9 requires some host resources and the output from
10 the CableCARD also takes host resources, and to
11 plug something like that in, I think, frankly I
12 think it worked okay as far as it goes in a
13 CableCARD way, but if the -- because we had a
14 common set -- mostly common set of RF inputs, but
15 I think that if we are -- and I think we do have
16 to, consider cable and satellite and other MVPDs
17 that the chances of being able to have a black box
18 that plugs inside of something and requires host
19 resources on its input seems a little less --
20 seems a little more difficult to actually
21 accomplish.

22 And so I think that maybe we can take a

1 minute now or later to think about whether having
2 the black box be internal-able to manufacture or
3 not, I think that it certainly is an aspect of
4 solving the problem that we kind of need to know
5 before we can really get too far down the road.

6 MR. MEDIN: So, I think one of the --
7 this is Milo from Google again -- I think we
8 should not assume that there may be one
9 architecture that a CE vendor might choose to use.
10 So, for example, I could easily imagine one case
11 where you might have the black box built into each
12 device but another case where a CE vendor builds a
13 hub, a DVR, and has different elements that sit in
14 televisions. And so, there's only one black box
15 in that scenario even though there might be six or
16 seven TVs at the home, right, because the CE
17 vendor is doing the distribution of the service
18 inside the home on the network.

19 Certainly our devices do that today as I
20 think many operators do and we don't necessarily
21 have to put individual MVPD interfaces for
22 transport into every one of them. So, we want to

1 support the model where CE devices act as
2 gateways.

3 MR. ROLLS: Jay from Charter again. I
4 think if we're talking -- how to embody this from
5 a downloadable security standpoint, we're likely
6 -- I don't want to jump right to the solution, but
7 a SOC, a chip, is a common way that this is done,
8 which I realize is not -- you can't download a
9 chip, but you do still need some aspects inside a
10 chip to provide the security that we need,
11 commonly referred to as hardware root of trust.
12 You probably have to serialize that chip so it has
13 a unique number in it. So, that's for
14 authorization.

15 You know, you have to be able to have
16 right decryption engine in there. This is all
17 pretty common inside silicon circles. And I'm
18 speaking because we just went -- you know, we're
19 developing a downloadable security system. We're
20 about to launch it, so I've just gone through this
21 over the past year and a half.

22 But this is one way of approaching a

1 downloadable that would be -- to a vendor would
2 look like, oh, okay, I need to have this version
3 of a chip from a manufacturer, and a lot of these
4 silicon providers can do versions of their chips
5 with certain modules in it to do things like this.
6 That's kind of how it's done in the industry
7 today, that's what we've seen. I don't know if I
8 just gave you the --

9 MR. MESSER: This is Alan from Samsung
10 again.

11 MR. MURRAY: Go ahead.

12 MR. MESSER: I think one thing we all
13 should consider is as a subscriber, we may consume
14 content on many different devices and we may
15 consume that content in different ways on
16 different devices. So, in my home or my TV or my
17 gateway devices -- I think Milo was mentioning --
18 we may bring that in to some intermediary box and
19 redistribute it. However, I may have a tablet or
20 phone that I'm drawing my service from a hotel or
21 whilst on the road somewhere, and I might be
22 connecting back to the same service provider, but

1 through a different mechanism, in that case,
2 perhaps because it's a mobile phone it would be
3 inconvenient to have a black box, but there will
4 be some downloadable security solution that would
5 work on the phone platform that would give me
6 access to that content on that kind of mobile
7 platform.

8 So, I don't think we should think of
9 subscriber and MVPD as a kind of one-to-one
10 channel, essentially, although each MVPD does
11 things a little bit differently. Typically an
12 MVPD would probably provide several different ways
13 of getting to the content depending on the type of
14 transport that would be used to get the content.

15 MR. HESS: This is Mark Hess from
16 Comcast. Alan, I think those are some great
17 points. I mean, I'm sitting here thinking just,
18 you know, black box, whether it's physical or not,
19 although if it gets physical and we're once again
20 putting it into devices, it's going to be a power
21 drain in a world where we're really trying to stop
22 doing those types of things. I know we are

1 anyway.

2 But one of the things that's not lost on
3 me, and maybe we should take a quick poll or
4 history lesson here, but you know, three years
5 ago, four years ago, there were no tablets, right?
6 There was no video on those tablets. And if there
7 was some black box device that we all had to deal
8 with in order to get content onto those tablets, I
9 wonder what that world would look like. I mean,
10 it's an app. Those apps go onto the tablets.
11 They download. You sign in. You're able to
12 authenticate and verify. I don't have to mandate
13 that app, Milo, that app could be my app, it could
14 be your app, it could be somebody else's app, but
15 I really wonder, you know, what we need to be
16 careful of as we talk through this because putting
17 a device between us and what is the next tablet --
18 and I'm not sure what that is -- is problematic.

19 So, that's something to just -- the
20 committee should be kind of thinking about in the
21 back of their heads because that market wasn't
22 there and it developed and it developed incredibly

1 quickly, incredibly well and it innovates every
2 single day and all of us innovate on it and
3 Android is a big part of that. It's a great part
4 of that.

5 I'm not sure how a black box would have
6 allowed that to happen. So, something we all --
7 you know, just to have in the back of our heads
8 when we're thinking about this. The app situation
9 is maybe the way that this whole thing gets worked
10 out.

11 MR. CLYNE: Bob Clyne --

12 MS. NEPLOKH: Let me just -- if I can
13 for a minute there -- just flip that question back
14 around to you and try to envision ourselves five
15 years ago thinking about making a tablet and you
16 wanted to make a tablet that would work with the
17 service. As a vendor, what would you expect as
18 your experience to be in order to make a tablet
19 that could access a video service?

20 I think that's the experience we're
21 trying to describe in sort of non-specific,
22 non-technical terms today.

1 MR. HESS: And I guess -- this is Mark
2 Hess again -- I guess my answer is, I couldn't
3 describe it. You couldn't describe the
4 environment, the execution environment, the
5 security environment, the application environment
6 -- you couldn't describe the environment that
7 Apple first with IOS and Google second with
8 Android came up with to enable those products to
9 be so innovative and have so much innovation
10 around them. I don't know how you could describe
11 it. That's my answer.

12 MS. NEPLOKH: Okay, we'll go to Bob
13 first.

14 MR. CLYNE: I just wanted to add on to
15 what Mark had said. Two years ago we didn't have
16 very many devices playing video in the home
17 outside of a TV. Today, three million customers,
18 Mark, from my MSO, we have over a million devices
19 playing out, and we didn't tell them what they had
20 to play, they came and we said, okay, if you're an
21 Android device you get this app, if you're an IOS
22 you get that one, if you're a PC, you get

1 something else, and it just -- it actually came
2 into play by itself. It wasn't mandated that each
3 person had to do this particular way of developing
4 a box or anything, you know, designing a tablet.

5 I think the industry itself today is
6 just moving in that direction that the app just
7 automatically allows that device to work.

8 MS. NEPLOKH: Yeah, I think this is
9 great. And so you're describing a vendor
10 experience here where the vendors come to the
11 operator and you work with the vendors in order to
12 build an experience.

13 I think we're trying to feel out if
14 that's the right vendor experience we should be
15 striving for and I think Joe had his hand up
16 first.

17 DR. WEBER: I just wanted to say -- this
18 is Joe Weber at TiVo, to kind of counter a little
19 bit Mark's assertion. We haven't defined black
20 box yet but in some ways the CableCARD was a black
21 box, has inputs, outputs, uniform output, and
22 unlike the assertion that you should fear that

1 that would limit going to iPads and others, in
2 fact, it enabled it. So, TiVo, before many
3 operators, was able to get cable services to the
4 iPad and to Android and to others because
5 CableCARD enabled that.

6 You didn't have to wait for apps to come
7 from the operator. So, we should enclose that
8 ability that consumers have now that TiVo, through
9 this black box of CableCARD, was able to get to
10 all these phones and innovate on the user
11 experience before most cable operators had an app.

12 So, in some ways, Milo had said earlier,
13 the ability to enable innovation to have choice in
14 user interface is something -- again, not
15 advocating that the black box is something
16 separate, but whatever the solution is, it enables
17 the same innovation.

18 MR. CARD: So, I think there's an
19 important point to make. To my understanding, the
20 best of my knowledge, Apple never, ever knocked on
21 DISH's door and said, hey, we're thinking about
22 building devices that might some day want to

1 operate your services. There was no retailer-
2 service provider dialogue with Apple and by and
3 large, that was true with most of the Android
4 tablet manufacturers as well.

5 Fortunately, they talked to folks who
6 did understand, say, the content provider
7 requirements, they understood there was some
8 baseline needs of security and the content folks
9 were open enough and had enough of those
10 conversations that the common requirements were
11 all met in the hardware that was built by those
12 retail manufacturers, but DISH didn't have any
13 input into that process.

14 So, it's not as though we outlined,
15 here's the app environment we need to run on,
16 please build those, it's, what's out there, what
17 app can we build there.

18 So, in some sense, as a service
19 provider, we came into the market wanting to play
20 in these fielded devices and we got to figure out
21 how to make our app work in that environment,
22 which is fine, and we've been successful, and

1 others around the table that have as well. Others
2 may have had more direct conversation with some or
3 all parts of that emphasis. I suspect Milo might
4 know the name of some of the guys at Android and
5 may have had some influence, or maybe not, in how
6 that was built. If you did, thank you very much
7 because DISH has been able to build apps on that
8 platform.

9 So, I think, the answer to your question
10 is what's the retail manufacturer to get these
11 tablet out, and it's been, let me build on the
12 hardware that was built that the CE manufacturers
13 apparently knew enough to build a reasonable
14 platform. And, again, that was absent any kind of
15 a regulation or a mandated way of building things.

16 So, Joe, when you talk about being able
17 to provide services out -- I mean, the sling boxes
18 that EchoStar builds also were able to be fielded
19 because they're analogue outputs and if all of you
20 all would just continue making analogue outputs,
21 gosh, one of my hats would be overjoyed and I
22 wouldn't have to worry about putting it to bed at

1 night.

2 So, there's -- I guess if you're asking
3 what is the aspirational retail experience, we
4 should keep that in mind. I hope not to have to
5 have 1,700 different conference calls over the
6 next five years with each of the retail
7 manufacturers who want to build a device on DISH,
8 but that moves into the what's the service
9 provider experience in this.

10 MR. MURRAY: And I think those mesh
11 well. This is Brendan again. How can we make
12 that a very easy experience for everyone involved?
13 Is there like a single clearinghouse? Is there a
14 certification process where there's a company that
15 says, hey, you know, you can't have analogue
16 outputs that are going to send unprotected video
17 out and --

18 MR. CARD: Please don't.

19 MR. MEDIN: I mean, most of us -- this
20 is Milo from Google -- most of us MVPDs have
21 programming agreements that stipulate certain
22 constraints on output. So, I think to the extent

1 that, you know, device -- the cryptographic
2 protections are extended properly, vendors have to
3 go through some form of certification process to
4 do that. DTLA has a process that works quite
5 well. There are others that could do that, HDCP
6 is a clearly approved output standard.

7 I think these things will change over
8 time so it's important to recognize that those
9 interfaces may change over time, but I think going
10 back to the sort of core issue, we want to make
11 sure that users really do have lots of different
12 options. Apps are one option, but there are
13 plenty of other interfaces. You know, for fiber,
14 we integrate Netflix and VUDU and other over the
15 top services in our linear environment. Most of
16 my friends who are normal people don't prefer to
17 exit one app on their television and go to another
18 one to search for programs. They like to have an
19 integrated experience there.

20 Some folks want to do the kind of app
21 approach, and that would be fine, but I think what
22 we want to build is a framework that empowers all

1 kinds of user interfaces to be supported.

2 Let's not settle for a subset. Let's
3 fix the general problem and then subsets come out
4 of that naturally.

5 MR. CARD: Actually, I've got a -- that
6 brings up an interesting part of a conversation I
7 had at lunch. So, Milo, on your service if I am a
8 nine year old kid watching the Disney Channel and
9 I search on, say, key word "Barbie", will that
10 search necessarily bring up all of the content on
11 the service that might have Barbie or the adult
12 entertainment actresses whose names might include
13 Barbie? Or is there some narrowing that's done
14 because of the context of a search that you guys
15 are aware of or sensitive to?

16 MR. MURRAY: All right, we're getting a
17 bit off topic here.

18 MR. CARD: No, no, seriously.

19 MR. MURRAY: I understand, but this
20 doesn't have to do with the security issue, I
21 don't think, and that's the --

22 MR. CARD: I'm sorry. Okay. I

1 apologize. I thought we were talking about the
2 MVPD experience in a retail environment. If this
3 is something that is managed and that needs to be
4 managed going forwards, we need to write that down
5 as a requirement if it's not. If we never need to
6 worry about any of the requirements not to show
7 children's programming and advertisements all
8 mangled together that we seem to be operating in,
9 that's fine. Let me know and I'll stop asking
10 these kind of questions.

11 MR. MURRAY: I don't think this is the
12 specific issue of how you would build a device
13 that handles authentication for a service
14 necessarily.

15 MR. CARD: Okay. All right. Then, God
16 help the children.

17 MR. MURRAY: That's no -- I'm not saying
18 that's not an issue that won't ever be dealt with,
19 I'm saying for this -- for purposes of this
20 specific advisory committee, that's not
21 necessarily an issue.

22 MR. CARD: Okay. That's fine. Do I

1 need to worry about providing adult programming
2 into the city of Cincinnati, which I'm not allowed
3 to do? These are -- I'm sorry, but you've told me
4 that I can't address all of the requirements as a
5 service provider that I am mandated to address.
6 So, which of the requirements, as a service
7 provider, shall I not address in this committee?
8 Can you provide me a list of those?

9 MR. MURRAY: To the extent you need to
10 figure out localization, I believe that's an
11 authentication issue.

12 MR. CARD: Yes. Some of those
13 localization issues are driven by content
14 restrictions. So, I understand. I'm not trying
15 to bring up a red herring. This is actually a
16 problem, which we have applied technological
17 solutions to and some of those are absolutely in
18 the realm of downloadable security.

19 MR. MURRAY: Sure.

20 MR. CARD: Some of them absolutely go
21 into the user interface, and I am curious, I'll
22 talk to Milo offline to understand what they --

1 how they manage to handle this, because I
2 apologize for asking that in this committee. I'm
3 more curious to see if they've figured out a
4 better way to do it, but there are absolutely
5 requirements that are mandated on the way we
6 provide service that any downloadable system needs
7 to be aware of and any retailer, I suspect, should
8 be cognizant of or they're going to find
9 themselves subject to the same rules that -- I
10 mean, history will repeat itself, let's say.

11 MR. MCCLELLAND: Hey, John, if you can
12 hear me, this is Bruce with ARRIS, and, you know,
13 I think what you're doing is trying to kind of
14 test where the boundaries are on this topic,
15 right, which is, I think, a very fair point. And
16 we start with the premise that we're talking about
17 downloadable security, but it just shows how
18 complicated that topic is, right, and there's a
19 whole bunch of other aspects that go into
20 providing that service that have to be considered.

21 But I think your question is valid and
22 frankly I'm confused exactly where those

1 boundaries are around the scope as well.

2 DR. ANSARI: And this is Ahmad Ansari.
3 I'm on the same boat. So, I'm not really clear.
4 We need to probably define the boundaries clearly
5 and I agree with John -- the points John brought
6 up are valid points we need to discuss.

7 MR. MURRAY: Okay, well then let's frame
8 them in the discussion of security rather than
9 user experience, necessarily, not necessarily
10 what's going to show up on the screen, but how you
11 authenticate whether it's allowed to show up on
12 the screen, if that makes any sense.

13 MR. MCCLELLAND: Yes, I was going to
14 suggest something similar where, you know, like we
15 went through the black box discussion, and I
16 apologize, being remote it's really difficult to
17 participate, but, you know, a number of the things
18 that got talked about were not really security --
19 you know, strictly downloadable security related
20 topics. They're at the fringe of user interface
21 and the complete experience that goes with
22 delivering the content. And I think, you know,

1 you could have a list of fairly strictly
2 security-oriented items and then a longer list of
3 things that are around the boundary that may need
4 to be thought about as we go through this.

5 MR. ROLLS: This is Jay at Charter. You
6 asked one question, which was interesting, what
7 should we try to be thinking of in the future and
8 I'm sorry if this is so obvious, but I want to
9 state it that we do keep in mind Google certainly
10 pioneered cloud-based services, but I can tell
11 you, watching what's happening inside my company,
12 it is nothing short of amazing how fast that's
13 moving. So, I think we should always be thinking
14 a little bit in terms of -- you know, we're using
15 these sort of box-like paradigms but we really
16 should be thinking of this in more of a virtual
17 standpoint because that's how so many of these
18 services are getting created now. It's amazing
19 what's able to be manifested in a centralized
20 infrastructure.

21 MR. SMITH: This is Brent from Evolution
22 Digital. Jay brings up an excellent point. If

1 you're looking for, let's say, use case or
2 something that gives you an inkling as to how this
3 thing could be deployed, I think the best case is
4 TV everywhere, authentication of services, whether
5 it be CBS, Arts & Entertainment, all the channels,
6 HBOGo, operators, for the most part, I think, all
7 have ways in which these devices -- those mobile
8 devices can access and consume content, the
9 permissions aspect ratio, the DRM, all of those
10 things are built into the infrastructure.

11 I think the issue is really around
12 linear live services. Let's kind of set that
13 aside. If I'm a Comcast customer, I'm a TiVo
14 user, I can get all of those services on my mobile
15 device. I can watch live television. I can watch
16 -- I can search across in a unified way any kind
17 of content that I want.

18 So, I mean, there are shining examples
19 of how the industry is taking hold of this issue,
20 how -- on the back office side, because when you
21 talk about authentication and security you need to
22 have the relationship with the billing system so

1 the customer information is tied to the content
2 that he's seeking to consumer.

3 So, already the industry is addressing
4 this, and this goes across, I'm sure, all MVPD
5 platforms, whether it be satellite, cable, or
6 telco. So, again, the bloody albatross in the
7 room here is how do we deal with live broadcast
8 services, and cable industry is doing their part
9 to try and fatten up the pipe. Just, you know, to
10 put context to it, for those of you who don't know
11 who Evolution Digital is, we've been around
12 largely in the U.S. Market to find a way to help
13 operators in a cost effective way get their
14 analogue bandwidth back.

15 And let's put things again in
16 perspective. An average cable operator today has
17 750 megahertz of spectrum that he's playing with
18 and when you chop off -- when you take a look at
19 it, analogue consumers 75 percent of that, 500
20 megahertz typically was used just to deliver
21 analogue services to a non-digital world TV.

22 Well, if you put that and convert that

1 to bit rates, that's almost 5 gigabits of
2 spectrum, of broadband capacity, and so the idea
3 here is we went and petitioned the FCC to get a
4 waiver for a product that could be used on a low
5 cost basis to reclaim that spectrum. And I bring
6 this up really because -- to Mr. Wheeler's point
7 -- we have to do something that's not unduly
8 burdensome to this industry, and the CableCARD,
9 for all its intent and desire to fix this issue,
10 put at least a \$50 bill inside of every set top
11 box that's been sold over the last few years.

12 That money could have been better spent
13 to get your spectrum back to do all IP, which is
14 where we now get to the case of having an IP
15 delivered service that's authenticated, tied to
16 the billing system, where there's innovation on
17 user interfaces, et cetera.

18 So, I really want to just bring to the
19 point here, we're speaking also on behalf of the
20 smaller cable operators, the NCTC, who are our
21 primary customer base, and whatever decisions that
22 are made here, whatever recommendations, can have

1 an incredibly adverse effect on their viability.
2 So, I just -- I think it's really important that
3 whatever this black box or thing that we come up
4 with does not put at a disadvantage the operators
5 who are desperately trying to stay alive here and
6 the CableCARD unfortunately had a detrimental
7 effect in a lot of ways. For all its good things,
8 getting one retailer out to the market, they've
9 had a deleterious effect of many others. I'll get
10 off my soapbox.

11 MR. MURRAY: Okay. Well, I actually
12 think you brought up a good point, the least
13 burdensome, as the committee works on this report,
14 ideally it will be least burdensome to all five
15 here. I'm hoping there will be some sort of
16 Taoist answer that is actually least burdensome
17 across all so that it's not a -- you know, if it
18 saves the CE manufacturers a lot it ends up
19 costing MVPDs a lot -- I'm hoping that all costs
20 will be kept down or all burdens will be kept down
21 so that that would be a great thing to keep in
22 mind.

1 The last thing, and I think we've
2 already talked about this a little bit, but I
3 would like to hear about the content owner
4 experience. Would content owners be involved? I
5 know there's, right now, the privity of contract
6 ideas that the CableCARD device is certified by
7 Cable Labs. Cable Labs has privity of contract
8 with -- or at least Cable Labs' members have
9 privity of contract with the content holders. I'm
10 wondering, is that the least burdensome way to do
11 it? Is there a better way to do it?

12 MR. MCCOSKEY: I think -- look, the
13 bottom line is, what rides on top of all of this
14 are the content owners with the MVPDs (inaudible)
15 and ultimately those deals today and in the future
16 will drive even more technical specifications.
17 MVPD folks and the DBS folks have talked about
18 this. Content owners require certain technical
19 capabilities to protect content and to protect
20 what happens to content downstream. So,
21 ultimately we can say that fits in the policy
22 side, but it really doesn't because those

1 standards and those specifications from content
2 owners are what has to flow through and ultimately
3 be implemented.

4 The good news is, a lot of those things
5 exist today. A lot of those things are working
6 really well today. And when you look at, you
7 know, the next step, which most people would say
8 is ultra HD, you know, there are already a lot of
9 industry efforts -- Movie Labs published, I think,
10 a year and a half ago, a standard kind of
11 specification around the content industry's
12 requirements for protecting UHD content. And
13 that's been something that I think most people
14 have picked up. It's been embraced -- (inaudible)
15 has started to embrace that from a standards
16 perspective.

17 So, ultimately, content owners want a
18 great consumer experience like everybody else
19 does. We want to protect our content, which
20 means, you know, authenticating users and having
21 reliable handoff standards and specifications that
22 the industry can adopt and the content owners are

1 comfortable with the level of content protection
2 around their content.

3 So, I don't think there's a huge content
4 issue here and, again, I think that if you look at
5 what's happening in the industry and what has
6 happened over the past several years and around
7 what Mark was talking about with tablets coming on
8 and so forth, you know, the market has been
9 solving those problems and it's been solving them
10 in a way that uses existing standards and modifies
11 standards to get there.

12 So, that's, I think, a general
13 perspective from content.

14 MR. HESS: One thing -- Mark Hess from
15 Comcast. You know, we're talking about
16 downloadable security. We're talking about
17 content security. So, as much as, you know, we
18 kind of maybe dismiss what John was saying about
19 searching and what not, the content agreements do
20 have other things beyond security in them --
21 channel position, tier of service is some of the
22 easy stuff, but you know, advertising that's

1 suitable for the content. Are people replacing
2 the advertising? Overlays. You know, the
3 branding of the content in the UI. The placement
4 of the content in the UI. All of those things are
5 now -- you know, as the world's gotten more and
6 more and more and more complex, all of those types
7 of things have been written into our agreements
8 and they make sense. I mean, you know, the very
9 first cable system I ran 32 years ago, one of the
10 systems in West Virginia had 10 channels, they
11 were all off air. I look back at those days now
12 and think, how nice that was, right, and when the
13 first cable-ready set came along, we were quite
14 happy. That was great. Easy for the customer to
15 use.

16 But the world has gotten so much more
17 complex since then. You know, we can't sit here
18 and say, all I worry about is the security itself,
19 because there's other requirements that are in
20 there that have gotten written into these
21 agreements, you know, for good reason, and it's
22 because the world has changed.

1 So, just one more thing to bring up, I
2 don't know if you'd agree with that or not.

3 MR. MCCOSKEY: No, I would. And I think
4 those agreements are not -- those are one-off
5 agreements between each content provider and each
6 distributor. So, it's a very complicated
7 environment.

8 MR. MURRAY: Okay. Well, with that
9 we've hit the 2:00 o'clock hour. So, if folks
10 want to take a ten-minute break, be back here by
11 2:10?

12 (Recess)

13 MS. TRITT: Okay, let's get started.
14 Who is going to lead this discussion?

15 MR. MURRAY: Right now I guess the talk
16 is going to be about working groups.

17 MR. GOLDBERG: Adam Goldberg with Public
18 Knowledge. I mean, can I add something to the
19 tail end of the conversation we were having just
20 before the break? I don't want to derail too much
21 but I think that it's important to at least
22 consider -- and I thought, you know, I mean, we

1 try not to talk about policy and talk about
2 technology only, but I think that much of the
3 conversation we had just before the break was sort
4 of centered around policy, that this whole
5 business with contracts and channel placement and
6 things like that seems kind of entirely a policy
7 issue, whether that should happen, whether that
8 should be allowed, whether it should continue is
9 all kind of a non-technical issue that involves
10 things that have been regulated in a policy stance
11 and I think that a lot of that stuff is really
12 kind of beside the point and we should be focusing
13 on technology and not worrying about things like
14 channel placement issues.

15 MR. MURRAY: Okay. So, we'll try to
16 merge that into our discussion here of working
17 groups. I know that John sent around some ideas
18 on working groups and I don't think we necessarily
19 wanted to prejudge working groups, we just wanted
20 to offer our thoughts. I don't know if people
21 want to hear our thoughts or if people just want
22 to go off of John's proposal on Friday, but I will

1 mention them briefly though.

2 Our first thought was that there would
3 be a security component working group that works
4 on the security component, you know, what the
5 specific security functions would be. The second
6 group would be a non security API working group
7 that works on the ideas of how the device is going
8 to get the content, what the necessary meta data
9 is, those types of issues, a codecs if necessary.

10 And then the third group would be an IP
11 working group, an intellectual property working
12 group that deals with the patent licensing, there
13 may be a draft licensing agreement, those were
14 just our thoughts though and we didn't necessarily
15 want to prejudge, and John had some great ideas,
16 so however the committee wants to go forward on
17 that. Cheryl, maybe take the lead on driving the
18 committee on how to pick working groups.

19 MS. TRITT: Does anyone have a view as
20 to which one might be better or does someone have
21 their own?

22 MR. ROLLS: Could we get John just to

1 restate -- just at a high level --

2 MR. CARD: Sure. Let me -- I believe I
3 even have a copy of what I sent, which would make
4 some sense.

5 So, from a high level -- well, first,
6 public thanks to Steve Dulac from DirecTV who's
7 helped me refine these ideas and he and I are
8 essentially coauthors of this, but I want to make
9 sure and let the committee understand, this is
10 coming from DISH as a committee member, so we're
11 happy to accept full responsibility for our
12 actions in bringing this forward.

13 Especially based on some of the
14 conversations that have happened so far with
15 scope, it appears to me, and I will assert that I
16 need some more background on bits and pieces of
17 this ecosystem. In particular, I don't really
18 understand in great detail some of the details of
19 the cable architectures where you say you've been
20 experimenting with downloadable security. I'd
21 like to learn a little bit more about that before
22 I go and write recommendations in the name of the

1 commission about downloadable security, especially
2 if you can tell me what to do or not to do.

3 So, to that end, we came up with the
4 idea that we'd have three working groups and,
5 broadly constructed, one would look at current
6 commercial requirements, because as much as I
7 respect, Adam, you saying you don't want to go to
8 the policy side, in reality, I think all of these
9 systems need to operate in the real world and
10 commercial requirements will come in with the
11 kinds of business arrangements you make with the
12 end subscriber or that a retailer would make with
13 a person going to the store.

14 So, when you say you'd like to have a
15 customer be able to buy a box and just plug it in,
16 that seems like a commercial requirement. The
17 technical requirement is that the interface you
18 use to plug it in needs to be commonly available.
19 So, there's technical and commercial requirements,
20 even in that very simple solution, that very
21 simple use case of what you're pursuing.

22 I think there are consumer privacy

1 requirements that come in, both commercially as
2 well as maybe even some Cable Act requirements on
3 some MVPDs. DBS has some particular views on
4 commercial requirements that we know are not
5 necessarily shared by other services.

6 Secondly, a working group to address
7 technology and current architectures, to kind of
8 document those systems that are deployed -- and I
9 know we haven't yet resolved the question about
10 over the top or not, so maybe the technology
11 committee should collect some information that it
12 can understand about services that run on other
13 managed networks and at least present the
14 requirements its able to uncover without
15 prejudging whether or not those are going to be
16 able to be in scope of the final report or not.
17 That seems like a worthwhile task to undertake
18 even if we aren't able to boil the whole ocean at
19 once.

20 And then, lastly, a working group that
21 addresses the future trends, and that is where
22 both the technologies that we're aware of that are

1 likely to be found on these systems going forwards
2 as well as the kinds of operations that have
3 historically driven different operators to make
4 different decisions or different retail devices to
5 make different decisions in what they build.

6 Broadly speaking, those three working
7 groups seem as though they could address the
8 requirements that would need to be met by any kind
9 of either a black box or some kind of downloadable
10 security system. And then given, let's say, two
11 months timeframe, eight weeks, those groups would
12 be done with their work, they'd bring their
13 requirements, the documents, back to the DSTAC as
14 a whole. We would meet then presumably as a whole
15 body and figure out what to do with those
16 requirements, how to dispatch them, and we might
17 end up forming working groups very much like you
18 suggested to address each of those requirements in
19 those three areas. There might be three or four
20 other areas, there might be no other areas that we
21 need to address in our final recommendations.

22 And then we'd figure out what to do with

1 the rest of our copious spare time before
2 September, but I don't see that these working
3 groups are a long-term task. I did ask earlier
4 about the quorum rules, so it feels like
5 nine-member working groups is going to be the
6 maximum. That means one and a half seats for
7 everyone around the table if you do the math and
8 lose a half person. I'm half a mind to be that
9 half a person, which means -- never mind.

10 Maybe there is room for a fourth working
11 group. Maybe I've fuzzed some things together
12 that shouldn't be there, but that was at least the
13 proposal that I shared with the workgroup here and
14 I socialized with a number of you before this
15 meeting to get some feedback.

16 MS. TRITT: Okay. So, let's hear the
17 feedback. Adam?

18 MR. GOLDBERG: Adam Goldberg from Public
19 Knowledge. So, John, if I understand right, at
20 least part of what you describe is we're trying to
21 develop a solution that works for a bunch of
22 different networks and part of having -- part of

1 doing that is figuring out where the commonalities
2 and differences are so that we know what the heck
3 we're doing, right?

4 MR. CARD: Yes.

5 MS. TRITT: And that would be like a --
6 maybe we're calling it a work group, it seems to
7 me more like an ad hoc group, a task to undertake
8 between now and the next DSTAC meeting and then
9 sort of reevaluate what the next work steps are,
10 right? Does that make sense?

11 MR. CARD: Again, it feels like a
12 two-month-ish timeframe task. Yes, that's
13 correct. That's what I'm calling the technology
14 current architecture group.

15 MS. TRITT: You're sure this is a
16 two-month horizon? That's a lot of work for two
17 months.

18 MR. CARD: Well, we have basically six
19 months, so if we spend more than about a third of
20 our time on these tasks, we're going to have less
21 and less time to accomplish anything else. So,
22 maybe not. Maybe I'm wildly optimistic in

1 planning to lose no sleep.

2 MR. CLYNE: This is Bob Clyne. I agree
3 with John. We need that time to figure out each
4 person's system, because if we don't know how
5 somebody else's system is working today, we can't
6 give a solution. So, I agree with John.

7 MR. HESS: This is Mark Hess from
8 Comcast.

9 MR. MESSER: This is Alan from Samsung.
10 Could you put me in the queue, please?

11 MS. TRITT: Just a minute. Mark, why
12 don't you go ahead and then you.

13 MR. HESS: Yeah, I wanted to kind of
14 reemphasize the education part. I think this is
15 something, Cheryl, I said to you, right, in our
16 first conversation? I mean, I really believe even
17 the bulk of the next meeting should be a little
18 bit about education on a lot of fronts, and while
19 I hear you on the policy side, I mean, for you
20 it's policy, for me it's contractual requirements.
21 I mean, it is what it is. You know, our
22 requirements are what they are.

1 So, understanding some of those
2 commercial requirements, too, are important. So,
3 I like the way you laid this out. I mean, I think
4 it gives us a framework that we can kind of break
5 this down and attack it. I especially agree that
6 if we can find commonalities, then maybe there's a
7 way to find a way that we can actually come up
8 with something.

9 So, to me, this is really well thought
10 out. So, thanks, John. And Steve, sorry.

11 MS. TRITT: Why don't we just go around
12 the table and let's hear what people -- yeah, and
13 then we'll go to the people on the phone after we
14 go around the table. Brad?

15 MR. LOVE: This is Brad from Hauppauge.
16 I think John's initial proposal on the working
17 groups sounds very good. It does take into
18 account the (inaudible) companies. And I would
19 like to hope that we could get a good amount of
20 stuff done in two months to leave ample time for
21 the rest of the committee so that we can move on
22 to other topics or further refine what we do

1 suggest.

2 MS. TRITT: Okay. Ken?

3 MR. LOWE: This is Ken. I don't object
4 to what -- the things that John has suggested.

5 MS. TRITT: Okay.

6 MR. MCCOSKEY: John McCoskey. I agree.
7 I think it's a good way to go. I think we have to
8 be pragmatic, though, and six months is probably
9 really more like five months. So --

10 MS. TRITT: It is -- I mean, I didn't
11 mention this this morning, but if we can't reach
12 consensus, we're going to have to have a majority
13 report done in time for the minority to do their
14 draft, so that's probably early August. That's
15 not very -- if we take the first two months to
16 information gather, that doesn't leave a lot of
17 time.

18 MR. MEDIN: This is Milo from Google. I
19 think John's proposal seems fine to begin with. I
20 do think there's a phase zero working group, which
21 is, what is the -- what are the requirements for
22 the system. I think actually Alison outlined, at

1 least, a good variant of something that would be a
2 functional successor to CableCARD, that builds on
3 what CableCARD does today and gives more
4 capability on top of that.

5 Without that, it's hard for -- I don't
6 know, as an engineer to have context in either --
7 any of these groups, to know whether or not we're
8 doing something useful or not. So, having Alison
9 maybe summarize those requirements that you talked
10 about earlier in a doc as guidance to the working
11 groups, I think would be very useful because we
12 don't have that -- I think we could just go around
13 in circles about, well, what's the appropriate
14 interface for this on this provider's platform, et
15 cetera.

16 MS. TRITT: Okay. I think we can do
17 that, can't we?

18 MS. NEPLOKH: Sure.

19 MR. MEDIN: Thank you.

20 MS. TRITT: Alan, Samsung?

21 MR. MESSER: Yes. Alan from Samsung. I
22 was just turning off the mute, sorry.

1 disenfranchised, that they know the scope of the
2 ask, because that line between current and future
3 with technology moving so quickly, unfortunately
4 will change probably by the time we get reports
5 back, and so understanding "current" will
6 definitely be key to avoid overlap or other kind
7 of concerns.

8 MS. TRITT: Thank you. Good points.
9 Jay?

10 MR. ROLLS: Hi. Jay at Charter. I
11 think I'm a little agnostic on the third one, but
12 on the first two, really important and I actually
13 thought the number one group was sort of what you
14 were talking about, Milo, that it's really about
15 nailing down -- you know, we're all engineers, so
16 we want to know what are we building to, what's
17 the goal. So, wanting to -- so, maybe I'm -- if
18 the three gets formed, I'm opting out of being on
19 that group.

20 MR. CARD: So, Cheryl is asking -- so, I
21 mean, your phase zero work, Milo, what is it --
22 what is the straw man or what is the thing we're

1 trying to build to? That may be a part of the
2 technology discussion, in other words, we need to
3 describe the CableCARD in enough detail that we
4 know we're at least building a replacement to
5 that. I don't know if we've got a fourth working
6 group to have that discussion or I don't know if
7 you are suggesting we wait to do this work until
8 we do some other work.

9 MR. MEDIN: No --

10 MS. TRITT: You were talking about it as
11 a threshold, as I understood.

12 MR. MEDIN: Yes, it's basically a
13 threshold qualifier that basically says -- this is
14 Milo from Google -- that we understand what
15 baseline is today from what CableCARD -- since
16 we're building a successor to it -- we would want
17 as least as great functionality as we have today.

18 MR. CARD: You may understand what
19 CableCARD does.

20 MR. MEDIN: Absolutely.

21 MR. CARD: DBS doesn't do CableCARDS, so
22 I actually do need the background in what

1 CableCARD does.

2 MR. MEDIN: I do think Alison did a very
3 nice job at the start of summarizing that. So, I
4 don't think, if you're willing to go put that into
5 paper, then I think we're actually in pretty good
6 shape there.

7 MR. CARD: Okay.

8 MR. HESS: This is Mark Hess from
9 Comcast. I have one kind of procedural thing on
10 that that I brought up earlier in the day. I
11 mean, I think what Alison brought up is wonderful
12 guidance, but I think it's the committee that has
13 to vote and decide on whether that's the right
14 scope. So, as guidance, it's good. As scope, I
15 think someone has to vote on it.

16 And we still have outstanding issues,
17 like are apps part of it or not part of it? So,
18 that's where I think the background work can
19 happen.

20 MR. MEDIN: The CableCARD gives you
21 complete freedom on UI, so -- an app can't do
22 that. So, again, I think we go back to what the

1 current baseline is. If we keep arguing -- there
2 are lots of discussions we could have about what
3 629 should say or what it does say or the rest. I
4 don't think that's in scope.

5 MS. TRITT: No, we're not going there.

6 MR. MEDIN: Right. Okay.

7 MS. TRITT: Brent?

8 MR. SMITH: Yeah, it's Brent from
9 Evolution. I think the education part of it, I
10 think, is critical. CableCARD, the first part of
11 that is cable, and the only people who are
12 actually having to deploy it are largely cable
13 operators. So, satellite, obviously, needs a real
14 refresher on this because they've not had to do
15 it.

16 There's common interface modules and
17 secure modules in satellite, but I think we need
18 to quickly get everybody on a level playing field
19 in terms of understanding what CableCARD is and
20 short of us coming up with a more broader mandate
21 other than just replacing the CableCARD, because
22 that's -- again, I think I'm kind of confused here

1 whether this is something for -- ubiquitous or are
2 we saying, let's build a CableCARD-like experience
3 across all MVPD platforms. Then the only thing we
4 can do is just take what's in the policy today and
5 say, okay, that device, whatever we do, must, at a
6 minimum, provide this functionality.

7 So, I think it's really important now
8 that we bring satellite in and others, that there
9 are security methods that are used that are not
10 within the cable space. So, we almost need to
11 triage all of the proprietary security
12 methodologies that are used across these different
13 platforms and hopefully get to a point where, are
14 there some common elements that can interoperate.
15 Because let's be quite clear here, we cannot come
16 up with a solution that requires a simulcast of
17 existing services. There has to be a way that
18 this thing interoperates, otherwise, how on earth
19 can anybody economically provide a solution?

20 MS. TRITT: But are you generally okay
21 with --

22 MR. SMITH: Yeah, but I just wanted to

1 emphasize that we need to triage pretty quickly
2 the different security methods used across all
3 these MVPDs so that we can -- is there a
4 methodology that can get us to a common
5 interoperable type of solution.

6 MS. TRITT: Got it. Joe?

7 DR. WEBER: I'm Joe from TiVo. So,
8 certainly the concept of having the taxonomy of
9 what's out there, what are the future trends, is
10 very important and something we should do first.
11 I think the worst thing is to have two months
12 spent and what we get back is, here's 1,000
13 different things everyone does and we've made no
14 progress. So, I'd rather see that it's a few
15 weeks in terms of taxonomy and then working group
16 two is the one that really matters, based on phase
17 zero from Alison, great, you did the taxonomy, you
18 see all the different landmarks. At a high level,
19 what is the recommendation? And it might be,
20 look, the way these MVPDs deliver technology has
21 to be different than the way the other MVPDs do.
22 We just don't know.

1 So, in short, I'd rather have some
2 clear, high- level, preferred architecture as the
3 output if it's going to be two months as opposed
4 to just the taxonomy.

5 MS. TRITT: Can you shorten the time?

6 MR. CARD: Sure. Again, I picked two
7 months literally at random. If it's six weeks --
8 six weeks is shorter than two months, one month --
9 one month is very, very, very short. I'm assuming
10 that we're going to meet face-to-face, let's say,
11 monthly. That gives us, you know, three weeks to
12 schedule some bi-weekly conference calls between
13 now and then. That's about six 90-minute meetings
14 to go over the architecture, for example, if we're
15 looking at technology workgroups, six 90-minute
16 discussions to cover all of the currently deployed
17 systems means people are talking really fast.
18 Seriously.

19 I'm not sure that any shorter than six
20 weeks is humanly possible to do, but, yeah, I'm
21 sensitive to the need for speed. If you really
22 think we can get this done in a month, we'll --

1 DISH will do our best to support whatever the
2 timeframes laid at our feet.

3 DR. WEBER: If I could respond to that?
4 Definitely, I think, but if we had some guidance
5 in terms of what's in the scope of that
6 discussion. I mean, you know, you and I have had
7 discussions of you have to control where a
8 satellite dish is pointing to and which satellites
9 it is -- I think in terms of this black box,
10 that's out of scope. We don't necessarily need to
11 learn all the details of your technology.

12 MR. CARD: That'd be great. If I know
13 ahead of time -- okay, I'm sorry, this is John
14 Card from DISH -- if that's a conclusion we can
15 reach ahead of time, then, yeah, I won't waste the
16 time opening the Pandora's box of all the details
17 that don't really matter for this system. That's
18 fine. I'm great not to have to document what I
19 don't have to document.

20 DR. WEBER: I am in agreement with
21 Milo's statement as well, some guidance then in
22 terms of phase zero would help the scope.

1 MR. CARD: Sure. If we can reach that
2 quickly.

3 MR. WILSON: Well, thank you, Joe. I
4 was going to -- Robin from NAGRA -- I was going to
5 say the same thing. I -- maybe it's because we
6 already make CableCARDS, I didn't want to spend
7 two months figuring out what we already knew or a
8 lot of us around the table already knew. Maybe
9 that's been a little unfair to some of us, but
10 maybe it puts some pressure on the few people who
11 don't actually know how CableCARDS work, and I
12 think some of us are pretty fast learners here,
13 looking at you, John, we could shrink that down
14 substantially.

15 The other -- I actually rather like
16 Brendan's -- I think it was your three topics --
17 I'm not quite sure of we can -- that meshes
18 sequentially later, it's not quite a map, but I
19 did rather like that way of looking at life -- or
20 Alison's -- I'll just throw that out.

21 The last thing is, again, somebody --
22 the Samsung guy on the phone whose name I've

1 forgotten, sorry, Alan, sorry -- I also was
2 concerned over this past looking/future looking
3 definition of "current". Is that "current" as in
4 how we currently would like things to move
5 forward? Or is it "current" as in how things have
6 been in the last 15 years? There's a big
7 difference between that definition.

8 MS. TRITT: Let's see, Dr. Ansari, are
9 you on?

10 DR. ANSARI: Yes, I'm here. Thank you.
11 So, in terms of our service and the structure that
12 John proposed, I am in agreement with John Card
13 from DISH. As you know, we are an IPTV service
14 provider and we don't have the background and
15 experience that (inaudible). I think the
16 education (inaudible) would be very useful, and
17 also the structure that John proposed, I think I
18 am in agreement with that.

19 MS. TRITT: Okay, thank you. Let's see,
20 Brant, you haven't spoken I don't believe. Brant
21 Candelore?

22 MR. CANDELORE: Yes, we would be

1 interested in doing some of what John is doing
2 with regard to the commercial requirements, kind
3 of laying down the -- whether the requirements --
4 the different providers, you know, like guide,
5 user interface, you know, things like that,
6 security requirements, interface like for
7 subscription status, all that stuff.

8 And then we believe that the -- a little
9 bit of what Alan -- Brendan mentioned, just
10 talking about the security APIs, and perhaps the
11 non-security APIs. I think a little bit might be,
12 as Robin was mentioning, might be a good way to
13 look at things, maybe simplify it without, perhaps
14 going into all of the details of the -- you know,
15 what's actually going on right now. So, that
16 might be a simplification.

17 MS. TRITT: Okay. Thank you. Is there
18 anyone else on the line that hasn't spoken that
19 has a view on this?

20 MR. CLARK: Hi. It's Matthew Clark with
21 Amazon. Just a couple points on the working
22 groups. Broadly speaking I think John's got a

1 good proposal in front of us. I would echo the
2 sentiment, though, that some type of a phase zero
3 seems like the right way to go to bring a bit more
4 precision to the discussions. I also wonder about
5 the timing.

6 I think I would echo other sentiments
7 about trying to make this something more like a
8 six-week exercise, and I think maybe my final
9 comment is this, and it regards the sort of
10 current commercial requirements, I wonder if we
11 can't make the exercise a bit more simple if we
12 just focus on those requirements that really have
13 to do with the secure transmission and related
14 issues around content itself, because I think
15 those ultimately are what drive the security
16 concerns and they do vary depending on the nature
17 of the video content. If we can sort of pinpoint
18 those things that might make that exercise a bit
19 quicker and perhaps steer us away from some of the
20 broader policy issues that I know are of concern
21 for the FCC in this exercise.

22 MS. TRITT: Okay. Good. Well, it seems

1 like we have something resembling consensus in
2 this regard.

3 MR. MCCLELLAND: Hey, Cheryl, Bruce
4 McClelland here with ARRIS.

5 MS. TRITT: I'm sorry. I didn't mean to
6 leave you out.

7 MR. MCCLELLAND: No problem. So, just,
8 I guess, quickly. I thought the framework of the
9 first two groups was a good way of coming at, you
10 know, getting to that common understanding and
11 maybe a common baseline and then kind of building
12 on what Mark said, you know, the outcome of that
13 being some consensus around the scope, whether
14 that's voting together or at least getting an
15 understanding of where we're aligned on, all
16 right, we're focusing on these requirements,
17 they're security related, these ones are out of
18 scope, et cetera, would be pretty helpful.

19 MS. TRITT: Okay. Anyone else on the
20 phone that I overlooked? Okay. We're done. So,
21 I do think we have something resembling consensus.

22 MR. CARD: So, yeah, in response to this

1 -- I'm sorry, this --

2 MS. TRITT: But it seems to me that
3 maybe we need to add a phase zero with--

4 MS. NEPLOKH: Well, I don't know if
5 anybody was suggesting that be a working group but
6 rather maybe some materials that I provide.

7 MS. TRITT: Right. Yeah, that's what I
8 meant. Right.

9 MS. NEPLOKH: Okay, yes.

10 MS. TRITT: Would people be satisfied
11 with that?

12 MR. MEDIN: Based on what you said
13 earlier.

14 MS. TRITT: Okay. And I think we should
15 schedule the working meetings not to exceed six
16 weeks and try to do it sooner than that if you
17 can. Okay. Go ahead.

18 MR. CARD: This is John Card from DISH.
19 Just in clarification for Alan and Joe and, I
20 think, Robin, the folks who asked about the
21 current -- the idea -- my use of the word
22 "current" was to try and restrict the scope of

1 what is being discussed to the things that we
2 could point at and would be public information,
3 literally today, or while these conversations are
4 going on, so that if, in these current technology
5 or current commercial requirements, if we say, we
6 already know that, for example, on the DISH
7 system, I need a way to, as Milo described,
8 communicate with my customer and have some kind of
9 a two-way dialogue with them through -- enabled by
10 this security system or enabled on any retail
11 device, that's a current commercial requirement.

12 I don't need to talk to them about the
13 Mars landing, which may or may not ever happen.
14 Similarly, on the technology side, to document
15 those architectures that are currently being
16 fielded and exist today, things like future
17 technologies, that's the intent of the future
18 trends working group is to look ahead and say,
19 well, we've got new encoding systems coming, we
20 have new kinds of services coming, et cetera, and
21 then trying to encapsulate if we can describe
22 those requirements there.

1 So, I wasn't trying to weasel out by
2 using the word "current", it maybe should be with
3 whatever date we want to give to this activity,
4 maybe, as of February 21st 2015 to document those
5 systems that are there right now. So, that was my
6 intent of saying "current".

7 MR. GOLDBERG: This is Adam Goldberg
8 from Public Knowledge. Sort of two questions.
9 Six weeks sounds like a fine number. When is our
10 next -- when is the next DSTAC meeting, number
11 one? And then number two, of the three working
12 groups, I think that we heard this morning you
13 can't have more than nine members of any one
14 working group and I think it might be interesting
15 to know how many people want to be in each of
16 these groups, because it may be that a group has
17 about 19 people that want to be part of it.

18 MS. TRITT: Right. Do you want to
19 explain how this is going to work?

20 MR. MURRAY: Sure. So --

21 MR. MESSER: Can you ask John a quick
22 question before we get into that? This is Alan

1 from Samsung again.

2 MS. TRITT: Yeah, go ahead.

3 MR. MESSER: Thank you. Sorry. John, I
4 just want to clarify from the current suggestions,
5 I think it would be good to scope it, I think,
6 (inaudible) when you gave an (inaudible) that we
7 limit it to essentially currently deployed systems
8 as of, say, today. I like the requirement of the
9 accessibility of public information too. I think
10 that is a fine requirement too. But you know, I
11 just want to avoid the kind of flippage of
12 information, oh, we're possibly going to do this
13 in a month's time, you know, poses a fuzzy edge to
14 that kind of (inaudible).

15 MR. CARD: I agree 100 percent, and
16 frankly, given that CableCARDS are deployed today,
17 I'm expecting to hear requirements, for example,
18 coming from Brad and Joe, about the existing
19 system and some requirements that they understand
20 from the currently deployed technologies, either
21 on the commercial side or on the technology side
22 that come in as requirements for any replacement

1 system.

2 If the system is -- if parts of the
3 system are working, let's not throw those out in
4 replacing them with something different. So, your
5 point is well taken, Alan. Yeah, I don't believe
6 it would be wise to try and shade things into the
7 future in these two groups.

8 MR. MURRAY: So, getting a bit ahead of
9 ourselves, but I will mention the dates that we
10 have reserved this room, and obviously this will
11 require a federal register notice so, you know,
12 these aren't totally concrete but these are pretty
13 solid dates. March 24th, May 13th, July 7th, and
14 August 4th.

15 MR. GOLDBERG: Sorry, for those that
16 didn't have a pen handy, can you do that again?

17 MR. MURRAY: Sure thing. March 24th,
18 May 13th, July 7th, and August 4th. And based on
19 the few emails I received, none of those are a
20 Monday or Friday, so there will be some travel
21 times here not on the weekend. Sorry, this was an
22 extraordinary situation.

1 MR. MEDIN: Given the makeup of the
2 working group from a location perspective, I would
3 be happy to offer to host the group in California
4 or in our office in Boulder, some place that
5 people could get to on a day trip rather than
6 having to fly out here all the time.

7 MR. MURRAY: And the only requirement is
8 that an FCC person be on the phone. So, yeah,
9 that's totally fine as long as the working group
10 can agree on a spot.

11 MR. MEDIN: Great.

12 MS. TRITT: You're talking about working
13 groups, not the advisory committee?

14 MR. MURRAY: Right, right. The working
15 group meetings -- these are just the advisory
16 committee dates that I just read off.

17 MR. MEDIN: I was suggesting the
18 advisory committee.

19 MR. MURRAY: I don't know -- we'll need
20 to talk about that with our general counsel's
21 office.

22 MR. MEDIN: The other thing is, I'm not

1 sure if it applies to anybody else, but I sit on
2 the FCC's TAC as well, so we have meetings that
3 are already docketed -- you know, the second week
4 -- the first week of April. So, if there could be
5 a way of synchronizing this with the tack, that
6 would be really awesome.

7 MR. GOLDBERG: March 24th is, I think,
8 about four and a half weeks, not six weeks from
9 now. Four weeks and a couple of days, but -- on
10 day. How many days are there in -- 28, oh, you're
11 right. Whatever. Fine.

12 So, maybe putting a six week price tag
13 on this first task is maybe a little bit longer
14 than we wanted to do given that we're going to
15 have to reevaluate what exactly we're doing after
16 we get that information, right? So, I've made it
17 impossible to ask 50 percent more, less possible?
18 Less possible?

19 MS. TRITT: You'll have to check with --

20 MR. MURRAY: Yes, we'll have to check to
21 see what dates are available for this room.

22 MR. GOLDBERG: No, what I'm saying, you

1 said you'd reserve the room for March 24th --

2 MR. MURRAY: Right, right.

3 MR. GOLDBERG: If this group meets -- if
4 the advisory committee meets on the 24th, it seems
5 like the output from these working groups, instead
6 of six weeks, really ought to be four.

7 MR. MURRAY: Oh, could be available by
8 March 24th. Yeah, I mean, if the working groups
9 can knock that out, yeah.

10 MS. TRITT: That would be perfect. That
11 would be great.

12 MR. GOLDBERG: I'm not saying it's
13 possible, I'm just saying it makes the most sense.

14 MR. MURRAY: Okay, before we got John's
15 excellent ideas on which working group should
16 exist, I came up with ballots. The names on these
17 ballots will not be correct for the working
18 groups, but they're numbered, so just -- you know,
19 you can rank your working group preferences.

20 Also, I believe it makes the most sense
21 to have an editorial team for the full report, and
22 probably for the working groups as well, just the

1 one to be responsible for submitting the working
2 group report to the committee and then also the
3 committee report to the commission.

4 So, that is another question on here,
5 would you like to be part of the editorial
6 committee, and if so, which one would you like to
7 be editorial for?

8 And I think that's it. So, I'll hand
9 these out. For those on the phone, I will email
10 you a ballot.

11 MS. TRITT: Just so I'm clear, after we
12 do the first three working groups, do we have
13 agreement on the subsequent working groups, or is
14 that to be determined? Do we need to do that
15 today? Do we --

16 MR. ROLLS: This is Jay from Charter.
17 Seems like we'd probably be more effective at
18 getting that right with the wisdom of, hopefully,
19 some of the output that we get from the working
20 groups.

21 DR. WEBER: This is Joe. Hopefully, as
22 it says, there's a preferred architecture or

1 architectures as an output, then we can apply the
2 other originally proposed working groups directly
3 to those. Again, make sure that there is an end
4 goal on this four, six weeks, that there's
5 actually preferred architecture that's defined.

6 MR. MURRAY: So, this is Brendan again.
7 You don't need to fill these out right now. I'll
8 take them at the end of the meeting. We'll have a
9 break so you can discuss with your counsel if
10 you'd like.

11 As you'll see here, there's a blank for
12 rank. Rank your first choice, number one, your
13 second choice, number two, and your third choice,
14 number three, and then like I said, if you want to
15 be considered for editorial duties, just circle
16 yes or no and then which editorial duties, circle
17 which type of editorial duties you'd like, and
18 feel free to stop by with any questions you have
19 during the break, I can clarify.

20 MR. MEDIN: Are we going to be on just
21 one working group?

22 MR. MURRAY: I think the math was one

1 and a half, right?

2 MR. CARD: I think there are 27 seats if
3 you're going to only reach quorum level in each
4 working group.

5 MR. MEDIN: But you could have some with
6 less than nine?

7 MR. CARD: You could have some with less
8 than nine, so there may be some vacant seats in
9 that. So, if you really have a hankering just to
10 do one thing for the next month, put down the one
11 number.

12 MR. MESSER: This is Alan from Samsung.
13 Maybe I'm missing some (inaudible) information,
14 but why is the maximum size nine?

15 MS. TRITT: It's a FACA requirement,
16 under the Federal Advisory Committee Act.

17 MR. MESSER: It has to have at least
18 quorum or it has to have a max nine?

19 MS. TRITT: Yeah. It can't be more than
20 a quorum. It can't have quorum.

21 MR. MESSER: I see. Missed that. Okay,
22 thank you.

1 MR. MURRAY: So, I think we can take a
2 break now?

3 MR. CARD: Is there a similar document
4 being distributed to folks by email?

5 MR. MURRAY: Yeah, I'm going to email
6 them and let them know. We can take a break now.
7 Actually, we had time for scheduling future
8 committee meetings and working group meetings, but
9 because we did that within the past ten minutes or
10 so, we could actually skip that. If you wanted to
11 shorten the meeting, we can skip that.

12 MR. CARD: I think if we've got a month
13 to get working group work done, we're going to
14 need to actually schedule first calls and second
15 calls and maybe third calls for each of these
16 working groups ASAP to get started.

17 MR. MURRAY: Right. We need to make up
18 the -- so, this is an FCC job. We have to
19 actually determine the make up of the committee so
20 that we make sure we have balance.

21 MR. CARD: That's fine.

22 MR. MURRAY: So, we'll do that this

1 afternoon or after the end of this meeting and
2 then talk about scheduling the working groups,
3 unless --

4 MR. CARD: I suggest that you -- even
5 those of us who are not officially on a working
6 group -- for example, I am the DBS card at the
7 table, not the CableCARD, the DBS card. I'm going
8 to, I suspect, need to provide at least some
9 information about DBS in each of these three areas
10 no matter whether I'm on those working groups or
11 not. So I would very much like to know those
12 working group schedules from the get-go. I think
13 the same is true for everybody, so I think we
14 could probably schedule those working group calls
15 without knowing who's on them now. I suggest that
16 would be efficient.

17 If others are going to tell me, no,
18 don't try to schedule work group calls, then
19 don't, but I plan to be available for any and all
20 calls and I'd like to know when those are going to
21 be.

22 MR. ROLLS: It might be easier to do

1 electronically, because we're all going to be
2 referencing calendars.

3 MR. CARD: Okay. That's fine.

4 MR. ROLLS: We know we can rule out, oh,
5 I'm not on that committee, then I don't care if
6 I'm available or not.

7 MR. CARD: Okay.

8 MS. TRITT: And the committees will be
9 completed today, right, or tomorrow?

10 MR. MURRAY: Today or tomorrow, yeah.
11 So, we can take a five or ten minute break or we
12 can not take a five or ten minute break, open
13 things up for 15 to 20 minutes of public comment
14 and then end early. It's up to -- any thoughts?

15 MS. TRITT: I bet people are anxious to
16 get out of here. Why don't we do that?

17 So, we left some time for comments from
18 the public if anyone in the audience has something
19 to say?

20 MR. MURRAY: Stand up, raise your hand.
21 Okay. I'll be by with the mic.

22 MR. NEVELSON: My name is Alex Nevelson.

1 I'm an independent security consultant to the
2 cable industry. I think I'm going to join a few
3 other people about the scope of this group and the
4 section 106 of STELA is called the repeal of
5 integration ban, which to me means basically
6 replacing a CableCARD, but it appears that it's
7 sort of more often something much bigger than
8 replacing of the CableCARD. So, the new target
9 seems to be building a completely new ecosystem,
10 which will cover all the mobile devices, DBS
11 system and everything else, and so I just wanted
12 to kind of ask, if you will, a rhetorical
13 question, what is the scope of this group? I'm a
14 security guy only, so to me, you know, replacing
15 CableCARD with a security is not (inaudible)
16 complicated, but if you are trying to build a
17 completely new ecosystem that will cover
18 everything, then we are looking at, you know, it's
19 not just sort of launching a satellite into earth
20 orbit, it's going out outside of the solar system,
21 if you will.

22 So, anyway, this is my first comment.

1 And my other comment was about the black box,
2 which is not a bad metaphor, but again, my concern
3 was that it does turn out to be much bigger, much
4 more expensive and much more electricity sucking
5 CableCARD. Thank you very much.

6 MS. TRITT: Thank you.

7 MR. WILLIAMS: I am Jim Williams of
8 Media Strategies and Solutions and I'm here on
9 behalf of VeraMatrix. VeraMatrix is another
10 security company, much like my colleague here,
11 Robin, of NAGRA. And I note that NAGRA is sort of
12 the only -- even though there is security involved
13 in part of the business of all of the companies
14 here, NAGRA seems to be the one that's
15 representing the security vendors.

16 And while I know that it's only --
17 there's sort of like one or just a couple from
18 each group, the name of this group is downloadable
19 security, and so I think it's going to be
20 important to take some of the lessons from the
21 entire industry in the U.S. And actually even
22 around the world, of the various attempts that

1 have been made to do downloadable security
2 standardization and whenever one does that,
3 they're fraught with difficulties because
4 standardization is sort of the opposite of
5 diversity or it can be the opposite of diversity
6 if it's done in certain ways and diversity is part
7 of security.

8 So, if we make a single point of attack,
9 then that's a bad thing. So, that's what will be
10 in the back of everyone's mind here as they're
11 trying to do this work and that's why we just
12 asked the group to try to -- even though I know
13 that the group is composed of these parties for
14 debate, to please take -- invite experts and take
15 advice from the various efforts to standardize
16 with the various components of security that have
17 taken place in the U.S. and around the world as
18 part of your work. Thank you.

19 MS. TRITT: Thank you very much.

20 MR. MEDIN: This is Milo from Google.
21 Just as a point of reference, Google is also a
22 conditional access vendor, because we bought

1 WideVine, so in addition to all the other things
2 we are.

3 MR. EFFROS: I am Steve Effros from BBT,
4 Beyond Broadband Technology. I agree with the
5 comments that the two others just made on the
6 subject and that is primarily that we all note --
7 those of us who are dealing with security note
8 that the name of the committee is based on
9 downloadable security and what Milo said earlier
10 was, I think, the key to the language of the
11 problem that seems to be going around the table.
12 He said, what we're looking to do is get a
13 functional successor to CableCARD and then build
14 on that.

15 Well, the functional successor to
16 CableCARD in terms of downloadable security is a
17 technical issue. The end build on that is a
18 policy issue. What are you going to add to it?
19 What are you going to have it do in terms of
20 graphical interfaces or whatever else you're going
21 to do?

22 We would suggest that focusing on

1 downloadable security is what the mandate of the
2 group was designed to be under the statute and
3 that there are answers to those questions but they
4 focus more on things like trusted authorities and
5 threat targets and all of the things that were
6 just mentioned and we would hope that you would
7 focus on those. Thank you.

8 MS. TRITT: Thanks. Anybody else?
9 Everybody is happy? Any further last comments
10 before we adjourn? Thank you very much. This was
11 a good meeting. We'll see you in a few weeks.

12 MR. MURRAY: Thanks, everyone and I'll
13 grab your ballots from you.

14 (Whereupon, at 3:02 p.m., the
15 PROCEEDINGS were adjourned.)

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