# United States Election Assistance Commission

## Technical Guidelines Development Committee

Held on

September 11, 2017
at
9:00 a.m.

at
1335 East West Highway
First Floor Conference Room
Silver Spring, Maryland  20910

VERBATIM TRANSCRIPT

The following is the verbatim transcript of the United States Election Assistance Commission (EAC) Technical Guidelines Development Committee (TGDC) Public Meeting that was held on Monday, September 11, 2017.  The meeting convened at 9:11 a.m. EDT and recessed at 6:00 p.m. EDT.

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COMMISSIONER MASTERSON:

All right, good morning.  I will open this meeting of the EAC's

Technical Guidelines Development Committee.  I want to welcome

all of you, both here in the room -- I feel comfortable saying this is

already the most popular TGDC meeting we have ever had, given a

full room -- also, those joining us by video, online.  So, thank you all

for joining us.  I remind everyone to please silence your cell

phones, quiet everything so that we can move forward

uninterrupted.

As is tradition, we will start this morning with the pledge of

allegiance, so if you all stand with me and pledge allegiance.

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[Commissioner Matthew Masterson led all present in reciting the

Pledge of Allegiance.]

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COMMISSIONER MASTERSON:

Thank you all.  Quickly, because I'm, I think, required to go over

logistics very, very quickly, for those in the room with us here today;

if you exit out the backdoors and head to the left, there are

bathrooms available to you should you need them, as well as

emergency exits along the back there.  Additionally, just after 9:30

today we will observe a moment of silence because today is

September 11th in memory of those who lost their lives on

September 11th.  So, I will stop the meeting and we can observe

that moment of silence.

At this point, it is my pleasure, my honor, to introduce Dr.

Kent Rochford, the Acting Under-Secretary of Commerce for

Standards and Technology and the Acting Director of NIST, quite a

title, who many of you met at the previous TGDC meeting.  Dr.

Rochford, one, I want to thank you for coming to Silver Spring,

participating in the meeting and being with us here this morning.

DR. ROCHFORD:

Great, thank you Matt.  And I am very glad to be with you here

today.  In accordance with the Help America Vote Act and as Acting

Director of NIST, I am honored to continue to serve as Chairman of

this committee.

Now, over the course of the last year we have seen a lot of

press surrounding elections, from early concerns over

compromised voter registration systems to the designation of

election systems as critical infrastructure and follow-up activities.

The cybersecurity of election systems is of paramount importance

to the integrity of the election process and I hope this will be at the

forefront of our thoughts while we consider revisions to the

Voluntary Voting System Guidelines.  Indeed, the task of this

committee is to serve as the technical advisor to the Election

Assistance Committee [sic] and, by extension, to the states that

administer elections.  And that has never been more complex or

more essential to our democracy.  And a specific charge to this

committee to assist the EAC in developing voting standards and

guidelines for voting equipment and technologies, it is a critical

requirement for making accessible, accurate and secure elections

possible.

So I want to thank all of you for serving on this committee

and for bringing your unique expertise to this effort.  Each of you is

an essential subject matter expert as we engage in the

deliberations over the proposed new version of the Voting Systems

Guidelines, the VVSG 2.0.  And, as you know, this version of the

VVSG uses a new structure.  It is going to have a high-level unified

set of principles and guidelines for voting systems.  The draft has

been developed by NIST through an open and transparent process

that included biweekly meetings with experts from the NIST/EAC

public working groups.

Now as part of this development process, the principles and

guidelines have been distributed to the EAC Standards Board, the

EAC Board of Advisors and the National Association of State

Election Directors for comment and feedback.  My goal for the

group at this meeting is to carefully discuss the current draft and reach agreement, if possible, that it can be forwarded onto the EAC. The EAC in turn will further comment -- will seek further comment from their advisory boards and the public at large.

So after introductory remarks this morning, we will have presentations from Cliff Tatum, from EAC, who will provide a review of the TGDC Charter, NIST Mary Brady, who will provide an overview of the VVSG structure, development activities and progress towards requirements and testing, the EAC, with the expectations for the review and adoption process for moving to VVSG 2.0, and from David Wagner and Diane Golden, who will give us an update on an EAC-sponsored meeting held in June to better address security and accessibility issues and how we can better harmonize those.

After lunch, we will then devote the remainder of the day to discussing the principles and guidelines, highlighting new areas for consideration. And during the afternoon, we will hear from a number of NIST staff covering human factors, security, interoperability and implementation related topics. On Tuesday, we will hopefully continue the VVSG 2.0 discussions, as necessary. And hopefully, by this time we will reach consensus on the next steps. Afterwards, John Wack from NIST, and John Ziurlaj from Democracy Fund, will provide updates on the common data format.

Finally, our last two sessions will focus on cybersecurity. Josh

Franklin, from NIST, will provide background information on how

threat -- the threat model for voting, more broadly, election

systems, has changed over time and provide some considerations

for moving forward. And then our colleagues from the Department

of Homeland Security will present progress with respect to the

designation of voting systems as critical infrastructure.

I do need to apologize in advance for schedule conflicts that

will prevent my participation in the full meeting. However, you will

be in good hands. In keeping with the TGDC Charter,

Commissioner Masterson, the Designated Federal Official, will take

over as Chair and, in addition, Mary Brady will be here to provide

assistance as needed. So, thank you Commissioner Masterson

and Mary.

So on behalf of the Commissioners and NIST, please know

that we do appreciate your continued commitment to serving on this

committee, and I look forward to your deliberations that help the

nation improve the security, usability and accessibility of our voting

systems.

So thank you.

COMMISSIONER MASTERSON:

Thank you. And I appreciate you being here to open and chair the

meeting. And while you are here, I want to thank you and your staff

for the incredible work that they have done on VVSG 2.0 and their

leadership. They have done great work, and so, I think it is

important to recognize that while you are here.

DR. ROCHFORD:

Thank you.

COMMISSIONER MASTERSON:

They have been fantastic, thank you.

Well, good morning to all of you. Welcome to the Election

Assistance Commission here in sunny Silver Spring. I want to

thank not only Dr. Rochford and the NIST staff, but also the EAC

staff that helped make this meeting possible who put in yeomen's

work on the development of VVSG 2.0 helping to run the public

working groups. I want to thank you as TGDC members and the

incredible work that you have done in the development process.

And I want to thank the hundreds of people that have participated in

the public working group. I think when the public working groups

were established and we, you know, kind of chartered off on this

effort we were not sure the level of engagement. And we have

been thrilled by the amount of participation by folks in all of the

working groups, the amount of input people have provided and the

consistency. It has not dwindled but, in fact, picked up as we have

moved forward.

This effort to develop VVSG 2.0 began with a reconstituted

TGDC in July of 2015.  Since that time, the effort has been done

both in a public working goup and the TGDC function.  That TGDC

meeting represented the first meeting of the TGDC in four years.

The effort, though, on TGDC -- or VVSG 2.0 really began before

that July meeting with the work of the EAC VVSG working group,

the work that the NASED VVSG working group put together and the

recommendations of the Presidential Commission on Election

Administration who recognized the need for updated standards that

allowed for innovation and ensured accessibility and security of

voting systems.  Since that time, all of this in this room, hundreds of

election officials, experts in cybersecurity, accessibility and usability

and citizens have dug into this work in order to contribute and

develop the next set of voting system standards.  Having guidelines

that ensure accessible, accurate and auditable elections is critical

to the integrity of the election process moving forward.  Given all

that has gone on since July of 2015 in that initial meeting, and I do

not have to remind particularly the election officials in the room of

everything that has happened since that meeting, I think it is clear

that this work has never been more important.  As we discuss,

today and tomorrow, and drive towards consensus on VVSG 2.0. in

the next two days, I hope we call can appreciate what we have

done as a group, what we are doing here today and over the next two days and how incredibly important this work is.

I want to thank all of you in advance for your time, for your incredible thoughtfulness and dedication to this effort. VVSG 2.0 represents a truly open, transparent and collaborative effort to improve the overall accessibility, security and functionality of voting systems and I hope we can reach consensus and move forward to approve this important work.

I want to thank you all and we can begin the meeting with Mary, if you are ready, to brief us on NIST update -- oh, are we doing Cliff first? I am sorry, I am sorry, if I could read an agenda. We are going to start with the federally mandated FACA briefing from the EAC General Counsel. This is where real news is made on this FACA briefing. So, Cliff, the floor is yours. Thank you.

MR. TATUM:

Commissioner Masterson, thank you very much. And Mr. Chair, Mr. Rochford, thank you for your introductions.

I just want a point of clarification. Are we going to establish a quorum before I present my part or should we…

COMMISSIONER MASTERSON:

Sure we are, Counselor, yes we are. The question from the Counsel was, are we going to establish a quorum and we are. So

we can go through and do a roll call of those participating, if that is all right.

So EAC Board of Advisors rep Linda Lamone.

MS. LAMONE:

Here.

COMMISSIONER MASTERSON:

EAC Standards Board rep Greg Riddlemoser.

MR. RIDDLEMOSER:

Here.

COMMISSIONER MASTERSON:

EAC Access Board member Marc Guthrie.

MR. GUTHRIE:

Here.

COMMISSIONER MASTERSON:

EAC/NIST technical appointee McDermot Coutts.

MR. COUTTS:

Here.

COMMISSIONER MASTERSON:

EAC/NIST technical rep David Wagner.

MR. WAGNER:

Here.

COMMISSIONER MASTERSON:

Welcome, EAC Board of Advisors member Neal Kelley.

MR. KELLEY:

Here.

COMMISSIONER MASTERSON:

The NIST Director is present.  Technical expert -- EAC/NIST

technical expert Diane Golden.

MS. GOLDEN:

Here.

COMMISSIONER MASTERSON:

NASED representative Judd Choate.

MR. CHOATE:

Here.

COMMISSIONER MASTERSON:

NASED representative Lori Augino.

MS. AUGINO:

Here.

COMMISSIONER MASTERSON:

EAC Standards Board representative Robert Giles.

MR. GILES:

Here.

COMMISSIONER MASTERSON:

Representative -- EAC/NIST technical representative Jeramy Gray.

MR. GRAY:

Here. (via telephone)

COMMISSIONER MASTERSON:

Awesome, the voice of God from above.

[Laughter]

COMMISSIONER MASTERSON:

We are missing, and not assigned an ANSI and IEEE rep, so they won't be reflected in the quorum here today.

You are on.

MR. TATUM:

Commissioner, we have a quorum.

COMMISSIONER MASTERSON:

All right, thank you, you may proceed with the FACA briefing.

MR. TATUM:

Thank you very much.

Pursuant to the Help America Vote Act Section USC -- 52 USC Section 2961, the Election Assistance Commission has chartered the TGDC as an advisory committee. According to the Federal Advisory Committee Act itself, we have submitted to the Registrar and to the Secretariat a Charter on April the 13th, 2017. That Charter specifically provides that there shall be the Director of NIST as the Chair and 14 other members of -- select members from the boards and the bodies that you just named. Those individuals will be confirmed to serve on the committee and the committee will conduct its business starting today.

The role of the committee is to -- is strictly advisory.  It provides the Election Assistance Commission with support for developing the Voluntary Voting System Guidelines.  Each of the members who serve on the committee serves in either a representative capacity or as a special government employee.  The representative capacity members are not subject to the Ethics Code or the conflict of interest statutes.  However, they are admonished to adhere to sound business practices and to avoid the appearances of impropriety in any of their actions and conduct in conducting themselves and representing the Board of -- the Technical Guidelines Development Committee.  The special government employees who, of course, have been notified as to who they are, are subjected to the Ethics Code and the financial conflicts of interest statutes and, of course, are required to adhere to those rules and regulations specifically.  As indicated, meetings that are conducted by the TGDC are in a public forum.  They require a quorum.  We have a quorum today.

So unless there is other questions, Mr. Chair, I will close with that update.

COMMISSIONER MASTERSON:

Thank you, Counselor Tatum.  I appreciate it.  You all have been briefed now.  We fulfilled that obligation.

So now we get down to the business of work and we are

going to start with a general update from Mary Brady and NIST,

generally on the work that has been done since the last meeting,

the process moving forward, all with a goal towards driving towards

consensus on VVG 2.0 at this meeting.  The goal of this meeting

and our hope is that you all can reach consensus on the

recommendations to be sent to the EAC Executive Director per

HAVA.  And so, Mary will start with a general update and then we

will get into the nitty-gritty of what VVSG 2.0 says.

So with that, Mary we will turn it over to you for the update.

MS. BRADY:

Thank you, Commissioner Masterson.  Can everyone hear me?  It

is a little further back.

So good morning everyone, I am Mary Brady.  I am the

Voting Program Manager from NIST and I am going to give you a

bit of an update this morning on what has been happening, maybe.

That does not seem to work.  Here, I will just use this.  We will give

that a shot.  Thanks, Ryan.

Okay, so a number of these topics, a number of folks in the

room have seen some of these slides before.  I apologize in

advance for those of you who have, but some of you have not, so I

wanted to make sure that we were all up-to-date.  I will start with an

overview of the development process, talk a little bit about scope

and structure and how we came to it, tell you a bit about principles

and guidelines, where we are with respect to the requirements and

the test assertions and leave you with some parting thoughts.

So, as you all know, the development process for the VVSG

this time around has been a little bit different, that in past versions

of the TGDC, NIST provided technical support to the TGDC.  We

would bring that input into this meeting, when we got to the point

that the TGDC was happy with a draft, they would forward it onto

the EAC who would then send it to the Standards Board and the

Board of Advisors and out for public comment.  This time around

we created these public working groups, and the idea was that we

would try to tap into as many experts as possible and keep people

advised of the process as we were going, rather than waiting until

after the fact to engage the broader community.

So these public workings groups were spawned from a

variety of efforts that were going -- ongoing prior to 2015.  And we

started with three election groups; the pre-election, election, and

post-election and four constituency groups; the usability and

accessibility, sometimes we use the term human factors,

cybersecurity, interoperability, and testing.  Now the truth of the

matter is three of those four constituency groups have been very,

very active.  We have yet to launch the testing group, but I think

that is going to change here shortly.

The public working groups, as Matt mentioned in his opening remarks, have been very active. Initially the election groups went through and developed the process models and the constituency groups have been very active with the principles and guidelines. Here you can see some numbers, you know, pre-election 103, election 107, post-election 96, and the constituency groups with 105 and U & A,/cybersecurity 121, interoperability 158. And even though there is nothing going on in the testing group, we still have 84 members that are ready and waiting to get to work.

We had an entire process working on reaching consensus on the VVSG scope and that has been played out in previous TGDC meetings. The election groups developed process models that were aired with the TGDC, with the Standards Board, the Board of Advisors and with NASED. We developed use case scenarios and ultimately the EAC put forth 17 core functions that define what a voting system is and provide us with scope. That has been agreed to by the Standards Board, the Board of Advisors and NASED.

We have also at the same time, while we were looking at scope, we were looking at structure. And we had this tradeoff between high-level principles that we could all participate in defining and agree to, and the low-level test assertions that are necessary for testing voting systems. So we have come up with a

four-pronged approach, if you will, where you have the principles and guidelines at the very high level, you have requirements that serve as a basis for the manufacturers to build to, and then the lower level test assertions that can be used by the voting system test laboratories to test voting systems.

Just as a reminder, here are the pretty process models that…

[Laughter]

…that the election groups worked very hard on. What we did is we took the VVSG, and this is actually a word cloud from the VVSG 1.1, and we overlaid the process models on the VVSG, and we questioned everything. We wanted to know, if it was there, should it stay, where were the gaps, and how could we make use of the best research, to date, in a variety of areas. And we brought those experts to the table to discuss all aspects of voting systems.

We came out with this 50,000-foot view and a number of the principles and guidelines are actually encapsulated in this 50,000 foot view. It all starts with the voter, the folks who are actually placing their votes. You need to have all the information available in whatever mode that is useful for the voter and it needs to be available, you know, both from a usability perspective and an accessibility perspective. Accessibility is the law and we need to abide by what is in HAVA and the other federal laws there.

Throughout the voting process we have to be sure that we keep the integrity of the ballot secret -- that we maintain the integrity of the ballot and we honor the secret ballot. We have to provide for auditing at the backend. And while we put together these voting systems they have interact in well known ways and the entire process has to be transparent.

So with that, we put together the principles and guidelines. Initially we had 18 principles and 53 guidelines. We started with -- the early versions had over 200 pages of the VVSG in early presentations. We got it down to 38 just for usability and accessibility. Another version we got down to 20, then to ten, and finally to five. So every word has been well vetted throughout the public working groups and the public working groups have been, you know, just a great asset for us to call upon and to work with.

We sent the -- we presented the principles and guidelines at a variety of venues; at NASED, at Standards Board meetings, Board of Advisors. We sought feedback. We discussed it within the particular working group, whether it was cybersecurity or usability, accessibility or interoperability, and also between the public working groups. We simplified the text, we removed duplicates and we merged categories. So today we have before you, I think in your packets, the current version of the principles and guidelines. There is 15 principles and 52 guidelines. And we froze

this version a couple weeks ago, prior to the NASED meeting that

was out in Anaheim, but the truth of the matter is, there are some

comments that are continuing to come in that we will deal with as

part of the public comment process. So work continues.

COMMISSIONER MASTERSON:

I would note, also, those are available both at eac.gov and

vote.nist.gov for folks to check out as well, and it is only five pages,

so it is a quick read.

MS. BRADY:

It is a quick read, yes.

So that is the majority of what we will be discussing today is

the principles and guidelines. And let me just give you a quick shot

at them. These -- it is starting with design and implementation --

high quality design and implementation, transparency,

interoperability, equivalent and consistent voter access, voter

privacy, marked, verified and cast as intended, robust, safe, usable

and accessible, auditable, ballot secrecy, access control, physical

security, data protection, system integrity, detection and monitoring.

As part of the session this afternoon, there are folks here from the

NIST staff, from the NIST voting program, who will go over these in

detail, will  highlight changes from VVSG 1.1 and will engage you in

quite a lively discussion I am sure.

One thing to note is, you know, initially we had these principles and guidelines broken down by categories, so we had human factors, usability and accessibility, we had security, we had interoperability. In the end, as we removed duplicates and did some merging, the current thinking -- or the thinking was that they really all need to work together; that it is an integrated set of guidelines and they should not be separated by category.

COMMISSIONER MASTERSON:

Mary, if I may, this is actually a good point to stop so that we can do a moment of silence at 9:37 a.m. for those who lost their lives or were impacted on the terrorist attacks on 9/11. So if we could all just take a moment of silence of remembrance.

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[Pause for moment of silence.]

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COMMISSIONER MASTERSON:

Okay, thank you all. I appreciate it and it helps put in perspective all of this and this work. So Mary thank you, appreciate it.

MS. BRADY:

So as we go through the principles and guidelines this afternoon, we actually will not go through them in this order. We have reordered them a little bit just to make sure that you are awake and paying attention.

[Laughter]

MS. BRADY:

The working groups did not stop with the principles and guidelines. As they were continually discussing the principles and guidelines and updating them, they were also working on requirements. So I will talk a little bit about the work that has been done on requirements first by the human factors group.

They have been working on turning these abbreviated requirements into detailed requirements. And you all remember the tabular description of the abbreviated requirements and they have -- they are turning out white papers at an incredible pace on various aspects of the research that has been done in the usability and accessibility areas.

So here are the abbreviated requirements. They were based on a gap analysis performed by the working group and they highlight the changes and provide further insight. One of the aspects of the abbreviated requirements which will carry through into the detailed requirements is they are all now tagged with update, new, review, combined move and remove the abbreviated requirements. But what we will retain as we move into the actual requirements is the legal accessibility requirement; that this will be highlighted, you know, throughout the requirements and the test assertions. Right now it is identified by a wheelchair icon, and this

indicates that it is either required by HAVA, Section 508, the Web

Content Accessibility Guidelines or the Voting Rights Act.

This is all backed by a set of -- a whole body of research

which has been encapsulated in a variety of white papers that have

been put together. The initial topics were on text size, contrast,

navigation from the review screen, scrolling on the ballot and

assistive technology in the polling place. More recently, the group

has taken a look at election materials including bilingual ballots and

at looking at the combination of universal design, user-centered

design, usability, accessibility and ISO standards. There is -- it is

an active area with a number of bodies that are participating looking

at all of those and bringing to bear what -- bringing to bear on the

voting system guidelines what is necessary. Their current status is

they have completed the analysis for updating the requirements

and they are in the process of reordering them according to the

order that we will present later today and to continue the

development of the detailed requirements.

In the cybersecurity area, we went back to, you know, some

of the aspects of cybersecurity. We are in the 2007 TGDC

recommendations and we do not want to throw the baby out with

the bath water, so we want to retain, you know, the good work that

has been done in the past. So there has been a review of the 2007

TGDC recommendations, as well as some comments on remote

ballot marking.

Let me just -- I do not know if there is an Internet connection

here, but let me just try to pop out to the website.

COMMISSIONER MASTERSON:

Nothing like just trying Mary.

MS. BRADY:

Hey, you know.

[Laughter]

MS. BRADY:

I like to live life on the edge.

COMMISSIONER MASTERSON:

If the lights go out, we are blaming you.

[Laughter]

MS. BRADY:

So here there are working documents -- are the lights going out?

It was okay.  I am not sure what you have done here now.

[Pause for technical difficulties]

COMMISSIONER MASTERSON:

Now you have done it.

MS. BRADY:

Let the record note that it is Ryan that is…

COMMISSIONER MASTERSON:

Yes, yes.

[Laughter]

COMMISSIONER MASTERSON:

That was an excellent try.

MS. BRADY:

So, anyway, the -- if you go out to the website, what you are seeing
on this screen here is a list of working documents.  And what they
have done is they have gone through over the course of the
summer, from June until the present time, and they have issued a
gap analysis for each of these areas; auditability, ballot secrecy,
system event logs, communication security, physical security,
cryptography, setup.  And I think if we -- and then there is a couple
of other categories beyond that of access control, system integrity
and management.  And it was a crosscheck against the current
principles and guidelines, but they have also been able to map all
of those requirements that were pertinent to moving forward and
have identified gaps.  So they are well on their way to creating
requirements that will map to the principles and guidelines.

In the interoperability area, also known as the common data
format, there is -- we have near final versions on cast vote records,
event logging and updates to the election results, progress on the
voter registration interchange, voting models and voting variations.
John Wack is with us and will provide a more in-depth review of the

progress to date tomorrow during the common data format session. And, again, here we have set up a get-help repository and there are some early requirements, draft requirements for cast vote records and for event logging.

In addition, we have had some help from Democracy Fund. They have -- we -- and particularly in the initial development focus on the election process models. You all remember, you know, some of the very complex diagrams that Kenneth Bennett had provided to us in the past. That work continues. John Ziurlaj has been working on it. And also in the deployment area, Katie Owens Hivler [ph] is the primary lead there. So we are thankful to have that help from those folks as well.

In some of the other areas that sort of come under the high quality design and high quality implementation, we have done a review of the software, hardware, telecom, quality assurance, configuration management, the testing in the TDV packages and we are about ready to embark on that effort as well.

On the test assertion front, work, although we have not really kicked off the testing group, NIST has continued to develop test assertions. They have been developed for 1.0 and more recently for 1.1. They articulate the requirements as testable, logical statements. And if you all remember, there was a process that was set out to do this; that we started with NIST drafting the test

assertion, sharing it with the labs, the voting system test

laboratories and the EAC coming to consensus there. And when

consensus was reached, providing them to the manufacturers as a

-- you know, for comment and feedback. So, as I have said many

times among -- you know before this group and others that we are

not actually giving them the answers to the test, but we are giving

the manufacturers the questions that are going to be on the test.

These are necessary for identifying the breadth and depth for

testing voting systems and it provides consistency across the voting

system test laboratories. So for right now the status for VVSG 1.1

there is nearly 1,200 assertions developed to date covering six

sections and addressing the functional requirements and general

usability requirements. And here is just sort of between the overall

system here is a breakdown of the various categories.

So, in summary, the principles and guidelines, the draft is

ready for the review and we will see that review this afternoon. We

will step you through highlighting various changes from previous

versions. It has been developed through an open and transparent

process, the working group process. We have had a phenomenal

-- access to a phenomenal set of experts during this entire process.

The public working groups are busy and they have already started

on the requirements.

In the human factors area, the research is complete.  They have abbreviated core requirements that they are translating into, you know, the longer version of the requirements.  Cybersecurity a gap analysis has been done.  They have mapped the 2007 recommendations to the principles and guidelines.  Interoperability there is much progress on the common data format.  And in testing, particularly I'm looking at McDermot here, it is -- I would like to propose that we expand the focus to implementation and testing and have the group not just looking at testing but to draft requirements for high quality design implementation in the transparency principles, and you will see what they look like this afternoon, as well as developing best practices for testing.  This is -- these areas -- for the vast majority of the principles and guidelines we have had great feedback from the public working groups, but in the area of the high quality design and implementation it is a set of principles that are without a working group.  And I think that the testing working group would be a great place to carry out that work.

And as we move forward I just want to point out that the requirements and the test methods will continue to be developed using an open and transparent process.

Thank you.  That is all I have.

COMMISSIONER MASTERSON:

Thank you, Mary, appreciate the update.  If any of the members of the committee have questions for Mary, now is the time, or comments.  It does not just have to be questions.

Okay, I am sure when we get into the principles and guidelines we will have more of that.  And I appreciate your overview because it helps encapsulate not only the work that has been done on the principles and guidelines that we are here to talk about today, but that follow through, down -- all the way down to the test assertion level to ensure that the testing is consistent across the laboratories and covers adequately the principles and guidelines at that higher level.  So I appreciate all the work that has gone into that.

Mr. Hancock, the floor is yours.  I think – Mary, if you want to stay there and if we get additional questions as we go through this, I think that is fine.

MS. BRADY:

I think it is break time, isn't it?

MR. HANCOCK:

It is a little early for break I think, so we will -- we will play it by ear.

COMMISSIONER MASTERSON:

So next up is Brian Hancock.  He is the Director of Testing and Certification at the EAC.  Joining him at the table is Ryan Macias who works in the Testing and Certification Program with Brian.  The

purpose of this presentation is to walk through, if or when you all

agree on VVSG 2.0, we will call it when and hopefully it is soon, like

really soon…

[Laughter]

…what are the next steps, what does the process look like, how will

the process proceed, and what are the timelines for that, so to give

that perspective.

So, Brian.

MR. HANCOCK:

Thank you, thank you TGDC members, Chair, Chair Masterson, we

appreciate it. And I also wanted to thank you for remembering

9/11. As someone that was here in Washington, D.C. on that day

and those folks that were in New York City, I think it changed all of

our lives very profoundly. And, as you mentioned, it puts into

perspective even the very important work that we are doing here

today. So I wanted to thank you for that.

I will go over, for the committee -- we are assuming that the

guidelines will get adopted today or at some point in the very near

future, so I think we need to talk a little bit about the review and

adoption process after the draft guidelines are approved by this

committee.

[Pause for technical difficulties.]

COMMISSIONER MASTERSON:

Ryan also playing the role of IT help desk today.

[Laughter]

COMMISSIONER MASTERSON:

Here is what we are going to do. We are going to take a 15-minute

break and we are going to get this laptop where we need it to be so

that we are not doing this the rest of the day.

MR. HANCOCK:

We got it.

COMMISSIONER MASTERSON:

Are you good?

MR. HANCOCK:

We are good.

COMMISSIONER MASTERSON:

All right, we are going to get through this and then we are going to

get that laptop where it needs to be so we are not doing this the

rest of the day.

All right, the floor is yours.

MR. HANCOCK:

Thank you. Again, for the review and adoption process we need to

remind ourselves what the requirements of the Help America Vote

Act are, right? So, in general, the Help America Vote Act requires

the publication of the proposed guidelines in the *Federal Register*,

an opportunity for public comment, an opportunity for a public

hearing on the record and publication of the final guidelines in the

*Federal Register*.

In a little bit more detail, it states that the Executive Director

of the Commission shall take into consideration the

recommendations put forward by this committee.  That will be the

draft VVSG 2.0, that the Executive Director of the Commission shall

submit those guidelines that we propose to be adopted to the Board

of Advisors and also to the EAC Standards Board.  Those boards,

then, will review the proposed guidelines and submit their

comments and recommendations on the guidelines to the Election

Assistance Commission.  The Commission will, at some point then,

vote on the final adoption of the guidelines.  But there also needs to

be a 90-day -- a minimum 90-day public comment period for the

guidelines before any of that happens.

So let's remind ourselves how we worked this process in the

past and then we will talk about how we have changed the process

and what we are going to be doing to somewhat streamline that

process moving forward.

So looking back at the original VVSG 1.0, there was a 90-

day public comment period.  We had three public hearings at

various places across the country.  We had one in New York City,

one in Pasadena and one in Denver, Colorado.  We had a two-day

meeting of the EAC Standards Board and EAC Board of Advisors

to discuss the VVSG and to receive comments.  And for those of you that were part of that, and I know there are probably some in the room that were, it was not the smoothest process.  If you remember, the initial guidelines were about 260 pages without the appendix, right?  So that is a very large draft document for the boards to go over in a two-day period and have reasonable comments and reasonable discussion on.  It was very intensive.  We kind of broke the boards up into small working group sessions and essentially staff worked all night working on comments and resolutions.  And that certainly was not an efficient way to do things.  I think, hopefully, we will have a better way this time.

In any case, the public comment period and the Standards Board/Board of Advisors' review resulted in over 6,500 public comments.  The EAC and NIST staff reviewed and considered every single one of those comments.  And, finally, on December 13th the Commission voted to adopt the VVSG 1.0 with a 24-month implementation timeframe.  And I think that is something important to remember, as well.  There will be an implementation timeframe of some sort that goes along with these guidelines.  As I said, 24 months for 1.0, I believe we had 18 months for VVSG 1.1 and there will be reasonable timeframe considered here, too.  We need to remember that after these guidelines are adopted, our voting system test laboratories need to be accredited to test to these

guidelines, the voting system manufacturers have to have some

reasonable time to develop systems to these guidelines, although

hopefully they are looking at them now and sort of seeing where we

are headed into the future so that timeframe is not too extensive.

But all of those things play into what that implementation timeframe

will be eventually.

So here is our general VVSG 2.0 review timeline.  We will

assume that at some time this month the Executive Director will

receive the draft VVSG 2.0 from the TGDC and NIST.  Hopefully by

October we will provide VVSG 2.0 to the Standards Board and

Board of Advisors.  By January we are planning to have a meeting

of both the Standards Board and Board of Advisors to consider

VVSG 2.0.  After that, we will begin the required 90-day public

comment period.  And so, by around the end of April or early May

we will have all the comments in hopefully and EAC and NIST staff

will be able to respond to changes from the public comments,

comments from the boards and get all our final formatting done.

And our goal is, as a Commission, to be able to present VVSG 2.0

to the Commissioners for a vote sometime in May of 2018.  I think it

is aggressive, but it is not too aggressive and I think it is where we

need to go given the current state of affairs and some of the things

we have seen over the past year or year-and-a-half.  This is the

timeline in just a little bit more of a graphic format.  I think one

important thing to point out here, too, and as I mentioned under the

HAVA discussion, there is a requirement for a public hearing, at

least one public hearing during this timeframe, and so, we will have

to work that in, although we have not necessarily determined what

month or when those public hearings will be.  But it is a

requirement, and just to note that it does have to be included in

there at some point.

      We also will have some significant programmatic changes

that are taking place along with the VVSG 2.0 review and adoption

process and Ryan Macias is going to talk about that in the next

presentation.

      But at this point I am open for some discussion or

comments.  Thank you.

COMMISSIONER MASTERSON:

      So we will open the floor to the committee for discussion of

timeframes, process moving forward, and then Ryan will give a

presentation on the programmatic changes that the EAC will have

to make to the testing and certification program given the new

scope and structure of the VVSG.  So any questions for Brian on

process?  Bob.

MR. GILES:

Yes, just where do the requirements fall in that?  You know we had

talked about we were going to adopt the standards and then

develop the requirements.  Where does that fall into the timeline?

MR. HANCOCK:

Well, as Mary mentioned, the requirements are being worked on

now and actually have been being worked on for quite some time.

They will continue to be worked on and I believe those documents

will be publicly available for comment, as well, once they are

completed.  This committee will have a chance, the Standards

Board, the Board of Advisors will have a chance to look at those,

and I believe the thought was they would also go out for some sort

of public comment period.

MR. GILES:

Are they going to follow the same timeline?  Are they going to be

finished at the same time?  Like, where do they fall in relation to

adopting the principles I guess is the question.

COMMISSIONER MASTERSON:

So let me see if I can give a primer on that and then Mary can

weigh in.

So the requirements, as Mary outlined, are already in

development and available through the public working groups right

now as part of the work that is going on there.  That will continue.

Part of what needs to happen in order for the requirements to be

completed is the principles and guidelines to get done so you know

the rest of the scope.  So there is some assumptions that NIST and

the public working groups are making on scope and what not, but

have to wait for the finalization to really understand.  And so they

won't be done, I do not think, you know, immediately upon adoption

of VVSG 2.0, but they are not far behind.  And perhaps most

importantly they are available -- you can go look at them right now

as they are being worked on to understand the nature of them, the

work, the scope of them and what they look like.  And they do not

have to follow the same HAVA prescribed adoption process which

is the key, right?  And so part of the reason I think we all supported

the structure of this VVSG is to allow the flexibility for the

requirements development that not only when they are done but if

there is a need to continuously evaluate them, and they will

continue to be publicly vetted in that way, that that flexibility is

within this structure that previously they would have had to go

through, you know, this entire HAVA mandated process every

single time you want to change one thing.  And so that was part of

the thought and purpose, as you know, behind this.

        I do not know, Mary and Ryan -- go ahead Mary.

MS. BRADY:

I do not really have much to add.  I mean, we are certainly working

on them as quickly as we possibly can.  And I think, you know, part

of it really sort of depends on the scope of, you know, I think I had

mentioned this at the -- you know previously is, for instance, if you

look at auditability we can write requirements for auditability.  If

auditability is -- or if we look at some of the security issues, you

know, we can write requirements for paper, but, you know, if we

have to write requirements for ETE systems, which will be quite a

ways out, then there is research that needs to be done there.

So there is going to be a timeline from, you know, what is the

minimum we can get done,  to how far down the spectrum do we

have to go, and hopefully the minimum won't be too far, you know,

beyond, you know, and we will keep it as near to instep as we

possibly can.

COMMISSIONER MASTERSON:

Ryan?

MR. MACIAS:

And just to add to that, actually the next presentation is that is one

of the major changes within the program that we will be going

through in how we transition because, as the Commissioner had

stated is, it is not going to be a one and done.  Since it does not

have to be adopted under the old formal process is, you know, we

will be getting into some of the processes that are going to be

developed for being able to roll out new requirements and test

assertions beyond the initial set to be able to stand up the testing

and certification program to the VVSG 2.0.

COMMISSIONER MASTERSON:

McDermot.

MR. COUTTS:

If I could just add to that, when we get the requirements and we

actually will have to put them through putting together test

assertions, and then make sure that the things are implementable

and testable, and do not conflict with anything else. The last thing

we want is a test assertion in one group conflicting with the test

assertion in another. So there is going to have to be a whole lot of

work in there to make sure that we have a testable and verifiable

set of requirements that can be implemented and actually do what

we want them to do.

COMMISSIONER MASTERSON:

And the good news is, McDermot, your testing group is going to be

the one tasked with looking and making that consistent, right? We

are that point now to hand that information, still working with the

other working groups to ensure that consistency and, you know,

covering everything that we need to.

MR. COUTTS:

As soon as my test plan is done, I am all yours.

COMMISSIONER MASTERSON:

David Wagner.

MR. WAGNER:

David Wagner. Could we get a little more specificity about the plan

with the requirement development?  Will those be drafted by this

committee?  Will there be a vote by the committee on the proposed

requirements?  What is the committee's role on, like, are we

developing recommended requirements that we transmit to the

EAC?  Can you talk us through that a little more?

COMMISSIONER MASTERSON:

Sure, the goal is to engage you all in the requirements, at least,

review process.  Again, it does not have to -- you all under HAVA

won't need to do a formal vote, although you could.  That is up to

you all as an advisory committee.  But the work would continue

under the public working groups and then the communication via

NIST and the EAC to you of the requirements will continue.  We

can continue to have TGDC meetings to go through the

requirements, to review them, but there is not a requirement for a

formal vote, per se, by you all.  But absolutely, the plan is to

continue to engage from public working groups all the way on up to

you all, in the requirements development process, to make sure

that we are consistent with your principles and guidelines and the

principles and guidelines that the EAC ends up adopting at the end.

So your work continues, I guess, is the answer.

MR. RIDDLEMOSER:

Mr. Chairman, I move that we adopt the milestone calendar for

VVSG 2.0 as presented.

COMMISSIONER MASTERSON:

Wow.

[Laughter]

COMMISSIONER MASTERSON:

Well, there is a motion on the table, and so, is there a second?

MR. GILES:

I will second it.

COMMISSIONER MASTERSON:

Okay, second by Bob Giles.  And so, now we will open it for

discussion on the motion to adopt this timeline.

MR. KELLEY:

Thank you, Mr. Commissioner, and this is probably an unfair

question but I am going to ask it anyways.

You talked a little bit about the things that have to go into the

timeline, obviously the requirements, spooling up the test labs.

There is a lot that needs to be done.  As a local election official, and

I am sure my colleagues are wondering the same thing, do we have

any idea, and this could be a guess, when there might be product

on the street under VVSG 2.0 that we could actually implement?

[Laughter]

COMMISSIONER MASTERSON:

So let me clarify one part if I can and then they can answer. None of that impacts this timeline, to be clear, right? Yes, and so, this timeline -- so the motion on this timeline, which would serve as guidance to the EAC and NIST to get this done in this timeline is not impacted by that. But perhaps McDermot is maybe the best person to answer, generally speaking, timeframes as far as build and design to the guidelines and requirements.

MR. COUTTS:

I am guessing. It is a somewhat educated guess, but it is still just a guess. Once the -- so once we have the standards in front of us, and more importantly, the test assertions, so we know what it needs to do, though we do have to talk about what the process will be for adding test assertions or changing test assertions, and what sort of process that has to go through, and what the impacts are if we are changing something that people are currently working on. But the scope of this kind of -- it impacts all systems across the board. There is not going to be a whole lot of systems that can be updated to this, which means you are kind of starting from scratch. So you are probably looking on, really, closely, probably a 24-month development cycle, plus, then testing. And, as you saw on the list, for the 1.1 we already have 1,200 test assertions. That is a lot of testing. And the process can go anywhere from three months

to over a year.  So you are probably looking at about three months -

- or three years between adoption and on the street.

MR. HANCOCK:

Right, and it is going to depend on the implementation timeframe,

because what we have seen in the past is that the implementation

timeframe oftentime drives the vendor's product, right?  So for 1.0 it

was 24 months.  So automatically, let's just use that as an

assumption, that would be 2020, and then testing on top of that.  So

reasonably, mid 2021, something like that, I mean, even

optimistically.

COMMISSIONER MASTERSON:

I would just add, though, optimistically that the -- two things.  The

requirements and test assertions that exist now are currently public

and available, and so, at least there is more of a lead.  So 2005

VVSG, the vendors had to take from square one and go, right, from

the time that it was adopted.  Here there is -- the information is

already available, largely in big chunks, and a great deal of it is stuff

they are already familiar with.  And although the requirements may

change a bit, they know, generally, how it would be tested and

evaluated.  And so, I like to believe that public industry is -- or

private industry is enterprising and seizing opportunity here, and

that perhaps those timeframes will be more aggressive because of

the opportunity.  But perhaps I am overly optimistic on that.

MR. HANCOCK:

Well, the other thing we have to think about is election officials,

right, Neal?  So there are a lot of folks that have either very recently

are or perhaps in the next six months or so going to change over to

new equipment, right?  I do not think those folks are going to want

to then turn around and buy new equipment again two years from

now or two-and-a-half years from now.

MR. KELLEY:

Thank you for answering an unfair question.

COMMISSIONER MASTERSON:

So we have a motion on the table about the schedule.  Diane

Golden?

MS. GOLDEN:

I think I am going to ask if perhaps we could table that motion until

we actually vote on the…

[Laughter]

MS. GOLDEN:

It just seems odd to me to vote on a timeline for something we have

not adopted yet, and not that I am anticipating something going

horribly wrong with the adoption process.

COMMISSIONER MASTERSON:

Thank you for saying that.

MS. GOLDEN:

However, yes, it just seems like the timeline should come after the

standard, the -- yes, the principles and guidelines are adopted.

And since I have the microphone I will say I will bow down

and praise someone if we actually have something certified to 2.0

in 2020, because I have been waiting for accessibility now for

over…

COMMISSIONER MASTERSON:

Bow down.

MS. GOLDEN:

Yes, to the Commission or somebody.  That would be delightful if

we have something by 2020.  I am hoping there is something

before I am dead, quite frankly.

So anyway.

[Laughter]

MR. GILES:

Just to follow-up, as part of that discussion, but if that has to

change, that was my concern, if we -- are we locking ourselves into

an absolute timeline if we adopt this?  Or are we just using this as a

guide once -- and I agree that you might want to table it.

COMMISSIONER MASTERSON:

So anything you all would adopt or vote on is a recommendation, in

the end, right?  And so, in theory, the EAC and NIST could choose

to ignore it or do the best they can, or anything in between.  It does

not lock you all into anything.  It would be a strong encouragement to us to meet our own timeframes, right?  And so, that I will ask before we get to you, Marc, the maker of the motion, are you willing to either withdraw the motion until such time as there is, you know, a vote on the -- or table the motion until such time per Diane's request?

MR. RIDDLEMOSER:

You will just have to ask Bob if he will withdraw the second.

COMMISSIONER MASTERSON:

Yes.

MR. GILES:

I withdraw my second.

MR. RIDDLEMOSER:

Then there is no second.

COMMISSIONER MASTERSON:

Yes, okay.

MR. RIDDLEMOSER:

Way to get out of it.

COMMISSIONER MASTERSON:

Yes, right.

[Laughter]

COMMISSIONER MASTERSON:

But I think we will all note the importance of the timeline and we can

revisit it as we visit a vote on the principles and guidelines and

other.  And we can even draft a resolution to it.

MR. GUTHRIE:

Thanks, Matt.  I was going to second Diane's motion to table, but

since we do not have to do that I was -- I just wanted to mention,

and I know there is not a specific timeline given, but I just wanted to

ask that you consider avoiding a conflict in January with the Access

Board meeting because, you know, it might be handy for you to use

their offices at that time.  And those dates are January 8th through

the 10th just as an FYI.  Thank you.

MR. WAGNER:

David Wagner. I wanted to follow up a little more about the

requirements.  I think the requirements are very important.  And

one of the discussions we have been hearing multiple times in the

cybersecurity working group is, what does this principle mean, what

does that guideline mean?  Well, what it really means is going to be

determined by what the text of the requirements are, because those

are what is actually going to have to -- the equipment is going to

have to comply with.  So that is going to determine how those are

interpreted which...

MR. COUTTS:

Or proved.

MR. WAGNER:

Um-hum, exactly, which then influences how we evaluate those principles and guidelines.   So I guess I want to probe a little further to understand how that plays into this.  Will the requirements be part of the recommended VVSG that the TGDC is recommending be adopted or be part of the final VVSG that is adopted by the EAC?  Will it be available for public comment?  Will there be a public comment period on the requirements?  Can we commit that the TGDC will have a chance to comment on the requirements?  So how will they play into this?  And if they won't be available, then how will members of the public comment on the proposed standard without knowing what the implementation is, the requirements that implement these guidelines?

MR. HANCOCK:

Yes, thank you David.  I think we already mentioned that, yes, they will be all of those things, essentially.  They will be available for a public comment period.  The Standards Board, Board of Advisors, TGDC will get those to comment on.  The only thing is they will not be technically part of the VVSG 2.0.  They will be an adjunct; documents that are always with VVSG 2.0.  But as we have talked about actually for the past year-and-a-half or so, we want to be a little bit more nimble when requirements need to be changed or

slightly modified or new technology comes in.  And that is sort of

the whole concept behind the new scope and structure.

COMMISSIONER MASTERSON:

And I think Ryan's presentation will speak to some of this.

MR. HANCOCK:

Yes.

COMMISSIONER MASTERSON:

So maybe we ought to do Ryan's and then if you have follow-up

needing more detail on that we can dig into that.

MR. COUTTS:

Ryan, are you also going to discuss about the process for changing

and who ultimately signs off on these requirements?

MR. MACIAS:

So it will be getting into all of that.  The process is yet to be

developed, but that is a major part of the discussion, is all the steps

that need to take place and a timeline for what our program has to

do to be able to implement requirements, test assertions, to be able

to test to the VVSG 2.0, and the process for getting a transition

timeframe, and the steps that we are already taking and where we

are in that process right now.

COMMISSIONER MASTERSON:

Go for it.

MR. MACIAS:

Well, good morning everybody, Ryan Macias here.  And as we have been talking about, this is transitioning to VVSG 2.0, and Brian hit on some of the steps along the way, but we are going to dig into them a little bit more because, as we know, with the VVSG 1.1, with VVSG 1.0, through the learning curves of the adoption of those, we have realized all the things that need to be put in place internally at the EAC to go along with being able to test to those requirements and to those test assertions, and so, we are going to start here where we are with the standards right now.

As we know, the VVSG 1.0 most EAC certified systems are certified to the standard.  New systems can no longer be submitted to the standard, but modifications can continue to be tested to the 1.0.  So, if there is a system that is certified to the 1.0, then it may remain and have modifications made to that system moving forward.  And we have also worked out a process with the manufacturers and had a request for interpretation and an interpretation that was made on the determination of what is a new system and when they would have to be upgraded to VVSG 1.1.

With that stated, currently as of July 6th, 2017, all new systems must be tested to the VVSG 1.1.  At this current time, we do not have any applications to the submitted VVSG 1.1.  And internally, with the VVSG 2.0, we are developing the

implementation plan, and obviously, hopefully adopting it here today.

So here is another picture of kind of the process that Brian had laid out. And, as you can see, we are sitting in the green box and what this discussion is, is how do we get to the red box. And there is a whole bunch in between that was already described from an external source and how it works with the VVSG 2.0 in and of itself. But really we are going to focus here on the programmatic side of things.

So implementation plan, the timeframe and considerations. We have to develop testing and certification program policies, processes and procedures. Most of you know that as the testing and certification and the voting system testing lab manuals. These expire in 2018 based on the way that they were adopted in the past. But in order to move them forward and make them look more like the VVSG, they will probably be broken out into policies that would be adopted, process and procedures that would be more implementable internally. As we have been talking about here, we have to have manufacturers' research and development to the new standards. We have to make sure that the labs can implement and test to the VVSG 2.0. So they need to know what the requirements and the test assertions are. And then, we need to know what the impact is on the states and locals, both from a purchasing

standpoint, from an equipment standpoint, from a technology

standpoint. And what we have already been discussing in this

implementation plan at a few of the conferences that we have gone

to is the Glossary of Terms, things that the states and locals should

be considering and looking at. What we know is that there may be

terms that are in the requirements and test assertions that fit of the

majority of the states but some states have direct conflicts with.

And so they have to start thinking about their interpretations at a

state level for what that means and how to be able to implement

these systems or what those interpretations may be at the local

level.

So what are the required documents that have to be

developed? Well, we have to have the document called the

requirements and test assertions that we have been talking about

this morning. We have to have the Commission's policy for the

testing and certification program, basically as we know now what is

called the manuals. And the manuals are adopted by the

Commission and currently they have a three-year lifespan that ends

in 2018.

And then, as I was stating, breaking it down from a policies

and procedure standpoint, we have to have a bunch of procedural

manuals, and the ones that we have been talking about internally is

implementing the requirements and test assertions. So to your

point, McDermot, this would be, you know, what that process would

be for implementing that document that is up at the top, the

requirements and test assertions, whether there would be

modifications or whether there would just be additions based on

technologies that come out and interfaces that come out on new

technologies.  So this is a procedural document that will be worked

on.  The manufacturers' registration process, if there is going to be

any changes to that, voting system testing laboratory accreditation

process, we know there will be changes to that because they have

to be accredited to the specific VVSG.  Currently they are both

accredited to VVSG 1.0 and VVSG 1.1.  But there is going to be a

process for bringing them up to speed to 2.0.  And then, there is

going to be the voting system testing and certification just, you

know, what we call now the testing and certification manual.  What

are the steps and the processes for testing and certifying voting

equipment, particularly to this new realm of requirements and test

assertions.  You know, right now it says that every voting system

has to be tested to all requirements.  Is that going to continue to be

the case when we have these sets of requirements and test

assertions that may not be applicable to the system?  We have had

to work on that through a request for interpretation process and a

notice of clarification process, internally right now.  Is that going to

be the same, or with this more agile approach as we are developing

the implementation for requirements and test assertions, would it be something through that process?

We have the common data formats that we are going to hear about a lot more later today. But, you know, that is part of the interoperability is developing these common data formats and how do we implement those into the requirements and test assertions. So those will have to continue to be adopted.

And then, the Glossary of Terms, it is something we have talked a lot both through a CDF work, but also internally, is developing a glossary that will, hopefully, be able to be -- create synonyms and, you know, grabbing glossaries that are already developed and being able to associate it to all the different terms that are in use across the nation, both by the states and locals, but also, by others in the elections realm, and trying to develop that glossary. So, that is also currently under work.

So what are the steps? As stated, the Commissioners will have to adopt those policies for the testing and certification program. The testing and certification program is going to have to formalize and distribute all of those procedures that were just talked about on the last page. The testing and certification program is going to have to, after formalizing the process for implementing the requirements and test assertions, is going to have to have a process for publishing. And, as we have stated here, it is going to

involve you guys, it is going to involve the other advisory boards,

and then some way of doing a formal adoption or a formal

publication by the EAC and the testing and certification program

once they have been developed. We are going to have to go

through the accreditation process after the test labs, the process for

accrediting them has been developed, to make sure that they

understand not just the procedures but the requirements and test

assertions that they are going to be testing to, and make sure that

they have other test cases developed to those. We are going to

have to train the manufacturers on the testing and certification

process, procedures, requirements and test assertions. And right

now, we actually have a tentative October meeting scheduled to go

through some of these. And so, I am going to put myself on the

spot, and probably Brian and everybody else, but it is my hope to

have those procedure documents, at least in draft form, along with

presentations to the manufacturers, to start discussing what those

procedures are for the manufacture, registration, accreditation

process, and testing and certification process, since they have to

be adopted by 2018, and to start those discussions, and potentially

even start public working groups with the manufacturers and the

VSTLs, the voting system test laboratories, for the continued

improvement on those process and procedures document, and

then, informing the state and locals on these updates. Again, you

know, there is going to be that gap analysis and the transition from 1.1 to 2.0 on each of the principles and guidelines this afternoon. And this transition discussion has already taken place a few times with the states and locals, between NASED and iGO and a few other conferences that we have spoke with about the new process for getting there.

So, where are we?  With the requirements and test assertions, they are under development, as we have been talking about, and they are going to continue their development.  I do not have anything more at this time on a date for that, but they are still under development and continuing to be worked on.  Hopefully, us, as the testing group, will begin to look at the gap analysis between the requirements that have been developed and the testing assertions that are already out there, as well as, if there is any test assertions that were out there from 1.0 or 1.1 that could then help feed back into the requirements or at least back to the public working groups for developing those requirements, the specific groups.

The common data format models, we are going to get into that more later just as the requirements and test assertions, so I am going to breeze past those.

The glossary, we are currently doing work on that.  I am not sure if the presentation around the common data format models will

be discussing the glossary or not, but that is in development currently and we are looking at methods and modes of putting together that glossary.

The Commission's policy for testing and certification program and the testing and certification program procedural manuals, again, these were one document in the past -- or two documents, in essence, the testing and certification program manual and the VSTL manual, but to make it look more like the VVSG, having more of a high-level policy document similar to the principles and guidelines that would be adopted by the Commission and then the program procedure manuals. And so far, these are the four, broken out there, that we have identified internally that need to be developed. As stated, at least the last three are in draft mode and will hopefully be shared internally with the manufacturers and the VSTLs to get them to a place where they could be shared more publicly, hopefully, at this January Advisory Board meeting that we are talking about, and back with you guys, as well, for full implementation. Again, I am going to put this as a hope. A hope is that this would -- both the policy would already have been voted on or voted on alongside the VVSG 2.0 by the Commissioners, as well as having the testing and certification manuals ready to roll out at the same timeframe. So, if nothing else, whether or not the requirements and test assertions will be rolled out at that same

time, the process for rolling them out will be clear by the time that there is an adoption of the VVSG 2.0.

So that is -- that is where we are. The process is continuing forward moving quickly, but there is a whole lot of work being done. As I stated when we -- when I opened the presentation, we do not want to have you guys vote on the VVSG 2.0 and say, now what do we do as a testing and certification program to make sure that we can begin testing to this. The hope is, you know, requirements and test assertions aside, that at least the process and procedures and the accreditation that are necessary, all the steps that must be taken when the EAC Commissioners vote on the VVSG 2.0, we as the testing and certification program say, we can now, you know, that day or the very next day can begin taking those steps that are necessary to move forward. But, all of that will be wrapped into what we will call the implementation plan, because we know that the manufacturers are going to need time for R & D and the like. But at least everything will be laid out and clear for what those steps are.

And that is it.

COMMISSIONER MASTERSON:

Okay, we will open for questions. And I am actually going to start. And that is that the program manuals, like the requirements and like

the test assertions, also go out for public comment as well as going

through our boards and everything else.  Correct?

MR. MACIAS:

That is correct.  And so, yes, that is the hope for why -- for October

we will have the draft with the manufacturers and the labs, and

then, hopefully getting them into a more formalized, where we could

roll them out for the January meeting, as well, to the Board of

Advisors and Standards Board, and how we will stand those up are

when the next meeting will be here with this group or whether it be

submission via, you know, email we will definitely take comment on

those and be able to make any changes to them as necessary.

COMMISSIONER MASTERSON:

Lori Augino.

MS. AUGINO:

I would encourage you to not lose sight of the process that we have

developed up to this point that has been successful.  Can you guys

hear me in the back now better?  No?  I know it is working.

I would like to encourage you not to lose sight of the process

that has worked pretty successfully up to this point in garnering this

body and the public working groups on those test assertions and

requirements documents.  I personally would like to have an

opportunity to review and provide comment through a working

group methodology.  And I think it ties into David Wagner's

comments earlier, that this body might be the most appropriate

body to be working with first, before you are rolling out to the

Standards Board or Board of Advisors.  We are a smaller working

group that can provide -- or committee that can provide, you know,

good feedback.  And this is where the rubber meets the road.  And

so, not losing sight of continuing to use us and follow that process

that has been successful up to this point.

MR. MACIAS:

Yes, and so, just to be clear to answer that, from the requirements

and test assertion standpoint from, you know, I do not want to

speak for everybody but from my personal perspective is that

process will continue.  The public working groups will be the ones

that will be working on the requirements and test assertions and

continue that process forward.  When I was talking about the

document is the implementing those process and procedures and

that would definitely go to you guys as a board as well.  It just is not

ready for today.  So I am -- you know, again, I would be more than

willing to email it out to you guys in advance, or around the same

time as the Standards Board and Board of Advisors, but the hope

from a progression standpoint is that it would be at least public for

the boards by the January meeting.

MR. WAGNER:

David Wagner. I also wanted to follow up on the requirements since

Commissioner you invited me to…

COMMISSIONER MASTERSON:

Yes.

MR. WAGNER:

...continue after, and I am sure you will regret that.

[Laughter]

MR. WAGNER:

So I guess I just want to put in a word of encouragement to think

about how to make clear what the process for the requirements and

the testable assertions is I find it murky in my head.  For the rest of

the work we have done on the standards I found the process and

the ownership very clear.  The TGDC is an advisory body only, but

we are ultimately responsible for developing the TGDC

recommended proposal, which we have the control and the

responsibility for producing, we vote on, we have the assistance of

NIST, but we have the final responsibility and then we transmit that

on to the EAC and it is merely an advisory document.  I am not

clear on how the requirements and test assertions will be

developed.  I think you might want to consider, for instance, a role

like that.  I would find it helpful to know where we stand in that.  Are

we engaged?  Are we providing comment?  Are -- is this -- do we

have ownership over our recommended requirements?   Is it NIST

that is in control of those?  Is it the TGDC's product?

Thank you.

COMMISSIONER MASTERSON:

One, I take that encouragement seriously and absolutely hear it.

Let me see if I can put this more clearly than we have.

The requirements and test assertion process will mirror the

VVSG development process, except for there is no legal mandate

for you all to have to make those recommendations.  Is that a

clearer -- because I understand what you are saying, but, yes, it will

go through the exact same process.  It is in the working groups

right now.  They are working through them.  You can go look at

them now, but they will -- we will put them through you all, the

boards and the general public to comment on, as we do the VVSG

in the same way.  But I hear you, and so, the need to put that out in

a clearer document so that everyone understands the process, I

hear you on that.

MR. COUTTS:

Hopefully to clarify a little bit more, the concept that Marc and I

have been working on on this is now that the requirements are

coming out our group is going to start taking those piece by piece

and working on the assertions, working off what we have already

got, and then returning those back to the working groups,

highlighting any inconsistencies, any gaps, any issues, so that they

can then put them into their own discussions.  And it will kind of go

back and forth on that until we finally come up with something that

is a solid recommendation.

I have a follow-up question on this.  Despite the infallibility of

Robert Giles and others, it is entirely possible…

[Laughter]

…that when we put together the requirements that we will

find things in conflict in this document.  I have seen a couple of

places already that, on the surface, the VVSG looks good, but if

you dig down into practical requirements, depending on how those

are defined, we could actually wind up in conflict, and in fact,

shutting down some very promising advances in technology.  I am

wondering, what is our process, assuming that we do move forward

with a vote today, for amending these conflicts if we find them,

when we dig down into the requirements.  Because, as David said,

these -- the requirements are going to impact the principles and

guidelines significantly.

MR. KELLEY:

Ryan, I just have a process question.  I am a little unclear on, is it

the cart before the horse a little bit, on the manuals coming before

the requirements are fully flushed out?  Or -- help me understand

that.

MR. MACIAS:

Yes, so the manuals are already out right now and they have an expiration date. And this is really about how to submit an application, what is -- goes into a test plan, what goes into the testing process. And then -- and same with the -- registering manufacturers, how you become a registered manufacturer, how you become a voting system test lab. And then, the process for accreditation then takes that, the requirements and test assertions, to -- it is basically an auditing process that also works with the NVLAP, the NIST NVLAP process to run through auditing to make sure that they can accumulate everything together and be able to test to it, but from a process standpoint and -- so two things. One is now doing the structured tier the way that we did with the VVSG, if there does need to be modifications, then we would be able to make those. But more so from the process standpoint, there is not going to be much difference than what we have seen coming out of the manuals. The structure is going to look different, but it is really how a manufacturer submits their application, what the steps are before getting to a certification decision, what happens with a certification decision, rolling out those types of things. So, I do not think that there would be -- I do not think that is putting the cart before the horse.

MR. COUTTS:

Ryan, would you mind -- to reiterate my question, what is our

process for changing this VVSG if the requirements wind up in

conflict?

COMMISSIONER MASTERSON:

Yes, so I will attempt to answer it.  One is, I mean, there is a formal

process in HAVA that requires you all to approve changes to the

VVSG.  So we would have to go back through the TGDC process

like we have been doing since 2015, which is exactly why we are

moving the requirements where we are, right?  This is why we

chose the structure we chose so that in order to change each and

every requirement it does not involve a two to three-year process,

right?  And so the process is going to be evaluating the

requirements.  If there is a conflict that would necessitate a change

in the VVSG, we would have to come back to this table and go

through the VVSG process.  I would hope we could resolve that

through the requirements vetting process.  And I know NIST has

this experience in other areas.  I do not know -- I do not mean to

put you on the spot.

DR. ROCHFORD:

So -- thank you.  So, in our mind this is not dissimilar from our

cybersecurity framework that has been pretty successful.  And the

way that works is we do have a high level framework that provides

guidelines and principles, and are actually easily understandable so

that people at the highest levels of decision making can understand

what the goals are.  But underneath these are the very detailed

technical specifications, and then those can change as they do, as

technology changes, as markets change.  And those can change,

actually, fairly dynamically, without these being in conflict, typically.

Now if things do change so dramatically, as Matt said, then yes,

you would have to revisit.  But in the meantime, what this is doing is

it is also setting an expectation, right, because you have said these

are the principles that we are looking for, the underlying regulations

and standards to meet.

So,, if the conflict issue that you pointed out arose, ideally,

yes, that would be dealt with at the working group level, perhaps by

making sure that they are aligning with the principles appropriately,

or perhaps by making sure that any redundant working groups start

to merge or that, you know, you parse the specific technical goal

within one.  So there is going to be management in those lower

levels definitely.  But ideally much of it can be -- much of the high

level things can be contained here and be somewhat static, at least

on the year's timeframe.

Mary, do you have anything to add?

MS. BRADY:

No, I think that is correct.  It is -- you know, as much as we would

love to say, you know, we are going to vote on this and we are

going to accept it and we are done, standards do not work that way.

Nothing that involves technology works that way.  And, you know, I

think the processes are in place that if, you know, as we are going

down the requirements path, you know, if it cannot be solved in the

requirements or the manuals or processes and procedures, that we

have the opportunity to come back and, you know, modify as we go

along.  I mean, that is -- you know, all the processes are in place.

The groups are in place.  The procedures that were set out in

HAVA, you know, still apply.

COMMISSIONER MASTERSON:

Diane?

MS. GOLDEN:

Yes, I was just going to say, I would hope that the requirements,

you can resolve that at the requirements level rather than coming

back to the principle and guidelines.  To me, the principle and

guidelines are sort of like motherhood, apple pie.  You know, I

mean, how could you disagree pretty much?  It is the requirements

where, you know, reality and those specific conflicts and how you

resolve them, I would hope that is resolved at that level.  But I

would echo the fact that there will be issues there and I am hoping

this group can resolve those, because otherwise they are daunting

and may not be resolvable or they will be resolved in the Court of

public opinion which is not necessarily the best resolution in a lot of cases. So…

COMMISSIONER MASTERSON:

Okay.

MR. GILES:

Just -- so just one more thing, I am sorry.

COMMISSIONER MASTERSON:

You had to throw something in, Jersey.

MR. GILES:

Yes, I did. So, how does the, I guess the balance between requirements and test assertions and the potential conflicts there, like, as we are moving forward, are you going to develop a requirement, then the test assertion, before we adopt the requirement that we can make sure it is testable? Or are we going to do them on separate paths? How is that going to work?

MS. BRADY:

That is a great question. And let me just use a phrase from Commissioner Masterson, it depends. It -- you know, certainly, if they are ready to be presented at the same time, that makes a great deal of sense. But if, in fact, they are offset -- you know, we certainly do not want a situation where we have test assertions and no requirements, right?

[Laughter]

That -- I mean, there is a certain path that has to be followed. And if -- in some cases, you know, some of the groups will be ready to present, you know, a set of them at the same time. And I would expect that we will follow a process similar to what we have already done, that, you know, we are -- you know, the idea is to present the information to you as we go along in smaller chunks, so they can be reasonably reviewed and we can receive comment back, and go through this iterative process until we get to where we want to be, you know, as a community.

COMMISSIONER MASTERSON:

And Diane, there is always someone that does not like apple pie.

So, I am sure we will get to that point.

[Laughter]

MS. GOLDEN:

There you go.

COMMISSIONER MASTERSON:

But, okay, we are due for a break. We are going to break for about 15 minutes until 11:00 or so. In the meantime we are going to get the laptop more functional for us, I hope, and then re-adjourn around 11:00. And, again, bathrooms out the door is there. And if you are not a government employee and you are here, you do get rescanned by security if you come back through. So just be aware. So we will re-adjourn at 11:00.

[The EAC/TGDC Committee recessed at 10:45 a.m. and reconvened at 11:12 a.m.]

COMMISSIONER MASTERSON:

>All right, we are going to start back up again.  Next on the agenda is a discussion.  So I will tee up the kind of general information and then turn it over to Ms. Golden first, and then David Wagner to weigh in, as well.

>As part of your all's recommendations or encouragement to us at a prior meeting, and I think as a result of my own on-the-spot idea making, the EAC hosted a meeting of accessibility, so voters with disabilities and accessibility experts, including Diane and others, security experts including, I think, David, you participated via phone, but was part of the meeting, as well as some other computer scientists from across the country, and election officials. And the purpose of the meeting, as we talked about at the last TGDC meeting, was to tackle this idea and challenges of the need and requirements for accessibility that voters cannot only cast their votes freely and independently, but verify and have the auditing process done in an accessible manner and the desire and goals of the security community to have fully transparent, verifiable and auditable systems.  And so, the purpose -- and it was moderated

and facilitated by David Becker, who did a very good job feeding

the conversation in a direction to where are we, how can we ensure

both goals, because they are not mutually exclusive.  A voting

system needs to be both accessible and verifiable and auditable or

secure.  And so, the goal of the conversation was to have that and

see where there is agreement.

And so, I guess I will turn it over to Diane for her takeaways,

and then David and then others can weigh in.  And I am happy to

share my experience.  But I wanted to share the results of that

conversation because I think it speaks directly to where are

currently in the principles and guidelines and some of the tougher

issues or the toughest issues.

So, Diane.

MS. GOLDEN:

Sure, and I just jotted down a few notes.  Much of the conversation,

quite frankly, was repeat of conversations we have been having for

over a decade now, with the return to what I will just refer to as a

core paper ballot as the determinative vote record rather than a

"digital ballot."  It is very clear that paper is inaccessible in and of

itself, and so, making it accessible is a challenge.  And we have

done a reasonably sort of good job providing a digital interface for

people who need access features so that they can mark a paper

ballot, actually generate the print on a ballot.  But where we have

fallen down over and over and over again is allowing a voter to

verify that printed, marked paper ballot accessibly, and then casting

that print -- printed paper ballot accessibly.  And providing access

for verification and casting is very difficult and expensive and

complex and just has not been done, quite frankly because there is

not a market demand and, anyway, a variety of factors.  So that has

been the historic challenge.

And, as we discussed, from the security side, and I will

certainly let David Wagner speak to that, you know, one of the I

think classic statements from the security/auditability side was, well,

if you assume a core paper ballot, then all these other things fall

into place.  And I said, excuse me, but if you assume a digital ballot

all of my accessibility issues fall into place.  So, this is the inherent

tug here.  Quite frankly, in order to be accessible it has to be digital.

You cannot make paper accessible otherwise.  It has to be digital at

some point to be accessible.  So, we just have this balancing act,

tug-of-war going back and forth.  And, you know, there is a

resolution we will discuss later at some time, but -- and I was not

joking about, you know, my comment about I would like to see this

before I die.  I really would like to see an actually deployed system

that works and works efficiently and is cost effective from an

election official's perspective.  I mean, my gut fear is we can do

this.  We have the technology.  We can do it.  But can we do it in a

way that any of you guys can implement and make it work

efficiently and effectively?  That I do not know, because I have not

seen it happen.

So anyway, we had a good discussion, and I mean our

working group has you know -- we can put the standards together.

Whether or not we actually get a system deployed that meets them,

that works efficiently and effectively in an actual voting environment

is kind of the unknown of this equation.

So…

COMMISSIONER MASTERSON:

David, anything you want to add?

MR. WAGNER:

Sure, that was a good summary.  I will add a little more.  I was

there for most, but not all, of it.  I had to step out for an hour or two

to teach, so I hope folks here will correct me if I misrepresent

anything that happened at the meeting.

I believe the goal of the meeting was to try to figure out how

to the handle the tension between accessibility and security or

auditability, how to find a way forward that could meet the needs of

both of those communities and goals.  And I think the workshop

was successful at that, in indentifying a path forward that looked

plausible, that it could, sounded like, meet accessibility concerns,

and that looked like, from the security and auditability perspective,

could meet the security and auditability perspective. So I thought that was very encouraging.

The challenge that we continually face, as Diane mentioned, we have had this conversation over and over, is around paper, that what the security folks have -- what we have heard from that community and from the research there is that if it is not auditable it is not secure and to make it auditable that requires some way to check the system. There has been a proposed concept called software independence. And the challenge with that is that right now if you look at the systems that are on the market that are currently available, the only current way of achieving that involves some kind of a paper trail, paper ballot/paper trail, which then introduces all of the accessibility challenges that Diane raised, including, especially, transport of the paper ballot.

We heard from some of the cryptographers, computer security folks there speaking in favor of software independence. Some of them spoke in favor of a paper trail. Others advocated for a different angle towards software independence. They proposed cryptographic end-to-end voting systems, which are an alternative means of meeting software independence and providing auditability that may or may not involve paper. I think the advocates imagine, at least the initial implementations might possibly involve paper, but that do not need to and could provide a path forward to a system

that does not involve paper and is instead relying on some fairly

sophisticated mathematics and cryptography.  And there was a

debate among the security community about, you know, which of

those is the better angle, what is achievable, are the cryptographic

end-to-end systems plausibly implementable, could they reach the

market.  There is currently no systems I think that are of that form.

MR. COUTTS:

Are they FIPS certified?

MR. WAGNER:

Yes, the cryptography is specialized for the voting environment, so

we need to develop our own standards to support that.  FIPS was

not really developed with voting in mind.  It is developed for some,

yeah, rather different algorithms.  So you are getting at a challenge

there.

So I think what the security community take away from that

was let's not try to push one or the other of these angles.  The

proposal was to require auditability in the form of software

independence which could then be met either by paper or by

cryptographic end-to-end systems.  And from -- on the accessibility

side require that whatever the system is that it must be accessible.

So I think the outcome of that meeting, the path forward was

a dual requirement for accessibility no matter what and for software

independence with two possible ways towards achieving software

independence.  So the implications for us in the cybersecurity

working group I think that we have a pretty good idea how to write

requirements for paper-based systems.  For the cryptographic end-

to-end systems, that is going to be a bunch more work for us and

we are not there yet.  And it is going to be particularly challenging

because we do not have existing systems on the market, so we are

writing requirements for envisioned future systems rather than for

systems that are currently deployed or available on the market.

COMMISSIONER MASTERSON:

I think both of those are perfect summaries of where the discussion

ended and it is reflected in the current principles and guidelines that

you have in your folders.  There was a recognition that there was a

commitment in the principles and guidelines to be technologically

neutral and, therefore, that the software independence requirement

had to be viewed as such; that it could not be a dictate of a certain

specific type of technology but, instead, a principle to be followed

with the requirements to follow in kind, and that any form of

software independence had to offer full, independent not only ballot

casting, as we said, but verification and auditability, as such.  And

Diane I think made a very cogent point about why verification from

a paper standpoint for voters with disabilities is such a challenge.

And there was a recognition that the technology does exist to

provide that level of accessibility and that, in fact, it is incumbent

now on the marketplace to utilize that technology and that we have come a long way since the discussions of the 2007 VVSG technologically to tackle these. And there was an absolute unanimous agreement that full accessibility must be present; that that was not something to be capitulated on, from all, I think, in the room.

So are there any questions about that meeting the reflection in the draft principles and guidelines? But we wanted to make sure we discussed it because it was something we committed to doing at the prior meeting and fulfilled.

Awesome. You guys, both of you David and Diane, I want to thank you both for your participation, for sharing the comments. I will say, Diane probably did not feel as optimistic, I felt really good about where we walked out of that meeting at; that there was a recognition on both sides of the importance of their points and that it was not, one has to give for another, but, in fact, both have to be present. And I think both sides really shared that. And the election officials in the room certainly appreciated that because they are the ones that have to deploy this and would face lawsuits, I think, in both directions and otherwise. So I think, generally speaking, in the room there was absolute recognition of it.

Neal?

MR. KELLEY:

Mr. Chairman, I do not mean to go back on -- but I do have a question, actually. I am wondering, out of the meeting, if there was any discussion, or where it fit into the meeting, online marking device for accessibility with a paper printout, how did that -- was there a discussion on that?

COMMISSIONER MASTERSON:

Yes, so to my recollection, there was. And one of the conversations that was had was for voters with disabilities, that if there is this software independence principle present, that it increased the flexibility for the types of technologies folks could use to mark their ballot, right? And so, there was a conversation around that additional flexibility for voters -- for voters with disabilities, particularly to use their own technology in a variety of ways, which may include online ballot marking, but that as long as you, in the end, had this verifiable, auditable record that it created that flexibility. And please correct me if I am misstating the conversation. But…

MS. GOLDEN:

Yes, the challenge with online ballot marking devices is in order to provide accessible verification -- and, you know, casting is really a challenge, but I will kind of set that aside -- a person really almost has to have their own AT, I mean, because you are talking about an OCR scanning. I mean, that is the only way you can really -- you

know, if you are asking a voter remotely to print, then somehow

they got to scan that print back in, and  that means they are going

to probably have to have their own assistive tech, sorry, to do that.

And that creates kind of another set of issues/concerns for people

about folks using their own technology.  And anyway, you know, so

there is, potentially, a number of issues.  But for me, you know,

remote voting, letting somebody use their own assistive technology

is kind of the best option because you eliminate all kinds of issues.

Training and experience and knowledge and expertise of using

your own, you know, assistive technology makes things so much

easier.  So anyway, yes, it is not -- yes.

COMMISSIONER MASTERSON:

Other questions?   Okay, well, the good news is we are a little

ahead of schedule.  And I appreciate you all indulging in that

conversation, but we wanted to make sure we were responsive to

the prior meeting.

So I think we can tee up the discussion -- the beginnings of

the discussions on the overview of the draft principles and

guidelines and at least begin that.  Is that all right?

MS. BRADY:

I think there is an awful lot to tee up.  I thought we were just going

to go right into the discussion of the draft principles and guidelines.

COMMISSIONER MASTERSON:

Yes, perfect, let's do it.

MS. BRADY:

Okay. Well…

COMMISSIONER MASTERSON:

Do you need to get your folks?

MS. BRADY:

I do, we kicked them out of the room.

[Laughter]

COMMISSIONER MASTERSON:

So we will grab the NIST folks. Who is first?

MS. BRADY:

Sharon.

COMMISSIONER MASTERSON:

Sharon. All right, so this next portion of the meeting what we will do

is -- in theory they are watching, so they will know, in the breakout

room -- the next portion of the discussion is the NIST staff will walk

through what the principles and guidelines say, what the

motivations behind each one of the principles and guidelines were,

answer questions, concerns, comments on them, with the goal of

working through whatever concerns you may have heading into

tomorrow and possible approval of the principles and guidelines.

So now is a good time to have an open discussion about any

concerns you have had as you have looked through them, to ask

questions of the NIST staff that have worked with the working groups and the EAC staff that have worked with the working groups, to be able to fully vet the principles and guidelines with you all heading into tomorrow.

So with that, I will turn it over to Dr. Sharon Laskowski, to tee up the first set of principles and guidelines which will be on accessibility and usability.  Sharon, the table is yours.

MS. BRADY:

Well, I believe Matt just did the intro…

COMMISSIONER MASTERSON:

You are up.

MS. BRADY:

…so you are up.

COMMISSIONER MASTERSON:

And, again, this is meant to be interactive for you all.  So as she goes, as you have questions, or if you want to wait until the end, the idea is for you all to be able to cover questions, concerns, what not, as we walk through the human factors principles and guidelines.

DR. LASKOWSKI:

There we go.  Thank you very much.  So I am going to be talking primarily about the human factors principles and guidelines.

Okay, there is basically four principles; equivalent and

consistent voter access, marked, verified and cast as intended,

robust, safe, usable and accessible and voter privacy.  I am going

to be going over, in detail, each of these with your associated

guidelines.  And there is also -- let me take this opportunity to talk

about when we -- the NIST team took our stovepiped principles

from security, interoperability, high quality design and

implementation and put them together.  Into the 15 that you see

now, we saw there were overlaps and we realized we needed to

kind of look at the whole, because all 15 principles stand together

and work together.  So, this final version is a result of that

collaboration across the team.

So first let me quickly go over the changes from the VVSG

1.1.  So what is new with this approach to high level principles and

guidelines is that we can clearly state high level goals of

accessibility and usability for all voters.  We envisioned this in a

way that these can be applied to any interactive system or function

that is in the voting system scope.  And we hope and believe that

as technology emerges that we are generic enough that you do not

really have to change at this level, it is the underlying requirements

that change if there is some specific implementation details that is

relevant to that technology.  And the way we developed our

principles and guidelines is an extensive gap analysis and review of

the research and sort of how do these group together, and then we drilled back down to identify where there were gaps in requirements. So as a result of this process, we actually do have a skeleton set of requirements underneath them.

We also felt it was important to reference federal accessibility standards to make sure that systems meet accessibility requirements as required by law. So we wanted to say that generically because versions of standards underneath change, they get updated, but this ensures that we always refer to commonly acceptable standards.

We also wanted to be sure to include accessible processes for verification, including voter verifiable paper records as you just heard earlier from Diane and David.

And we organized, also, according to what are called the POUR principles; perceivable, operable, understandable and robust. That comes out of the accessibility community and standards such as the Web Content Accessibility Guidelines, which are now part of the updated Section 508.

We also wanted to make sure we support universal design and usability, that is, trying to identify the largest range of voters while balancing minimizing the voter interface complexity, especially at the polling place.

And we added, and I will talk about this in a little more detail later, making sure our user-centered design methodologies apply, upfront, in the development process, and also, kind of a higher level transparency principle that John Wack is going to talk about later in the day that the systems and processes are easy to understand  That creates trust.  That is kind of a meta usability accessible human factors thing that looks at the higher level processes.  So it is not a direct, here is very specific user interface requirements, kind of thing.

I am not going to go over, in detail, this slide, but for those of you that remember, say, seeing an earlier version from February 2017, we did some shuffling.  But everything that was in the February 2017 is still in here.  It is just shuffled and reworded for clarity.  What was new is culling out voter privacy and ballot secrecy, explicitly, and developing a working definition for that.  And I also mentioned the user-centered design methods added to the high quality implementation and the transparency.

So the first principle is equivalent and consistent voter access.  The wording is "All voters can access and use the voting system regardless of their abilities, without discrimination."  So what are the two guidelines associated with that?  Well, that voters have a consistent experience throughout the voting process in all modes of voting.  So there is two levels of which this can be interpreted.  At

one level, if the voter needs to use audio that that audio experience

is consistent throughout the process of voting, and including, for

example, the verification of the ballot -- ballot choices, that is.  But,

also, you want voters to have a consistent experience in their voting

process at the meta level, that is if they are going and using their

own assistive technology to mark their ballot at home, as opposed

to the polling place, that experience should be as similar a possible

and consistent across the board.

And the second guideline is "Voters receive equivalent

information options in all modes of voting."  That is a basic

accessibility requirement; that is, you want the same information,

the same kind of options.  We use the word equivalent here, not the

same because, for example, to use audio again, there may be

instructions for navigation that are slightly different but equivalent,

and the voting information is audio.  So it is equivalent information,

and that is a term of art in the accessibility community, as well.

The next principle is marked, verified, and cast as intended.

That is ballots and vote selections are presented in a clear,

understandable way and can be marked and verified and cast by all

voters.  Here is where we see the perceivable, operable and

understandable guidelines.  The robust, the "R" part of POUR is in

the next principle.

So for perceivable you want displays working -- a display working for the widest range of voters and voters can adjust the settings to meet their needs.  So, for example, requirements about font and contrast fall into play.  And we know from research that voters -- all voters want large enough font, for example.

Operable, voters and poll workers can use all controls accurately, and voters have direct control of all ballot changes.  Here is where we talk about preventing over votes, good -- you know, being able to navigate easily through the ballot and not having the system say if you change something, let's say in particular if you are doing say -- voting by party, that things do not get changed unexpectedly in other parts of the ballot.  You always as a voter have direct control.  And understandable, can voters -- voters can understand all information as it is presented, including instructions, messages from the system, and error messages.  So here we are talking about clear feedback, plain language in the error messages and in the navigation.  And there is a lot of research that has gone on since VVSG 1.1 that we have pulled together to update requirements to capture this.

MR. RIDDLEMOSER:

Sharon, before you go on I have some…

DR. LASKOWSKI:

Yes.

COMMISSIONER MASTERSON:

Yes, questions.

MR. RIDDLEMOSER:

Of the 15 higher level principles that are included in…

COMMISSIONER MASTERSON:

Greg, can you use your mic?  I'm sorry.

MR. RIDDLEMOSER:

I was, I just wasn't…

[Laughter]

MR. RIDDLEMOSER:

It is on.  Of the 15 principles and guidelines that are in here, this is

the only one of the 15 where we have put something in bold, all

caps in front of the operable sentence.  Is that necessary?  It was

obviously purposeful, but is it necessary?

DR. LASKOWSKI:

We had a discussion.  So we knew this was very important to cull

these out for the accessibility community, but it is not consistent.

And we have gone both directions.  I would certainly like the input

from this committee as to whether we need to change the format or

not.  We certainly can put in something about, you know, the -- we

can work that into a sentence and wordsmith it to eliminate that.  I

would maybe look to Diane to comment on that.

MS. GOLDEN:

Yes, I was just sitting here thinking about, you know, POUR is a

term of art within the accessibility community, and so, I understand

but then, again, we have got perceivable, operable and

understandable and we do not have robust capitalized anywhere,

so we have kind of done pooh something, I do not know.

[Laughter]

DR.  LASKOWSKI:

Yes, well, it is in the next -- there it is on the next slide, but it is not

bold, yes.

MS. GOLDEN:

Yes, it is in the next one, but it is not capitalized and bold.

DR. LASKOWSKI:

Yes, yes, yes.

MS. GOLDEN:

So we have kind lost the POUR anyway.  So, yes, I do not…

DR. LASKOWSKI:

I mean, if there is…

MS. GOLDEN:

I think we could probably put something in parens or something, if it

is really a big deal to make the formatting the same…

DR. LASKOWSKI:

Yes.

MS. GOLDEN:

…across all of them.

DR. LASKOWSKI:

Yes, I mean, certainly, I think the verbiage associated does capture the notion of perceivable, operable and understandable.  Maybe the -- yes, the solution is to just cull it out in parentheses at the end of the sentence.  Is that…

MR. RIDDLEMOSER:

Well, I would not even do that.

DR. LASKOWSKI:

Or not even do that.

MR. RIDDLEMOSER:

If we are going to have this 700 page glossary at the end, then it would certainly behoove us to not…

DR.  LASKOWSKI:

Not have to define them explicitly, yes.

MR. RIDDLEMOSER:

Yes, inside the document itself.

DR. LASKOWSKI:

Yes, we can do that.

COMMISSIONER MASTERSON:

I will add, just for purposes of discussion, the reason -- part of the reason I think that this was included in this way, or it was important to have those words, in particular, was Mat McCullough, who is not

here today, at a very early meeting in 2015, stressed the

importance of having these concepts within the document.  And so,

the reason it is culled out specifically in this way, in this document,

is because Mat had spoken to, and I think both Diane and Marc

agreed, to cull these out because these are known terms within that

community, to see that those were being addressed directly in the

guidelines and principles.  So, for whatever perspective that is

worth, I recall that being part of the discussion in a prior meeting

that we had and I think what drove this kind of layout.

DR. LASKOWSKI:

Marc, perhaps you have a comment?

MR. GUTHRIE:

Yes, too bad Mat is not here but I think you know why he is not

here, do not you?

COMMISSIONER MASTERSON:

Yes.

MR. GUTHRIE:

Okay, yes, I would rather not speak for him, but I think you

capsulated it pretty well.

DR. LASKOWSKI:

Um-hum.

COMMISSIONER MASTERSON:

Neal, did you…

MR. KELLEY:

Yes, thank you. So, I admit I am coming to this in the ninth inning because Judd and I are both brand new members of the TGDC, so I feel a little guilty about asking these kinds of questions, but I am over it now.

DR. LASKOWSKI:

Not at all.

MR. KELLEY:

So…

[Laughter]

DR. LASKOWSKI:

Not a problem.

MR. KELLEY:

Under understandable in that 7.3 -- I really like the document, in whole, because it really talks about being easy for voters and individuals to understand these items. And then, this is the only area where we are not using the word easily. So that is my question, because we talk about it in transparency that it should be easy to understand, and then, we come down here and we say, voters can understand, as opposed to continuing that theme. And maybe it is minor, but I just thought that it is not consistent through the document. So, that is what I was wondering.

DR. LASKOWSKI:

Um-hum.

COMMISSIONER MASTERSON:

So your -- I am sorry, just for clarity, you would like it to read

"Voters can easily understand all information"? Okay.

MR. KELLEY:

It just keeps it consistent.

DR. LASKOWSKI:

I guess we were trying -- I think just one of the reasons we did not

use the word easy is we were trying to be very specific about what

is to be measured in requirements underneath it, you know,

because easy is kind of, oh, you know, what does that mean? But

you know…

MR. KELLEY:

I guess in that concept…

DR. LASKOWSKI:

Yes, yes, so as we will move on we certainly want things to be

tested with real users to make sure they can understand and can

use the controls. So I think that is why we did not have it in there,

to make that point. It kind of gets overused and then loses

meaning. So Diane I -- you know I am going to look to you for…

MS. GOLDEN:

Yes, that is honestly it. It is -- you know easily, efficiently is another

one, and when you are talking about access features sometimes

they just are not very efficient.  Even if they are the best designed

access feature in the world, they are still slow and cumbersome.

But that is you know -- so I think all of those kind of qualitative

words are a little challenging to quantify and measure and -- when

you are looking at requirements and test assertions and verifying

conformance.  So…

DR. LASKOWSKI:

Yes, even efficiently, you can actually -- if you got a standard

protocol for testing, a standard ballot, which we have done in the

past for testing, you can actually measure time on average with

specific sets of users and get some -- which is particularly important

for the accessible system, because if you got – say, designed it so

there is 300 button presses, if you are using a switch, probably not

something you can expect voters to -- with those kinds of

disabilities that need that assistance to use.  So…

MR. KELLEY:

Well, and I was not thinking of that in that context, so I appreciate

the discussion.  It is helpful.

DR. LASKOWSKI:

Okay.

MR. COUTTS:

Just one thing to bring up on that, as they have been stating, easy

cannot be measured.  And what we do at that point is we start

moving the judgment of what is easy to the lab because we cannot

write a test assertion to measure it.  Well, then you start getting

inconsistencies in the lab because depending on who is testing and

what their test protocol is, then suddenly every lab is doing it

different and they are giving judgment which we are trying to do

because the labs are doing conformance and we must give them

something to conform to.  So the word it is -- it actually should go

the other way where we say it is easy it is a can.

MR. KELLEY:

So where easily is used elsewhere in the document…

[Laughter]

DR. LASKOWSKI:

Not my area of expertise, so we will have to look through for that.

COMMISSIONER MASTERSON:

One is, we are tracking each one of your comments so that we can

revisit them once we get through each one of the sections so we

can say, you know, is this something you all would like to see

changed or not?

Two is, that obviously the principles and guidelines are not

what is going to be taken and actually tested to, right?  We talked

about that this morning.  The requirements and test assertions will

be developed off of this.  And so, to the extent that easily is used

somewhere else, we can make a decision whether it is appropriate

to use it here or not use it in those other places this afternoon,

recognizing that requirements will be following along with these.

So, other questions for Sharon before we move forward?

Go ahead, Sharon.

DR. LASKOWSKI:

Okay.  The next one is robust, safe, usable and accessible.  The

voting system and voting processes provide a robust, safe, usable,

and accessible experience for all users.  So, the guidelines under

that are, first, the voting system's hardware and accessories protect

voters from harmful conditions.  For example, you do not want the

polling booth falling over or plugs, you know, getting lose and

electrocution or the flicker rate being such that it causes a seizure

in some sensitive individuals.  And so, we have a lot of -- by the

way, we have a lot of these requirements in 1.1 already.

Second, the voting system meets currently accepted federal

standards for accessibility.  I already talked about that.  We

generalized it at this level, so rather than reference, say, WCAG 2.0

specifically, that would go in the requirements underneath where

we have more flexibility to change them as standards get updated.

And, thirdly, the voting system is measured with a wide

range of representative voters and poll workers, including those

with and without disabilities, for effectiveness, efficiency, and

satisfaction.  This is based on an ISO definition, and as I mentioned

before this -- these -- this particular set of requirements are already in VVSG 1.1. We have a lot of guidance that we want to revisit in terms of how you test. This is geared at the sort of near or end/final product, where you are testing with sets of users, each mode of voting. So if it is the audio mode, you would test with people that need to use the audio mode in order to vote. And effectiveness, efficiency, and satisfaction are part of the standard ISO definition for how to measure this. This is called a summative usability test, if you want to get into, you know, the usability, user experience lingo. And, as I said, we had guidance in terms of a test protocol, what those sets of users should look like, what a test report should look like. We have got a standard medium complexity ballot on which to test, so you could actually look at error rates, look at efficiency, and voter satisfaction.

So there is lots of materials there. We would like to revisit them and package them up better, maybe with short background to make it easier for the developers to use.

COMMISSIONER MASTERSON:

So it -- go ahead, you first.

MS. GOLDEN:

Well I was just going to add to this, and we have had quite a bit of discussion about when you try to gather up a representative group of voters with disabilities, it is a bit of challenge. And I am -- yes, I

am saying that with all, you know -- and that has been part of the

problem. "A," there are a whole lot of different kinds of functional

limitations that you need to have represented. So, having like one

blind person is not going to cut it, you know, and one blind person

does not equal a second blind person. If you happen to pick the

one blind person who is really technologically savvy, you are going

to get a whole different user feedback than you are, you know,

someone elderly, with macular degeneration, who does not use any

technology, you know, and is still blind. So it is just trying to

provide guidance, as Sharon said, and at the same time

acknowledging that it is really difficult to find the kinds of user

groups that really is going to give you a good set of information

about what is, you know, what is working, what is not,

effectiveness, efficiency, satisfaction. And I can say this from

experience, for the work we did with one of the EAC funded grants,

trying to find representative samples of people who use switch

input, you are talking about gathering up a whole lot of different

kinds of people with different kinds of disabilities and constituency

groups. And even if you go poll a group of people with cerebral

palsy, you get completely different kinds of cerebral palsy and

functional limitations. It is just it is not -- it is not as easy as, you

know, opening a storefront someplace and saying, okay, a whole

bunch of users come in. That is great usability testing in one

sense, but it does not give you a really good set of feedback about access features. It is much more challenging than that.

So, anyway, that is part of trying to provide a little bit more guidance and help and suggestion for vendors. And I have talked to Mat about this a lot. Somehow we got to bridge the gap between the voting vendor community and the assistive technology vendor community, and just in general trying to merge this a little bit better. So anyway, we are -- hopefully we will have some good things come out of it.

DR. LASKOWSKI:

Yes it sounds impossible, but it is not. People in the user, experience, accessibility community do it all the time. But I think we also need to keep -- so -- but certainly, a need for guidance to make it clear how to do that easily.

But, also, we are thinking about, in the polling place, which kind of users are actually going to be there. If you take this broader view where you have different modes of voting, so if they can mark their ballot at home using their assistive technology, you do not need to worry about all the requirements in the in-polling place to get at these very specific kind of individuals.

So if you give them different paths for voting, or if they can bring their ballot in with a barcode, they have already pre-marked it, they just submit it, you can then address -- so we are trying to make

the umbrella of voters that we can cover as big as possible with the

universal design in the polling place and some minimal assistive

technology that covers enough folks that will use that technology,

plus some alternative modes.  So I think that is how to approach

the problem and I think that some guidance will help.

COMMISSIONER MASTERSON:

Two things, real quick on that.  One is, and I think Diane said it well,

and that is because -- we have seen this challenge in our current

testing program.  This is not a new challenge to us.  It is something

we have talked with Diane a lot.  So one of our commitments when

we looked at the Charter in the EAC/VVSG working group is some

sort of education effort behind the VVSG; that once the VVSG is

approved, the EAC is going to endeavor with others to help educate

on what it means and impact.  This is where bridging that gap

between the vendors and some of your folks would come in, so that

-- and the test labs, by the way, and the test labs, so that we can

begin to tackle the complex nature of this challenge and make the

testing better and improve the systems, because the manufacturers

want to do this better.  I do not think it is a lack of desire.  It is just a

-- it is a real challenge as you said.  So I think that will be part of the

VVSG education push on our end.

The other -- I want to highlight the middle bullet, that voting

system meets currently accepted federal standards for accessibility,

only to make the point, as we talked about the principles and

guidelines versus requirements this is one of the areas of flexibility

that we give ourselves by doing it this way.  And one of the things

you all, as a group, had told us, is that you want to incorporate

current standards for things and allow that to continue to be used,

as opposed to being locked in to, you know, version "G" and not

being able to update it, right?  And so, this is one of the ways, this

is one of the areas, I guess, that we did that, or the folks working on

this did that.  And that is the flexibility you get with the requirements

being able to be more readily updated and reflect new standards

and new technology in that way.  So I wanted to highlight it

because it is a good example of that.

MR. COUTTS:

A quick question, Sharon, at your last point, wide range of

representative voters and poll workers.  At this point the

accessibility options for poll workers has been more limited than

what we do for voters.  Is the intent on this, that the poll workers will

-- the poll worker interfaces will have the same level of interface

and accessibility as the voter?

DR. LASKOWSKI:

That is -- according to HAVA, poll workers are not included.  It is

the voter.  I think we need to recognize that the poll worker

population is an aging population, so you want a good contrast just

like, you know, for everyone, a large enough font, et cetera.  But there is -- we do not envision writing requirements for the kind of accessibility -- for accessibility only, you know, so universal design.  So, for example, if there is an error message that comes up that the poll worker needs to read, it needs to be readable by typical poll workers.

MR. COUTTS:

Right, but it does not need to be auditable, for example?

DR. LASKOWSKI:

No.

MR. COUTTS:

Or audible.

DR. LASKOWSKI:

That is not the view.

MR. COUTTS:

Okay.

DR. LASKOWSKI:

And I do not believe, but I am not -- I do not have legal expertise that there is any legal requirement to provide that.

MS. GOLDEN:

It would be an ADA issue on the election official's side.  Since they are all going to be public, it would be a question of a reasonable accommodation.  Can the poll worker do the essential functions of

the job of poll worker?  Anyway, you know, so, yes, there are

provisions for that, and the expectation would be that if there is a

way to make an accommodation and/or add on assistive

technology to do that then, you know, yes.  But that would be taken

care of outside of these standards.  That is going to be an ADA

implementation issue on the election official side.

MR. COUTTS:

I simply bring it up because it is set up in that document -- in that

statement as equivalent and can be taken as such.

DR. LASKOWSKI:

Yes, so it is just a measurement.  So, I guess we were not clear.

Most of this is for the voter.  Do we need to make this clear that

also for anything the poll worker sees it has got to be usable?  You

know, we did not make this distinction in the guidelines.  You know,

I am okay with that, but it is going to be how the requirements are

written then.

MR. COUTTS:

This is going to inform the requirements, and so, depending on how

people want to interpret what we write here, that is…

DR. LASKOWSKI:

Yes, we did not specifically say which part…

MR. COUTTS:

…important.

DR. LASKOWSKI:

> Everything should be usable, which parts are accessible.

MR. COUTTS:

> Right, because for the voter, we have to change for every voter and
> we have to reset for every voter.  Are we resetting for every poll
> worker?  What do we -- it can -- it can get -- if they -- if one poll
> worker needs high contrast, but the other one does not, how do we
> create the easy -- there is a lot…

DR.  LASKOWSKI:

> And we're…

MR. COUTTS:

> …that could go sideways.

DR. LASKOWSKI:

> And then, it is getting, in my opinion, way too complex to get a good
> system…

MR. COUTTS:

> Right.

DR.  LASKOWSKI:

> …put together.  We could add to the wording, representative voters
> for both usability and accessibility, and poll workers for usability.
> On the fly, I hate to wordsmith, so -- but that might be one way to
> make that clear if you feel it is not clear enough.

MS. BRADY:

So McDermot, what I am hearing is maybe we should break it out and -- or no?

MR. COUTTS:

I think that might be a wise decision, but I will…

MS. BRADY:

So it could be done…

MR. COUTTS:

I am just bringing up the point.

MS. BRADY:

Yes, it could be -- well we will come back and revisit these, you know, at the end. But I have noted it and, you know, certainly it could be solved in a number of ways, either by wordsmithing that current guideline or creating two separate guidelines or whatever makes the most sense.

COMMISSIONER MASTERSON:

Lori?

MS. AUGINO:

I would recommend that we strike -- point taken, that we strike poll workers in that third bullet, because we do address the ease of use, in principle 1, high quality design.

DR. LASKOWSKI:

We do not cull out poll worker specifically. So…

MS. BRADY:

Yes, we do.

DR. LASKOWSKI:

Well, the third bullet, we want to test, and we actually have a protocol for poll worker usability testing and there is specific requirements covering this in the VVSG 1.1. So I have to think where would we put those requirements for poll workers then?

COMMISSIONER MASTERSON:

So Lori -- just for reference, Lori is referencing principle number two, high quality implementation. "The voting system is implemented using high quality best practices." 2.2, "The voting system is implemented using best practice, user-centered design methods for a wide range of representative voters and poll workers, including those with and without disabilities." So I think Lori's suggestion, and correct me if I am wrong, is 2.2 covers…

DR. LASKOWSKI:

It does not cover the -- so this last bullet was the summative usability test. It only covers the user-centered design process, although if you do a good user-centered design process you will, in principle, be usable for poll workers. So I see that this adds a little extra in terms of an end user test for poll workers measuring effectiveness, efficiency, and satisfaction.

MS. AUGINO:

So I am just thinking in terms of in the desire to keep these reduced rather than create more principles and to ensure that we are somewhat concise, are we being redundant by having it in the robust, safe, usable, and accessible, as well as the high quality implementation?  And is there a way that we can pull in that component into two?

DR. LASKOWSKI:

Yes, it is getting at two slightly different ways of testing.  One is, in your design process you account for poll workers.  In this particular guideline it is culling out doing this test at the end.

MS. BRADY:

So I think why do not we table it until after we…

MS. AUGINO:

Um-hum.

MS. BRADY:

…discuss the high quality implementation?

DR. LASKOWSKI:

Yep.

MS. BRADY:

And then, you know, and then we can revisit.

DR. LASKOWSKI:

Okay.  So that actually goes to my next point, to transition to the next slide.  This last test is -- this last guideline that we have been

discussing is actually based on what is currently in VVSG 1.1. However, if you have not designed with your users in mind from the beginning, doing a test at the end is like forgetting the flour in your cake and trying to add it in when the cake is already baked. So that is why, under high quality implementation, which Ben will be talking about, we added a guideline that says that best practice user-centered designed methods for a wide range of representative voters and poll workers is implemented, including those with and without disabilities. And since we first wrote these requirements, actually starting in 1.1 for the ones you just saw, there is now a whole family of reporting formats, not just the one for summative usability testing, but for user-centered design methods reflecting best practice. So there is a lot of tools and guidance out there now for this. And really if you do your user-centered design properly in your development, everything should all out at the end. And it is not a full-blown lots of different representative users in a user-centered design methodology. You typically start off with checklists, perhaps. You may start out with expert users who know a lot about accessibility. You might add a few people who are expert with a disability, looking for problems you can fix in your design, presumably you are iterating through your design. So a lot of these user-centered design methods are relatively low cost and part of best practice across the IT industry.

MS. BRADY:

> I think that is a great point Sharon. I think, you know, maybe there
>
> is some resources that we should make available, you know,
>
> immediately, to the implementation and testing group so you have
>
> ready access to these resources.

MR. COUTTS:

> Right, and I think it also needs to be -- the labs need to be part of
>
> that discussion because it is entirely possible that the experts and
>
> these user testing designs will come up with a recommendation that
>
> is then somehow in conflict with the judgment of the labs as to how
>
> they interpret the standard. So making sure that that does not
>
> occur is very important, because I do not want to get feedback from
>
> one side, and then say, you do not pass the requirement on the
>
> other. And that…

COMMISSIONER MASTERSON:

> Judd…-

MR. COUTTS:

> And that…

COMMISSIONER MASTERSON:

> Oh, sorry.

MR. COUTTS:

> …that could happen.

COMMISSIONER MASTERSON:

Judd?

MR. CHOATE:

Would you mind going back to the last slide?  So, one issue, and I know it is a term of art, but the use of the word users in the principle are you -- do you  mean voters?  Or should we be using the word voters, instead of users, so accessible experience for all voters instead of users.

DR. LASKOWSKI:

We could edit that.  It was covering, you know, poll workers and…

MR. CHOATE:

Um-hum.

DR. LASKOWSKI:

…voters.

MR. CHOATE:

It seems like that would be a harder thing to test to if we were that broad.

DR. LASKOWSKI:

We were -- the principles were kind of more generic, so that is why we used the word.  But I mean, I do not think it necessarily hurts to be a little more specific.  I am trying to think are there other – well, election officials I suppose could be other users and if you are -- if you are going to look at software for setting up the ballot, et cetera, you would want -- those are not poll workers.  Those are -- there

are other users.  I will let some of our election officials chime in,

perhaps, on this.  It depends on the scope of what you are applying

some of these to, but…

MS. AUGINO:

This is Lori Augino, I think the intent of this was to roll up robust,

safe, usable, and accessible to capture all of those people that -- all

of us that might be using the system.

DR. LASKOWSKI:

Yes.

MS. AUGINO:

And I think we have identified that challenge as some of those

principles will apply to voters, some will apply to election officials,

some could apply to a poll worker, could apply to the public, in

general.  So, therein lies, I think, the challenge.

COMMISSIONER MASTERSON:

Yes, I think that is right.  I think we do not want a system that is

harmful to election officials, although some may want a system that

is harmful to election officials, right?

[Laughter]

COMMISSIONER MASTERSON:

And so, that is why it says users, right?  But your point is well

taken, so we can cover that.  But I think that was the point of the

higher level principle…

DR. LASKOWSKI:

Yes.

COMMISSIONER MASTERSON:

… saying all users that way, including poll workers too. You want it to say for poll workers, too, which would call into question how heavy the systems are, I think. But, go ahead.

MS. GOLDEN:

Yes, and I have been doing the same thing. I have been trying to figure out, okay, merge it over here or split it apart. And the challenge, quite frankly, is the accessible piece. The robust, safe, and usable I think you are okay at a user level and whether that is election officials or poll workers or whomever. The problem is there is a different legal standard for accessibility when you are talking about a voter directly interacting with and marking, verifying, and casting a ballot than everybody else interacting and there is a different level of access -- actually a different legal requirement, period. And that is where the challenge is trying to -- and I was thinking, okay, do you pull accessible out of the stem and -- I do not -- but there is -- that is the challenge is it implying that then the VVSG is going to have a whole set of accessibility standards for people beyond voters, which it is not, so, yes.

MR. GILES:

This is Bob Giles. I think my concern with that is because in 8.2 you say the voting system meets currently acceptable federal standards for accessibility. And if we are going to try apply that to board workers and election officials, I think that is where it starts -- you know, somebody could make that leap and say, well, you said the federal standards, so that means everybody who touches the system. I think that is where we need to be clear.

MS. GOLDEN:

Yes, and that is actually referencing, you know, general web accessibility standards or general document accessibility, not the actual voting system. So, yes, somehow there is some clarification we got to work on, but anyway.

DR. LASKOWSKI:

Yes, I hate to pull out accessible completely, right, because you want -- it can be accessible and not usable by people that need the accessibility. So it is hard to pull apart and it is…

COMMISSIONER MASTERSON:

We can revisit it this afternoon.

DR. LASKOWSKI:

Yes.

COMMISSIONER MASTERSON:

We will take a look. All of us can take a look...

DR. LASKOWSKI:

Yes.

COMMISSIONER MASTERSON:

…at a proposed change, if necessary.

DR. LASKOWSKI:

Might be able to do it by re-jiggering the guidelines underneath it to be more specific.

COMMISSIONER MASTERSON:

Yes.

DR. LASKOWSKI:

That might be the most elegant way to do it.

Okay, before I talk about privacy, when we pulled these together our security folks and the human factors folks said, well, we have got overlap with ballot secrecy and privacy, and we really need -- and we do not -- so I said, well, okay, what is our definition? And we did not even have a working definition of what we mean by privacy and ballot secrecy. So, in order to pull these notions apart and really understand them to understand -- to make sure we do not have redundancy but we are covering everything we need to cover, we have a working definition of privacy and ballot secrecy. So, we make a distinction between the privacy of the interaction between the voter, that is, if you are at the voting system as you want a privacy screen, you do not want your vote announced, your choices announced out loud. You want to be able to mark it

independently so you have your privacy. But there is also the secrecy once the ballot has been marked to keep that ballot secret from who -- so that no one can determine how a vote -- a specific voter marked their ballot. So voter -- so our working definition is that voter privacy is primarily concerned with what happens while a voter is marking and casting their ballot, right, so they can mark it without revealing their ballot selections. And also, a voting system should not record how a specific voter interacted with the ballot. We often do not have too many folks using the accessible system, so you do not want to mark, oh, audio was used. It is clear the audio was used, we only blind voter this morning, so you can reveal their vote. Ballot secrecy is primarily concerned with what happens after a voter casts their ballot. So the voting system must not create or store a link between a specific voter's identity and a set of specific ballot selections.

So with that intro, I am going to talk about privacy -- the privacy principle, and then, our security folks, I believe Josh and Gema, will talk about the ballot secrecy principle.

So voter privacy is that voters can mark their ballot and verify and cast their vote selections privately and independently. So that means that the voting process preserves that privacy of the voter's interaction with the ballot, the modes of voting, and the vote selections. And the voter can mark their ballot and verify and cast

their vote selections and other associated cast vote record without assistance from others. That is this whole independence criteria as culled out in HAVA.

So are there any questions about this? We found the definition useful in making these distinctions and where to place the different requirements underneath it.

COMMISSIONER MASTERSON:

Lori?

MS. AUGINO:

On our copy that we have in front of us, I think this one was the one that was in the packet, there is a punctuation -- some funky punctuation happening.

COMMISSIONER MASTERSON:

We did not hire you to be a proofreader, Lori.

[Laughter]

DR. LASKOWSKI:

Yes, there were two sets of typos. There is -- so the comma situation, so what I put down here was my correction of the typo.

MS. AUGINO:

Right punctuation, not proofreading, but punctuation could lead to a different definition of the principle.

COMMISSIONER MASTERSON:

Yes, got you, go for it. Go for it.

DR. LASKOWSKI:

It was corrected on my slide if you are happy with that correction.

COMMISSIONER MASTERSON:

So we need to update the document to reflect Sharon's slide, got it, done.  Thank you, Lori.

MR. RIDDLEMOSER:

This is Greg Riddlemoser. The first bullet, the third word, very seldom in here do we talk about anything other than voting systems.  And not to quibble, but voting process obviously can be argued to be everything from voter registration all the way through to the sticker lady and the 364 days that happened in between.  So my recommendation, and not to wordsmith this, because building PowerPoints by committee or speech writing or this, with lots of people involved, gets real cumbersome real quick, but I think that this is a distinction that needs to be made.

DR. LASKOWSKI:

I do think that the principle limits it to the marking, verifying, and casting.  So the sub bullet guideline I think inherits that, but it is the process of how the voting system is -- can be set up to preserve the privacy.  So I -- that is how my view of how it is scoped.

COMMISSIONER MASTERSON:

Good, anyone else?

DR. LASKOWSKI:

Okay. I -- and so, I have already talked about -- a little bit about transparency and user-centered design process that you will hear in other talks, so that concludes the human factors portion.

Any final questions? And I do really have to big kudos to the public working group. They really have been amazing.

MR. COUTTS:

A quick question, why did we -- you choose the words voter -- ballot secrecy rather than ballot anonymity? Because the contents of the ballot are actually not secret once they have left the voter's hands, as long as it is not traced back to the voter.

DR. LASKOWSKI:

Okay, so I was searching for definitions and it seems that voter privacy and ballot secrecy are kind of used interchangeably and those seem to be what the terms are, and there is various definitions floating around. And I did not see, nor did our security folks see that term specifically at the high definitional level. So…

MS. BRADY:

McDermot this applies to ballot secrecy?

MR. COUTTS:

Yes.

MS. BRADY:

Then we will come back to it after lunch and I will make note of it in the notes for the ballot secrecy principle.

COMMISSIONER MASTERSON:

Yes, I …

DR. LASKOWSKI:

I mean I could see that going into -- anonymity being used at the

requirements level, for certain.

COMMISSIONER MASTERSON:

I think part of it was to, not to take Sharon's words, but a use of

plain language to try to make it understandable and consistent with

other language out there.  But we will explore it with the security

folks this afternoon.

Sharon, I want to thank you, and I know I have done this at a

prior meeting, you and Diane and your working group led this

charge on this VVSG 2.0.  You all kind of set the pace out in front

with the amount of work and you continue to with your requirements

work.  And it is very much appreciated.  You all have been leaders

in setting the pace and work and so…

DR. LASKOWSKI:

I have to recognize the team behind us, though.  It has been

phenomenal.

COMMISSIONER MASTERSON:

Well, yes, the entire team and the work from Center for Civic

Design, obviously helping drive this, as well.  But you all did

yeomen's work and really kind of shamed the other working groups into pushing forward. So…

[Laughter]

DR. LASKOWSKI:

No, we inspired.

COMMISSIONER MASTERSON:

Yes, inspired, that is what it is, inspired.

[Laughter]

Okay, Sharon, thank you. Again, the process, so that we understand it, we will go through the other ones, we will continue to take notes on your suggestions, and then, we will revisit them all this afternoon. So anyone that thought this meeting would not be a grind is kidding themselves, but that is exactly what we are here to do.

It is lunchtime, so we will break for an hour which will bring us back at 1:15, 1:20. There are a variety of restaurants all around here, so it is kind of choose your own adventure as far as everything from Chinese to pizza to McDonald's, you name it. So just be back in an hour so we can continue, 1:15.

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[Luncheon recess from 12:17 p.m. to 1:24 p.m.]

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COMMISSIONER MASTERSON:

All right, we are going to go ahead and get started. I know Bob will be with us in a minute.

First of all, thank you for a good productive morning. I think we moved forward and did what we needed to do with the human factors. I appreciated the NIST staff and their work.

Next we are going to do the cybersecurity principles and guidelines. And before we get into that, I do want to remind myself and you all as we look at these, just remember that these are meant to be high-level principles and guidelines. So to the extent that there is a lack of precision in certain language, it is intentional because these are principles and guidelines. So just keeping that in mind, not -- you should still offer your comments, but remember what the goal is here on these.

With that, I will turn it over, first, Josh Franklin from NIST cybersecurity division and Gema Howell are here. We appreciate you both being here. Josh has been through this wringer on both the EAC side and the NIST side. Gema, this is your first time, and so I wish you the best of luck with whatever is about to happen…

[Laughter]

…with this.

So with that, I will turn it over to you all and welcome. Thank you for being here and your work on these.

MS. HOWELL:

Thank you.  Yes, my name is Gema Howell and I am new to the NIST voting team.  And, yes, this is my fist time here at a TGDC meeting.  I am excited and it is really nice to put some names to faces.  But, yes, I look forward to this experience.

MR. FRANKLIN:

Excellent, yes, and my name is Joshua Franklin and I lead the NIST voting project -- oh sorry, the NIST voting security project.

[Laughter]

Mary Brady, my boss, leads the voting project.

[Laughter]

Little bit of nerves, that is good, that is good, makes it real.

So we have seven cybersecurity voting system principles here; ballot secrecy, auditability, access control, physical security, data protection, system integrity, and detection and monitoring.  We arrived at this list by, you know, basically looking at the previous, you know, sections within the 2015 VVSG, and then, the 2007 recommendations to the TGDC.  And I am going to basically go over  each of these with Gema, and so please ask any and all questions.

So ballot secrecy, as Sharon previously stated, voter privacy and ballot secrecy were basically split.  In previous iterations of the VVSG they were basically all -- you know, all of the ballot secrecy

requirements and all of the voter privacy requirements were all

basically within section three. And so, this is a whole new area,

essentially, and so this -- you know these are the, you know, first

dedicated, you know, principles and guidelines and will be, you

know, the first requirements as well dedicated to ballot secrecy.

There was a question earlier, you know, about ballot, what

was it…

MR. RIDDLEMOSER:

Anonymity.

MR. FRANKLIN:

There we go, yes, yes, and so that was definitely brought up within

the cybersecurity working group. And that was, you know,

essentially thought to be, you know, a very low level concept that

we could basically enumerate within the, you know, requirements

ballot secrecy would be something that, you know, everyone would

be more familiar with.

I would be interested to know, you know, if you have any

misgivings there and…

COMMISSIONER MASTERSON:

McDermot, go ahead.

MR. FRANKLIN:

Yes.

MR. COUTTS:

I do have a penchant for specificity in language.

MR. FRANKLIN:

Sure, sure.

MR. COUTTS:

And -- because the ballots are not secret once they leave the voters' hands. They are public domain at that point. Once they -- as long as they cannot be tied back to a specific voter, they -- their contents are open. And so, that is why the concept of anonymity I thought was more specific. But if the consensus is that the concept of secrecy is more effective and plain language, as Whitney would say, I am perfectly willing to accept that. I am just worried about the other things that can be lumped into the secrecy word.

MR. FRANKLIN:

Okay, okay. I mean, so what we mean, you know, by that secrecy word is encapsulated here within this principle and guideline…

COMMISSIONER MASTERSON:

Can you make sure you use the mic, I am sorry, just so everyone can hear you?

MR. FRANKLIN:

Sure, definitely. Yes, so what we mean by, you know, the term secrecy here is encapsulated within this principle. And so, you know, it really seems to be about, you know, making sure that, you

know, there is no linkage between a individual voter and then, you know, their ballot after it was cast.

COMMISSIONER MASTERSON:

Yes, go ahead Neal.

MR. KELLEY:

Sorry, and I know Sharon earlier defined that first bullet as being primarily when after the ballot has been cast is what primarily that ballot encapsulates, right?

MR. FRANKLIN:

Ballots, yes.

MR. KELLEY:

Ballots, but the reality is that a voter, let's say they are casting a paper ballot in a polling place, the moment that they are turning that chain of custody over to the poll worker, that starts that process, right? So it is actually in the voting process. So my question is, is that defined later in definitions? For instance, from the moment you hand over your ballot until it is destroyed 22 months later, then it is shredded that that is maintained throughout that process?

MR. FRANKLIN:

I think that is a great concept that we should capture within our ballot secrecy definition.

MR. KELLEY:

Okay, so in the definition portion?

MR. FRANKLIN:

Yes, sir, that is actually a really good concept.

MR. COUTTS:

One other comment about the bottom bullet, I mean, that is not an absolute. There are state statutes that do require an ID to be attached to the ballot record, such that it can be retracted in certain specific situations.

MR. FRANKLIN:

That is also a great point and this is something that the cybersecurity working group list sort of lit up over, I would say.

[Laughter]

And there was -- honestly there was -- you know, this was, you know, one of those areas where there was not necessarily a clean meeting of the, you know, minds. And what the actual working group, you know, thought was that we will -- you know, we will put this into the requirements -- sorry into the, you know, principles and guidelines and if it needs to be modified later by, you know, groups such as this and, you know, other, you know, boards then, you know, that can be, you know, modified as such. But this -- you know, this was basically thought to be, you know, really stringent towards removing that, you know, linkage between an individual voter's identity and their ballot.

MR. COUTTS:

The way this is typically handled is that while there is a linkage between the actual ballot and the voter for the purposes of retraction, there is no interface whereby they can actually view the contents of the ballot. But that is splitting a fairly fine hair in this particular regard.

MR. FRANKLIN:

Sure, I mean, do you have any modifications that you would like to see?

MR. COUTTS:

Again, off-the-cuff wordsmithing is probably not a good idea right here. I think it should just be noted that this is a potential area where state rules will conflict with the VVSG and its testing.

COMMISSIONER MASTERSON:

Could conflict, right. Anything else on that? Go ahead, Dave.

MR. WAGNER:

Dave Wagner. Josh, you can probably comment on this better than I can, but I believe there was comment from the working group that at least some people wanted to see that say instead of produce, say produce or contain.

MR. FRANKLIN:

That is correct.

MR. WAGNER:

So I just wanted to flag that as one that came up, I guess, maybe late -- two weeks ago. So that might have been fairly late in the game.

MS. BRADY:

Yes, that did come up. We hopped on the phone with a member of the working group to fully understand, you know, where -- what the comment was about and we have it noted for -- to hopefully be resolved as part of the comment process.

COMMISSIONER MASTERSON:

Yes, so there were a variety, not just from the cybersecurity working group, but a number of comments, because the working groups work continued in each one, that we can use to inform, both in the Standards Board/Board of Advisors process, as well as the open public comment process. So that will be captured and reflected in public comment so that everyone has that as we look at the document. And you are welcome to raise it as the TGDC -- if you feel that is a change you would like to see, you can raise that here now, as well.

MS. BRADY:

If you -- could you just repeat the words? It was contained but it was…

MR. WAGNER:

I believe the suggestion was to replace produce with produce or

contain.

MS. BRADY:

I think that is what it was.

MR. WAGNER:

Is that correct?

MR. FRANKLIN:

Indeed.

MS. BRADY:

Um-hum.

COMMISSIONER MASTERSON:

Go ahead, Josh.

MR. FRANKLIN:

Excellent, okay, yes, and so this basically shows what the ballot

secrecy requirements looked at in the 2015 VVSG 1.1.  Really, they

were inside of the voter privacy section, but they were also sort of

splintered about through other parts of the VVSG, as well.  And so,

the hope going forward is that there will be a dedicated section to

ballot secrecy.

Moving onto auditability, auditability, the voting system is

auditable and enables evidence-based elections.  That is the

overarching principle here.  The first guideline here is, essentially,

software independence, the -- you know, which is the concept that

was discussed earlier between David and Diane.  The second

guideline here is,, basically making sure that there is -- that

basically records exist to identify any root cause of any irregularities

that basically happen with the voting system.  The third bullet is

basically making sure that voting system records can basically, you

know, maintained, integrity, they can be resilient in, you know,

forms of tampering.  And then, the fourth guideline here is basically

supporting efficient audits.  And here efficient audits means

essentially usable audits, you know, post-election audits that are,

you know, basically built into the voting system by default that are

very, very easy for election officials to actually run.

Yes, awesome.

MR. COUTTS:

I might suggest that in that case you say usable audits.

MR. FRANKLIN:

Okay, yes, that is definitely a fair comment.  We were trying to, you

know, not step on the human factors group's toes, but I could

definitely seeing that being a more plain language way of going

there.

MR. COUTTS:

Well, I would hate to have somebody come and judge efficiency.

And I realize this is probably getting at a lower level than we want

to get to here, but could you just give me a brief use case on your first point?

MR. FRANKLIN:

On?

MR. COUTTS:

An undetected error or fault in the voting system cannot cause an undetectable change in election results. While I completely agree with that, I am trying to figure out how we would test it. I realize -- and I realize this is a much higher…

MR. FRANKLIN:

Sure.

MR. COUTTS:

…level, but that one concerns me.

MR. FRANKLIN:

That is a -- yes that is a very reasonable point there. Yes so, you know, testing software independence is definitely going to be interesting and it is basically going to be entirely new ground. The actual software independence paper basically gives different classes of voting systems that would be software independent and then classes of voting systems that would be software dependent. I think writing requirements for that is going to be difficult.

Sorry, you gave me an eyebrow.

COMMISSIONER MASTERSON:

Dave?

MR. COUTTS:

I agree, it is going to -- I am trying to parse that one.

MR. FRANKLIN:

Okay, yes, sure.  I mean it is -- you know, it is basically if the actual

voting system is hacked into that, you know, there will be some,

you know, sort of record that will be auditable in the end, yes.

MR.COUTTS:

Thank you.

COMMISSIONER MASTERSON:

Did you have something to add Dave?

MR. WAGNER:

David Wagner. I can add to the path we envision how to make that

testable.

MR. COUTTS:

Okay.

MR. WAGNER:

As you say, it sounds hard to test because it is a high-level

technology neutral requirement, and so, this ties into the discussion

I raised this morning about we envision there is two paths to

achieving that.  One path is through the paper-based systems and

then we can write some set of requirements for that.  That is one

way to meet the requirement.  Another path is the cryptographic

end-to-end systems that provides an alternate path which we will

be working on writing requirements for. So I understand it looks

very abstract, but I think that when we start to look at ways to meet

it then we can provide multiple ways and provide requirements for

each of those ways.

MR. COUTTS:

Okay, good.

COMMISSIONER MASTERSON:

Thank you.

MS. AUGINO:

I have two comments. One is when I am reading through the titles

of the principles, perhaps we might want to consider changing this

to auditable instead of auditability.

MR. FRANKLIN:

Okay.

MS. AUGINO:

I have got -- found a couple other principles where we want to

make those tense adjustments.

MR. FRANKLIN:

Okay.

MS. AUGINO:

And then, also in your first -- in 9.1, that first bullet, it is -- we say

undetected, cannot, and then undetectable. Is there a maybe more

-- can we -- maybe that is just the right way or the correct way in the industry that software independence is identified in a bullet, but it feels like we could maybe flip that and phrase it in the positive. And I do not have a recommendation. I do not want to shoot from the hip and goof that up, but if there is something that we can do to phrase that more in the positive, it feels like we could. It is just a little bit confusing to…

MR. FRANKLIN:

No, that is…

MS. AUGINO:

…read from a plain talk perspective.

MR. FRANKLIN:

I think that is a great comment. So we essentially lifted this definition from the software independence paper and then modified it a little bit based on basically input from the working group. But I think rewriting it in a positive manner can definitely be done.

MS. BRADY:

Would it be good enough to just say – well, maybe we should not wordsmith right here on the fly, but I like to make things happen. An undetected error or fault in the voting system software or hardware will be detectable, will -- or generates a detectable change in election results? I mean, that is what is you are thinking, something like that?

MR. FRANKLIN:

Something like that.

MS. BRADY:

Okay.

COMMISSIONER MASTERSON:

Why do not we – Diane, I am going to get to you, but  we will take a

look at that with the idea of seeing if there is a way to, what, phrase

it more positively, or out of the double negative zone, with the

understanding of what the goal was.  And keeping in mind, also, of

the ones to update or change, this may be the hardest, because it

is an understood definition that has existed for a little while.  That

does not mean we should not try, but just with that understanding.

Diane, go ahead.

MS. GOLDEN:

Yes, and I was just going to echo there is a whole lot of negatives.

It is undetected error and cannot and undetectable.  It is like, you

know, it is almost like, okay, well that negated that.  Well, now, that

negated it again.  It is very awkward wording, and I know you took it

from someplace else.  And I -- my statement here is kind of back to

the, you know, these are high-level principles and we do not have

the requirements, but I think the differences in interpretation in

addition to the multiple negatives making it complex, I think the

differences in what this means are vast.

MR. FRANKLIN:

     Okay.

MS. GOLDEN:

     And what this means to you versus what it means to someone else versus what it means, and just because it had been around so long, I mean, there are people who, yes, on -- from my world that means for verification you cannot use the same software in the same machine to verify as you use to generate because it has to be software independent so you have got to go hustle a paper ballot to a separate piece of equipment. I mean, if we get into that kind of, you know, accessibility has gone down the toilet again.

MR. FRANKLIN:

     Sure.

MS. GOLDEN:

     And that is the, yes, the concern with this has been around awhile and has been either just interpreted in so many different ways to different people or it is -- yes, so I guess that is -- and I realize this will come down to the requirements and dealing with the specifics, but if there is any way to clean up the wording here so it is less ambiguous that would be really good.

MR. FRANKLIN:

Yes, maybe we should run all of the software independence requirements by the human factors group to basically make sure that a situation like that does not, you know, does not arise.

MR. RIDDLEMOSER:

Well, let's not go too far down that road too fast.

MR. FRANKLIN:

Okay.

MR. RIDDLEMOSER:

If you change the negatives to a positive, here is what you get. An undetected error or fault in the voting system must cause a detectable change in results. That is not the outcome any of us are looking for.

[Laughter]

So this speaks perfectly plainly to me, because if it was a detected fault that caused a detectable change in results, then we have the obvious, duh. We do not even to write specs to find those kind of things, because that is the kind of stuff that election systems are supposed to prevent. So let's not spend any time re-wordsmithing something that is an industry standard sentence, if you will, because we cannot make it sound positive. It is a very negative thing. And we -- undetected, undetected, undetected, that is the thing that we are trying to accomplish is the whole undetectable stuff. I mean, that is why it is in the audit section.

MR. FRANKLIN:

Maybe a way of addressing this is to simply say the voting system

is software independent and then we just define software

independence later. It definitely would make it I think more plain

language. This is just a decision that the cybersecurity working

group made to, you know, put the actual definition here versus just

saying, thou shall have this capability.

COMMISSIONER MASTERSON:

Neal.

MR. KELLEY:

Mr. Chairman, you might already -- you might know this, but that

second bullet there, is that language from 1.0? Or is there similar

language in 1.0?

COMMISSIONER MASTERSON:

From the first bullet?

MR. KELLEY:

From the second bullet, I'm sorry.

COMMISSIONER MASTERSON:

Let me read it. I do not believe that is in VVSG -- is that in 1.0? It

might be. The answer is, I do not know.

MR. KELLEY:

Okay, fair enough. Well, the reason…

COMMISSIONER MASTERSON:

We can look.

MR. KELLEY:

The reason I am asking is because the way that that is worded right now is you could have a manufacturer, in essence, that would have the data that would have to be extracted by the manufacturer for the election official, right? And that exists today in some systems. So that is my only concern with bullet number two.

MR. FRANKLIN:

Yes, thinking back to the VVSG, I am not sure if it is actually in the actual VVSG 2015 1.1, right now. Do you have any thoughts on how we should change it? I think that is a very reasonable comment.

MR. KELLEY:

I do not know…

MS. BRADY:

No, I was just going to say, I mean -- and sure, I mean, if you still have an issue after my comments, please chime in. But I wonder if when we get to interoperability that some of the principles and guidelines associated with interoperability might address your concern where the data has to be available for reporting…

MR. KELLEY:

Okay.

MS. BRADY:

….you know, through the use of the common data format.

MR. KELLEY:

If that takes care of that then, yes, it would.

MS. BRADY:

Yes, so it is…

COMMISSIONER MASTERSON:

Let's -- we will mark that, and then we will revisit it with the interoperability conversation.  The other thing I would propose or suggest, to tease out this conversation around software independence, definitionally, some of the challenge is that in the requirements development process that the human factors working group and the cybersecurity working group, you're welcome, write a joint white paper defining it.  So work together to co-define the requirements around this and what it means.  Thoughts on that?

MR. GILES:

I do have one concern where we are kind of throwing out a couple times now where we will define things or clarify things in the definitions.  But we are going to be asked to vote on something before the definitions are out there and I do have a concern that we won't be voting on the requirements, we are not required to vote on the requirements later, and so there is that concern that we are going to be punting some of this to a time that we are not voting on it.  So I do have that concern.

COMMISSIONER MASTERSON:

Okay.

MR. COUTTS:

A quick question.  Josh, is that first undetected actually required?

At this point the real key on this one is to make sure that there is no

undetectable change in election results regardless of cost.

MR. FRANKLIN:

You know, wordsmithing on the fly, right back at you, yes, I am not

sure.  That is a…

MR. COUTT:

I am just putting it out there.

MS. BRADY:

Does that help?  Does it make a clearer, an error or fault in the

voting system software or hardware cannot cause an undetectable

change in election results?

COMMISSIONER MASTERSON:

David?

MS. BRADY:

Lori?

COMMISSIONER MASTERSON:

Sorry.

MS. BRADY:

I mean, you brought it up.

COMMISSIONER MASTERSON:

So the proposed or suggested language, an error or fault in the voting system software or hardware cannot cause an undetectable change in election results. So we remove one of the negatives. We will take it down and reflect on it. We will muse, as it were, and come back. And so you know, I was going to wait on this, I hate to ruin my teaser, I know you all are on the edge of your seat, but when we come back to revisit these I would propose we look at them in three categories essentially. Accept it, say, yes, that change makes sense to us, let's go ahead and do it; reject it, no thank you, we think we can move forward; and then put it in the bucket of for public comment. So there is an option to say we are not sure what we want to do with this yet, let's put it in the public comments bucket so that it is reflected. So it is a comment that someone in this group -- so if this group could not reach a consensus, but someone feels it is important, it is reflected in the public comments as part of the public comment period, both for the Board of Advisors/Standards Board, and the 90-day public comment that Brian Hancock, you know, shared so that someone -- an individual TGDC member's views are reflected as part of the public comment if they cannot -- if we, you, the group cannot reach agreement on that particular change, does that make sense, so

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ensuring that someone's comment is captured in that way.  So

something to think about, pondering faces on that too.

Josh, just go.

MR. FRANKLIN:

Excellent.

[Laughter]

This is what the state of auditability is in VVSG 1.1.  This was

basically not an area, and so this is a whole new section.  It is a

significant update.  There are some auditability requirements, sort

of strewn about VVSG 1.1, but this would sort of be a, you know, a

whole new section, if you will.

Onward, access control, I am going to start with this slide

because I think it is a better way to go now.  So access control, this

is -- there were some access control requirements in the VVSG 1.1.

I would say overall we were just mostly simplifying the actual

concepts taken here.  The big update is basically the need for multi-

factor authentication for critical elections operations.  That could

definitely be something that, you know, ruffles feathers.

As for the requirements themselves, the principle states, the

voting system authenticates administrators, users, devices, and

services before granting access to sensitive functions.  I would say

that bullet three and bullet four are the only new areas here.  Most

of this is contained within previous versions of the VVSG.  Other

than that one multi-factor concept, I do not think there is much new here.

COMMISSIONER MASTERSON:

Comments on that? Go.

MR. FRANKLIN:

Talk to me.

[Laughter]

MR. COUTTS:

So, again, it comes down to ease of use, especially as the thing that the election officials will talk to you is about the poll workers, and if we have to do multi-factor authentication on the devices in the poll location that is anything more complex than a simple password, we are going to have pushback from the users. I am not saying it is a bad idea. I am simply saying there will be pushback.

MR. CHOATE:

This is Judd from Colorado. You won't get pushback from Colorado election officials because we use it currently for all of our systems.

MS. AUGINO:

You won't get pushback from Washington State election officials.

[Laughter]

COMMISSIONER MASTERSON:

At least some sector of your customer base is telling you it looks

good, but we will see what the rest say. That is why we have a

Standards Board.

Go ahead, Josh.

MR. FRANKLIN:

Yes I have, you know, definitely seen for myself how, you know,

new authentication requirements can basically cause problems for

users. So I guess the big thing here would be defining what a

critical election operation would be. And that is not listed here.

COMMISSIONER MASTERSON:

Go ahead.

MR. FRANKLIN:

Excellent, so physical security, I am going to pass that one over.

MS. HOWELL:

All right, physical security, we did not find any large changes here.

Physical security was pretty well covered in 1.1. These are just a

few of the sections that we found notes on physical security.

And then, the principle for physical security is the voting

system prevents or detects attempts to tamper with voting system

hardware. And the two -- we have our two guidelines that any

unauthorized physical access to the voting system, ballot box,

ballots, or other hardware leaves physical evidence of some sort.

And the voting system only exposes physical ports and access

points that are essential to voting operations, testing, or auditing.

Any thoughts?

MR. KELLEY:

It is vague, bullet number one.  I am just curious, how would you

define physical evidence?  I mean, what, the ballot box a seal being

broken?  Or if you are looking at ballots, how are you detecting

physical evidence that a ballot has been tampered with if it is

paper?

MR. HOWELL:

I think -- I am going to let Josh respond as well, but I am thinking

that that would be something we would maybe define a little more

in the requirements.  But I will ask Josh to give you his thoughts.

MR. FRANKLIN:

Yes, I mean, seals were, you know, definitely something that the

working group was thinking about when writing that, you know,

guideline, you know, basically putting, you know, seals on ballot

bags, making sure that, you know, a voting systems chassis is

actually made to have a seal put on it or, you know, some sort of

tamper detection mechanism.

MR. GILES:

Just to follow up on that, are you saying it just has to have the

ability to receive a seal, you are not going to get into the actual

types of seals that may be on a system?

MR. FRANKLIN:

Yes, to your first point. I am not sure on your second point. I would

not think that we would actually be talking about types of seals

though. That would be -- that would surprise me if the working

group really wanted to get into that. It has never been done before,

to my knowledge.

MS. AUGINO:

I have a question. The definition that you have on this screen is

different from our draft. Are we proposing the definition on the

screen -- or the bullet -- not definition, but bullet on the screen?

Unless I missed something, 12.1 is different than what you have --

yes, 12.1 is different than the bullet that you have on the screen.

The one that you have on the screen is more robust.

MR. FRANKLIN:

Okay, interesting, sorry for that error. So this is what the -- oh

sorry, what is on the screen currently is what the cyber working

group came up with and I am sorry for any omissions there. I think

there was some discussion that the ballot box, ballots, or other

hardware might be outside the scope of the certification process.

Previously, there has been at least one or two physical security

requirements on the actual ballot box.  Ballots would definitely be a

new area there.

COMMISSIONERMASTERSON:

I am curious, just to that point, so let me read just for the audience

12.1 as read in the document that the members have, "Any

unauthorized physical access to the voting system or other

hardware leaves physical evidence."  So it is a more generalized

definition as you were referencing, and I am curious as to what the

discussion in the cybersecurity working group was to change it to

include ballots -- specifically ballots, I guess, in there, versus just

leaving it at voting system or other hardware.

MR. FRANKLIN:

I am sorry I was receiving information.

COMMISSIONER MASTERSON:

Yes, I wouldn't listen to me either.

MR. FRANKLIN:

My apologies.

COMMISSIONER MASTERSON:

So the 12.1 definition in the packet says, "Any authorized physical

access to the voting system or other hardware leaves physical

evidence."  So it limits it to the voting system or the, you know,

corresponding hardware with the voting system, whereas the

definition on the screen brings into play ballots, specifically ballot

boxes. You said we have, now, some physical security

requirements about ballot box. That is not groundbreaking. So

what was the discussion within the working group to pull ballots in

which is a much harder thing for us to test as part of the voting

system?

MR. FRANKLIN:

Yes, some -- I would say that sometimes the working group is a

little over zealous and so…

[Laughter]

COMMISSIONER MASTERSON:

You just threw the working group under the bus.

MR. FRANKLIN:

No, I am part of that working group, right? I mean and so…

COMMISSIONER MASTERSON:

I guess my question was -- go ahead David, go ahead, yes.

MR. WAGNER:

Just looking through my notes, because I do not trust my memory,

and I have some reference that what that was getting at was

detecting tampering with the ballot box, so that if there is tampering

with the ballot box, then that should leave some evidence.

MS. AUGINO:

I think that is outside of the scope. I have ballot boxes that have absolutely nothing to do with the tabulation equipment and I think that that -- those would be outside of the scope of the VVSG.

MR. GILES:

And to my earlier point, when you are saying that it is going to leave physical evidence, if you are -- I guess, we would be asking for them to have the ability to have seals because the way I read it, it says you have to have a seal. So you would be testing the seals that they are going to put on there is the way I am reading that because if I do not use the seal, then there is no tamper evident tape or seal on there.

MR. FRANKLIN:

Indeed, yes, I like your way of saying that; that, you know, ballot box should have the ability to actually have a seal on it, yes.

COMMISSIONER MASTERSON:

Just trying to coordinate what you all are saying so we can pull it up later is you would like to see a reflection of the system's ability to support proper sealing, whatever else, not necessarily that the voting system itself does that, right?

MR. GILES:

Correct, they are not testing the seals.

COMMISSIONER MASTERSON:

Right, right, okay, we will see what we can come up with to reflect

that.

MR. FRANKLIN:

Sounds good.

MS. GOLDEN:

I am still back to though the ballots themselves and I am still -- you

are putting seals on ballots? I mean what exactly…

COMMISSIONER MASTERSON:

So the other thing for us to look at in this same vein is whether or

not as reflected in the draft you have whether you prefer the draft

you have versus what is up on the screen. And so, we can look at

that given the draft that you have.

MR. GILES:

So, and I guess to Lori's point, that then would that cover ballot

transport boxes at the end of the night? Because now you are -- if

you are transporting ballots, you know, I think we are getting very

broad with this.

COMMISSIONER MASTERSON:

Right, I mean, the key here, and we will see if we can reflect it in

the comment and make the change, the key here is that we want

the voting system to be able to support proper physical security

protocols, right, including, you know, seals. And tell me, both David

and Josh, if I am wrong, and we are not looking to dictate best

practices via the VVSG.  That is not the appropriate place…

MR. FRANKLIN:

Definitely not.

COMMISSIONER MASTERSON:

…to dictate best practices on seal protocols, for instance, in that

regard.  Go ahead.

MR. WAGNER:

David Wagner. I do not know how much you want to get into this

now versus us taking it home and thinking about it and coming back

to you.  Two questions for you to think about.  One is if the -- I

believe that the manufacturer sometimes supply ballot boxes with

the voting system as part of the voting system.  So you said it is out

of scope, but I wonder whether you might want those ballot boxes

to be in scope, when they are supplied as part of the voting system.

That is one thought.

The other is I was just looking through -- right now, looking at

what is in VVSG 1.1 about this and so I can read you the language.

I think I have the right document in front of me, so I will read what is

on the document.  I think I have got it right.  It says two things.  One

is "Any unauthorized physical access shall leave physical evidence

that an unauthorized event has taken place."  There is another part

a little bit further down that says, "Ballot boxes shall be designed

such that any unauthorized physical access results in physical evidence that an unauthorized event has taken place." So just providing some context, we should still get it right and figure out what the right thing to do is for the 2.0.

COMMISSIONER MASTERSON:

The other thing to keep in mind here, too, is that the VVSG itself is limited to just the voting system, just by nature, but I think we should take a look at the wording of this to reflect that. And that is helpful. As we do it, let's look at 1.1 and see if we either need to modify that language or be educated by the language already in 1.1.

MS. HOWELL:

All right, onto data protection, for the data protection principle, the principle -- oh the main takeaways for -- from VVSG 1.1 is that we are going to -- there is going to be some simplification, and then, just a few moderate updates because there are a list of a few relevant requirements that we found. And then, the key factor that we wanted to mention is that cryptographic protection of various election artifacts is necessary and that digitally signing tabulation reports is also necessary. So the -- for the principle, we have the voting system protects sensitive data from unauthorized access, modification, or deletion.

And then, for our four requirements we have that the voting

system prevents the unauthorized access or manipulation of

configuration, data, cast vote records, transmitted data, or audit

records. The second guideline is that the source and integrity of

electronic tabulation reports are verifiable. Third, we cover the

cryptographic algorithms that are public, well-vetted and

standardized. And, finally, the voting system protects the integrity,

authenticity, and confidentiality of sensitive data transmitted over all

networks.

Thoughts, comments, questions?

COMMISSIONER MASTERSON:

McDermot, I am sure you have one here.

MR. COUTTS:

Since you insist.

[Laughter]

COMMISSIONER MASTERSON:

Yes.

MR. COUTTS:

Define for me, please, that the algorithm be standardized.

MR. FRANKLIN:

I mean, so, you know, NIST has a cryptographic technology

division. NIST standardizes many different, you know,

cryptographic algorithms, things like AES, you know, I mean SHA,

any of that series.  This is basically to ensure that, you know, voting

system vendors are not rolling their own crypto.

MR. COUTTS:

All right, so at this point you are not mandating a specific standard?

MR. FRANKLIN:

No, not within this guideline.  I would say that there are very few,

you know, games in town, you know, when it comes to, you know

cryptographic standards and FIPS 140-2 would, you know,

definitely be a spot there for a requirement.  That would be very,

very reasonable.

MR. COUTTS:

Right, because as we brought up the concern earlier, some of the

solutions that we are looking at to handle the auditability require a

type of encryption that is not currently standardized or, in fact,

testable underneath a FIPS 140.  So suddenly we are now

completely removing an entire level of exploration by requiring a

FIPS 140-2 standard for all encryption.  So I would caution the

language there.

MR. FRANKLIN:

I think that is a great point.  The working group has been -- has not

quite identified a solution about how to make requirements for, you

know, basically voting specific crypto versus just, you know, normal

cryptographic primitives that, you know, everyone, you know, uses

every single day. I would say that under the actual future

requirements there would basically be a, you know, bifurcation that

said if you are using ETE your, you know, crypto has to go through

this process. If you are not using ETE, it would probably be FIPS

140-2 validated cryptographic modules.

COMMISSIONER MASTERSON:

Judd?

MR. CHOATE:

Is well-vetted a term of art? Is that -- like is there a definition for

well-vetted?

MR. FRANKLIN:

I see that term often. I am not sure if it is defined. And this is

meant to be high level. If you have any thoughts on that, I would

love to get it.

COMMISSIONER MASTERSON:

Neal?

MR. KELLEY:

I think it is important for an election system to be updated, you

know, for security fixes, patches, et cetera, and 14.1 -- or 14.4

states, "Software updates are authorized by an administrator prior

to installation." Is that meant to cover also the same issue related

to data protection and security fixes and patches?

MS. BRADY:

No, that is under system integrity.

COMMISSIONER MASTERSON:

Yes, so we will get to that.  Hold that question...

MR. KELLEY:

Fair enough.

COMMISSIONER MASTERSON:

…right, because we have not done system integrity yet, but we need to answer that question when we get there.  They will walk through that.

MR. FRANKLIN:

That is a really good question.

COMMISSIONER MASTERSON:

Other on data protection?  Okay, go ahead.

MR. FRANKLIN:

Back to me, system integrity, this is a new area of the VVSG.  This is a fairly large and significant update it would be.  There are some requirements in the VVSG 1.1 about this, but they are only tangentially related.

For the actual re -- sorry principles and guidelines here, the definition of system integrity is taken from the Committee for National Security Systems.  'The voting system performs its intended function in an unimpaired manner, free from unauthorized manipulation of the system, whether intentional or accidental.'

The first guideline basically addresses defense in depth,

making sure that there are multiple layers of technical security

controls in place on the voting system.  The second guideline is

basically attack surface reduction, making sure that software on the

voting system needs to actually be there, that there are not

superfluous ports and network services running, that there are not

actual physical ports on there as well, you know.  Essentially things

that need to be there to make the voting system run, that should be

the only things that are there.

The third guideline is basically runtime integrity, making sure

that different applications on the voting system are supposed to be

there and that they are not interacting with each other, basically

that there is a sandbox on the voting system.  And then, the fourth

one is essentially, you know, authorized updates by an admin.

COMMISSIONER MASTERSON:

So to get to Neal's question if we can, if I am hearing you from what

you just said, the idea is that there is no automatic updates that is

going to break something that someone is going to need to

authorize the updates before loaded.  Is that right?

MR. FRANKLIN:

Indeed, and to your point, sir, I mean, I definitely think software

updates and patching of voting system is a real serious issue.  We

just want to make sure that the right people are, you know, patching

and not, you know, someone else who is not supposed to be

patching the voting system is doing so.

COMMISSIONER MASTERSON:

Lori?

MS. AUGINO:

I have in our copy of 14.2, and I think on yours, as well, we need to

add a comma after ports.

MR. FRANKLIN:

Okay.

MS. AUGINO:

So, physical ports, and by using other technical controls.

MR. FRANKLIN:

Isn't that the Oxford comma?

MS. AUGINO:

Well, to be consistent, the legal comma.

MR. FRANKLIN:

Oh, is it?

[Laughter

And to be consistent.  And then on your version we have got the

unnecessary comma in that last bullet, but that is not on our copy.

MR. FRANKLIN:

Interesting, okay, thank you.

MS. AUGINO:

So keep it as contained on our draft, thank you.

COMMISSIONER MASTERSON:

Anything else on system integrity? Okay.

MS. HOWELL:

All right, we have our last principle, detection and monitoring. Here we just have a few moderate updates in this section. Again, these are the relevant requirements that we found in VVSG 1.1. And then one of the keynotes that we wanted to make here is that malware – it is malware detection focusing on backend PCs is necessary, not on voting systems. So for the principle, we have the voting system provides mechanisms to detect and remediate anomalous or malicious behavior.

Our fist guideline covers logging, so voting system equipment records important activities through event logging, which are stored in a format suitable for automated processing. And then the second one covers the logging of error messages, so it generates and stores and reports to the user or election officials all error message. And then the last two are, the voting system employs mechanisms to protect against malware, and finally that the voting system -- a voting system with network capabilities employs appropriate well-vetted modern defense against network-based attacks, commensurate with current best practices.

Comments?

COMMISSIONER MASTERSON:

Comments or questions there?  I will just add that, for what it is

worth, the event logging and system logging common data format

work that is being done will help create -- bring these to fruition or

help make these so, because of the work of the folks in the

common data format and interoperability working groups.  So that is

helpful as far as the way that they are reported out and making

them automated and what not.

MS. AUGINO:

Just one comment, in 15.2 perhaps we could consider striking 'to

the user or election official,' and just saying 'the voting system

generates, stores and reports all error messages as they occur'.

But curious if there would be any reason to keep that other

language.

MR. FRANKLIN:

Off the top of my head I cannot think of another -- yes.

COMMISSIONER MASTERSON:

Will you say that again Lori just so we got it?

MS. AUGINO:

The voting system generates, stores and reports all error messages

as they occur.

COMMISSIONER MASTERSON:

I see so you want to strike…

MS. AUGINO:

Striking to the user or election official...

COMMISSIONER MASTERSON:

…to the user or election official.

MS. AUGINO:

…comma.

MR. FRANKLIN:

I do not take umbrage.

COMMISSIONER MASTERSON:

Okay, go ahead McDermot.

MR. COUTTS:

The top one is remediate.  There is -- generally speaking we do not

remediate if there is a intrusion into the system.  The system stops

and notifies, but it does not attempt to correct, generally speaking.

And that is generally bad practice.  So the question is do we want

the word remediate in there or do we want detect and notification?

MR. FRANKLIN:

That is a good question.  I want to think on that one, to be honest

with you.  I just want to make sure that there is nothing I am

missing.  But that is -- do you have any thoughts, David?

COMMISSIONER MASTERSON:

If one wanted to play Devil's advocate, which I do not, ever, and

this is not a good argument either, but at the high level principle

stage, one could argue that just stopping is a form of remediation, in and of itself. It is not a good argument, but it would meet within here if we needed to get there, so just something to consider.

MR. COUTTS:

I will allow it if my allowing was actually necessary, which it is not.

[Laughter]

MS. GOLDEN:

I just said maybe another word like address, and maybe that is not the best one. But, yes, you want to notify them. That commercial about, you know, your --- yes, ID protection, well, I just notify, you know. Oh, great. I mean, it is notify and you are able to do something even if that is just stop or -- but the word remediate says you can actually fix it. And you may get an error that you cannot do anything but stop and start over, you cannot fix it. So I think you need a word other than remediate. It is detect and, you know, do something.

COMMISSIONER MASTERSON:

The other point I would make there, again, just for what is worth, is that the voting system is providing the mechanisms. It is not telling you how to remediate, right? And so, that feeds into it, too. But we will take a look at that and see if there a change that we can make without undermining the overall, because I do not think there is

disagreement in the purpose of the principle, right?  It is just getting

the word correct.

MR. FRANKLIN:

Yes, maybe respond to, maybe that might make a little sense.

MS. GOLDEN:

That is not bad, respond to is fine.

MR. FRANKLIN:

That is a great point. folks.

MR. KELLEY:

Can I just say, I mean, I agree with McDermot in what he is -- what

you are saying.  But at some point you have to remediate

something downstream, right?

MR. WAGNER:

You have to act.

MR. KELLEY:

So yes.

COMMISSIONER MASTERSON:

Okay, we got it.

MR. FRANKLIN:

So thank you very, very much everyone.  These were excellent

comments.  And I want to say thank you to the cybersecurity

working group for all their time and expertise.

COMMISSIONER MASTERSON:

Thank you both.  You both had a unique challenge.  Yours was the active of the working groups, which was great.

MR. FRANKLIN:

Yes, it was.

COMMISSIONER MASTERSON:

No, that is -- it is awesome.  It had the most involvement.  And so, you all did a great job parsing through a lot of noise to get to the point where we had a core set of principles and guidelines.  And you should be commended for that work.  I know it was not easy.

MS. HOWELL:

Thank you.

COMMISSIONER MASTERSON:

Thank you.  Next I think we will have both John and Ben come up at the same time, partners in crime, so you do not have to go at it alone.

Actually, what time is it?  You know what?  We will save you.  Let's take a break first.  We all -- after going through cybersecurity, who does not need a break?

[Laughter]

COMMISSIONER MASTERSON:

So we are going to take a15 minute break.  So 2:35, 2:35 right?  Did I get that right?  Yes, 2:35 to come back and start over again Ben and John will be ready, thank you.

[The EAC/TGDC Committee meeting recessed at 2:00 p.m. and reconvened at

2:20 p.m.]

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COMMISSIONER MASTERSON:

Many have made a joke about the setup in the room, and I will just

tell you, in the Federal Government, to use my grandma's phrase,

you play the hand you are dealt.  And so, this is the hand we are

dealt and you all have been good sports about the makeup and

setup in this room.  And it is cozy.  We are building team.

So with that, we will turn it over to John Wack and Ben Long,

neither of whom need any introduction to this crowd. John has been

working on this I think since the mid 1950's, 1960's.

[Laughter]

Ben, obviously, a much shorter amount of time.  No, John's

work in interoperability, as many have heard me say, is, to me, the

most important work happening in election technology.  Without a

common data format and interoperable systems, I think many of

what we want to achieve as an elections community, to better serve

voters, to provide better accessibility and better security, cannot

take place.  And so, John, you have done yeoman's work over the

years, not just on VVSG 2.0, getting the interoperability to where it

is.  I know John Ziurlaj will come speak tomorrow, but we ride on

your coattails on this work and we appreciate it. And then, Ben got

the other stuff category of VVSG 2.0, and so, he will talk about

those areas. And I appreciate both of you being here.

So, John, the floor is yours.

MR. WACK:

Well, thank you very much for those kind words. I had a -- I

was just going to say, hi, I'm John Wack, I am the hand you have

been dealt. But…

[Laughter]

…but I take it all back. So I did not actually expect to be on today.

I figured you all would be still talking with Josh and Gema for a

good bit longer. So I am impressed with how efficient you all are.

The two principles I have here are, I want to emphasize, high

level and goal oriented. They are not requirements. They are

things that you will -- you kind of know it when you see it. You

know when something is interoperable, when something is

transparent, and you know when they are not. But I do not expect

that we are going to have specific requirements, you know, where

this can be positively, precisely engineered. But there -- the

requirements ought to be removing barriers to interoperability and

barriers to transparency.

So with that, interoperability, so that is the principle followed

by the guidelines. And I won't read them off the slide, but instead, I

will go to the second one and talk about how it is a goal.  Now,

interoperability really could be, in my mind, renamed something

along the lines of, it should be easy for election officials to purchase

devices from different manufacturers and build the voting system

that they want, as opposed to, you know, just strictly from one

manufacturer.  Now, that is something that is not going to happen

immediately.  It -- you know, the voting industry is not a huge

industry that can afford to change things.  And there are good

reasons why you still might to have a voting system from one

vendor that works in a unified way.  But if you want to be able to

purchase the latest and greatest interoperability -- or I am sorry,

accessible voting device, for example, it ought to be easier and

cheaper to do that.

The TGDC recommendations of 2007 had some

requirements along these lines and there the term was used

integratibility; it ought to be easy to integrate with glue code or, you

know, whatever, integrate devices together without requiring major

changes, hardware changes, so on and so forth.  These are goals,

again.  It is not going to happen overnight.  It might be subsequent

revisions of requirements that push this along.

But going back to the principle, the guidelines there are

really kind of removing barriers to interoperability.  So making data

be in an interoperable format removes a number of barriers to

interoperability.  COTS ought to be easier to use, not that COTS is

a panacea for things, widely used hardware interfaces and

communications, protocols, that is currently done already.  But,

anyway, we should just be making it easier for this to happen down

the road.

So before I move on, any questions about that or

comments?

MR. KELLEY:

John, I -- first of all, thank you for the work you have done on data

standardization already.  I really enjoyed working with you on that.

MR. WACK:

Thank you.

MR. KELLEY:

I appreciate it.  My question is related to this 4.2 in interoperability,

which is the standard publicly available formats for other types of

data are used.  You and I chatted briefly about this beforehand, but

the reference there is to items that are currently being used as

opposed to a future standard.  Is that right?

MR. WACK:

Well, I guess an example I can think of is that a manufacturer may

use a QR code to pack together voter choices on a ballot marking

device.  So the -- you know the QR code, I am not sure what to call

it, but algorithm should be one that is publicly documented.  And

you know -- so, in other words, remove as much as is possible

proprietary ways of doing things. So it ought to be possible --

furthermore I am sure the data within a QR code is highly packed.

It ought to be possible to unpack that without going to, you know,

great lengths.

MR. KELLEY:

Got it.

MR. WACK:

Does that answer?

MR. KELLEY:

It does.

MR. WACK:

Okay, great, thank you.

COMMISSIONER MASTERSON:

Diane?

MS. GOLDEN:

I know we have talked about this before, but I am revisiting, it given

the principle over under accessibility about conforming with federal

accessibility guidelines/standards, and that was specifically in

reference to web accessibility standards. However, going back to

that same standard where it says publicly available formats for

other types of data, there are file formats for digital records that are

files. And for remote voting for those folks/jurisdictions who are

sending a file to a voter and the voter is using their own technology, that is another standard. And I am just wondering, so does that fit here? Or does that fit over under accessibility, under other federal, you know…

MR. WACK:

Yes.

MS. GOLDEN:

…what I am saying?

MR. WACK:

Right.

MS. GOLDEN:

But someplace there are so many jurisdictions doing that now, sending a file to a voter, either sending it electronic or mailing them a hardcopy, you know, something…

MR. WACK:

Right.

MS. GOLDEN:

…with a file on it, that would seem to fit in one place or the other and I do not know where or if anybody has even talked about that.

MR. WACK:

So does this relate to this -- the other issue I have heard is that input devices for an accessible voting system often tend to have proprietary hardware plugs, you know, it is not a standard USB or

audio jack or whatever.  And does this sort of relate to that question where, you know, how do you make that situation better?

MS. GOLDEN:

Yes, and I was not even thinking about hardware.  That is a whole other – ports, and that is just a whole other thing, although those have become more standardized.  I was thinking more of, yes…

MR. WACK:

Yes.

MS. GOLDEN:

…digital standards, whether it is for, you know, HTML web or it is an actual, you know, Rich Text Format in a file that you know there is -- all of those are pretty -- the EPUB standards they are all -- but they are pretty standard so that, again, in my world, assistive technology has a pretty robust set of standards.  If I want to use voice recognition software, I use a screen reader.  As long as the file format or the web content conforms to a set of standards, then I am pretty good to go.  And, like I said, I think our intention over on accessibility, we said that, but I do not think we were thinking so much about static files.

MR. WACK:

Yes.

MS. GOLDEN:

So, anyway, just a thought to make sure somebody thinks about it, in your camp or in ours.

MR. WACK:

Okay, yes, okay I am glad you brought that up.

The last thing I will say about interoperability is that for years I think we have heard from election officials that interoperability is something they want, you know. Interoperability will make it easier to use systems, to purchase systems, to analyze election data, has many, many, many benefits. But over and over again, from election officials it is, you know, can you make systems easier to use for us? So I think that is one of the big goals about interoperability there.

So that segues into…

COMMISSIONER MASTERSON:

Hold on one second.

MR. WACK:

Oh, sure.

COMMISSIONER MASTERSON:

Lori has a comment or question.

MS. AUGINO:

I have just -- in the interest of the consistent titles, this is one where we could look at calling it interoperable instead of interoperability.

And then, just kudos to you guys for the work that you are doing on the work to promote interoperability.

MR. WACK:

Thank you.

MS. AUGINO:

It is huge and it means a lot to us as election officials. So I -- we appreciate that you keep plowing forward and making it happen.

MR. WACK:

I meant to mention that up on our website we have a paper, I think it is from 2009 by Paul Miller of Washington who wrote, you know, a great article about why this is important and, you know, the benefits of doing it. So…

COMMISSIONER MASTERSON:

Judd?

MR. CHOATE:

John, I am worried about the final phrase of 4.4, the when their usage meets applicable requirements. I do not like the idea that that could sort of be used to create a circumstance where there -- where a commercial off-the-shelf piece of equipment would not be allowed to be used for a particular election function. Is there a reason why that phrase was added to it? Or what was the thinking behind that?

MR. WACK:

Yes, the thinking behind that was to make sure, for example, that the COTS device meets accessibility requirements, things of that

sort. That is really -- you know, does it fully live up to other

requirements in the VVSG?

COMMISSIONER MASTERSON:

Yes, I think that the purpose of that is so that you can introduce a

COTS device that violates several…

MR. WACK:

Right, yes.

COMMISSIONER MASTERSON:

… of the other principles or guidelines or corresponding

requirements and, you know, defeat the purpose of those by

saying, what, it is COTS…

MR. WACK:

Yes.

COMMISSIONER MASTERSON:

…you know we are good to go. So I think that was the purpose.

MR. CHOATE:

Can we then maybe play with the word applicable, maybe use,

previously mentioned, or some other phrase which alludes to the…

MR. WACK:

Meets other VVSG requirements?

MR. CHOATE:

Yes, meet other VVSG requirements.

MR. WACK:

Something like that, yes.  Right, yes.

MR. CHOATE:

Yes.

MR. WACK:

Okay, great.

COMMISSIONER MASTERSON:

Go ahead, John.

MR. WACK:

Transparency, again, this is a goal-oriented requirement.  Let me

start with, I thought it was useful to look up what transparency

actually means.

COMMISSIONER MASTERSON:

I would note NIST is using Wikipedia for definitional purposes.

[Laughter]

MR. WACK:

Well, I was thinking about not putting Wikipedia on there, but I did

not think that would be right.

[Laughter]

But I liked the first bullet, "As used in science, engineering,

business, implies openness, communication and accountability."

So we want to trust -- we want voting systems that are trustworthy,

that are open.  And so, transparency is a quality that as it

increases, I think offers the opportunity to put more trust in a voting

system, a design that is simple, a design that is well documented. Again, referring to the 2007 TGDC recommendations, there were requirements in there that promoted more extensive, more usable documentation with the idea being that if you want to make systems of higher quality, higher security, integrity, make them well documented.  And I think there is some truth behind that.

So I will mention also that this came from LA County's VSAP principles, and it came across as a good thing to aim for in the way the system works.  It ought to be relatively easy to demonstrate a system and have the public understand it.  I was thinking about this, and I do not want somebody who is, you know, making end-to-end voting systems think that this disqualifies E to E systems.  I am not saying that.  But I believe, as a design goal, a system ought to be easily explained and, very importantly, it ought to be easy to understand how to audit it, and how to perform that audit.  So this kind of overlaps, somewhat, with the security principles.

And so, the actual -- I think I lost the…

COMMISSIONER MASTERSON:

It happened.  Turn the lights out John Wack.

MR. WACK:

Did I?  Well, there is a lot of drama associated with these requirements here.

[Laughter]

MR. WACK:

Are there any questions I could answer on transparency before Ben

takes it away?

MR. KELLEY:

It is probably already documented, but our favorite word, easy, and

easily, is heavily used.

COMMISSIONER MASTERSON:

Yes, there is a lot of easies in here, so we will take a look at the

easies.

I do have one, and I know the answer to this, but the middle

-- so the second bullet in the list of three, "The processes and

transactions, both physical and digital, associated with the voting

system are readily available for inspection," inspection by whom, for

whom, and how are we going to test that?

MR. WACK:

I think part of the thinking behind that was that a voting system

should not be too complicated for the labs to test.  This kind of gets

into other areas; a good glossary, very well written requirements

without ambiguity are going to also assist in that realm as well.

Exports and imports and reports in a common format that can be

read, any voter out there could understand it, you know, so, along

those lines.

COMMISSIONER MASTERSON:

Judd?

MR. CHOATE:

Would that include ballots?

MR. WACK:

Ballots themselves, I guess, could you elaborate a little bit? I am

not sure what you mean.

MR. CHOATE:

Would ballots be accessible, available for public inspection under

that definition?

MR. WACK:

A ballot that you would vote on prior to the election?

MR. CHOATE:

Yes, a cast ballot.

MR. WACK:

I…

MR. CHOATE:

I am talking about a cast ballot.

MR. WACK:

A cast ballot? Oh, should the cast ballot -- should the record, the

cast ballots? Well, there are people who would like that. I know a

number of state laws prohibit that. I think that is -- we are getting

into that legal area and that is probably out of scope.

COMMISSIONER MASTERSON:

Yes, I think for the purposes of this discussion, it would be that if a state were to allow for that, right, that that be part of the voting system allowing that to be readily available…

MR. WACK:

Yes.

COMMISSIONER MASTERSON:

…should a state want to make it available, right?  So it is still incumbent on the state laws to do so.

MR. CHOATE:

So my only concern was that we were writing a requirement that forced a bunch of states to change their state law, which is -- but you are not suggesting that the requirement will lead us that direction.  I understand that this is a guideline, but hopefully the requirement won't lead us there, even though under Colorado law they are open.

COMMISSIONER MASTERSON:

David, did you have something?

MR. WAGNER:

On the first bullet, when I think of transparency I think of open to all, open to the public, available for view by the public.  And I cannot help but notice that the first one, the public is not included among those who are supposed to be able to read the documentation.

MR. WACK:

Unless you want to define them as independent auditors, but I agree, you know, voters -- it is a good addition.

COMMISSIONER MASTERSON:

So my suggestion -- I think it is a really good point. My suggestion would just simply to be to end at easily read and understood. That the 'by whom' can include all of those people if it is easily read and understood. So defining who is easily reading and understanding is not our jobs. Ours is to just make sure the system supports that.

MR. WAGNER:

Seems reasonable, I will ask a follow-up. Is the intent here to make sure that that documentation is public? In other words, that that is allowed to be read by the public, as opposed to, I think some past practice has been that often this documentation is considered confidential or proprietary or not released to the public. So is this intended to require that or take a stand on that?

MR. WACK:

Well, the first answer is no. I mean, the thinking was not, you know, along those lines, necessarily. But the devil is in the details and I, you know, in the event logging cast -- or common data format event logging, there was this issue of event codes that manufacturers use to describe an event, you know. Like hexadecimal 31 would mean ballot cast. And some people wanted all manufacturers to standardize on using this same hex code. And

ultimately, we agreed that instead of that, let's propose a

requirement that manufacturers make available in a standard

format what their codes mean.  So they use whatever code they

want, but by making that documentation easily available it is

possible to read the event log.  So there is an example of where

something being public would be beneficial.

COMMISSIONER MASTERSON:

Right, and I think to answer your question this would apply for a

state just as much, but I will use the EAC program.  If the EAC

program were as part of its programmatic requirements to say that,

you know, all system documentation is going to be made public by

the EAC, right, we are going to make it public, we want that

information to be easily read and understood.  And so, the point a

state could make that decision, a local could make that decision,

right?  But making clear that should that be made public by

whoever decides to do that, that it not be gobbledygook, right, so

that the public can read and understand it.

MR. WACK:

Okay.  All right, well thank you very much.  I appreciate the

opportunity to present this.

COMMISSIONER MASTERSON:

That is all you got?

MR. WACK:

That is it.

COMMISSIONER MASTERSON:

Man.

MR. WACK:

I would, like the other presenters, I would very much like to thank people in the interoperability working groups who have worked hard for little pay and done a great job.

[Laughter]

COMMISSIONER MASTERSON:

Thank you, John.

MR. WACK:

Thank you.

COMMISSIONER MASTERSON:

No, you can make it at the beginning of Ben's.

MS. AUGINO:

Okay, so…

COMMISSIONER MASTERSON:

Go ahead…

MS. AUGINO:

…just for Mary on that…

COMMISSIONER MASTERSON:

...while Ben gets set up.

MS. AUGINO:

…principle three, transparency, in talking about keeping the

headings consistent, maybe we could call that transparent.

COMMISSIONER MASTERSON:

Lori, you could just submit your edits to the secretariat.

[Laughter]

All right, Ben Long gets the bucket of "other stuff" as it were.

And Ben, to your credit, you took on this challenge, did a really

excellent job trying to capture a lot of other stuff in the VVSG that

ensures the functioning of the systems and the sustainability of the

systems.  So, go forth and conquer here and bring us home on the

review of the principles and guidelines.

MR. LONG:

Thank you very much, Matt.  I think we are just bringing up this

slide, one second here.  I am almost ready.  Thank you so much.

Thank you very much Chairman Masterson and everybody

here.  So as has been mentioned, I get to address, essentially,

everything else that does not fall into the system attributes that

have been discussed so far; human factors, security,

interoperability, and so forth.  As has been the case, with the

others, these principles have been arrived at from a review and a

thoughtful consideration of how to concisely encapsulate what has

existed in previous standards, including the 2007 TGDC

recommendations.

I have two primary principles here. One is high quality design and high quality implementation. And it should be noted upfront that to think about the differences between these, there is a couple essential differences to keep in mind as we step through. High quality design is essentially domain specific, so it is essentially oriented around -- it is organized around accurate election process specification. So it is specific to the election domain and it focuses on preserving correct election processes in implementations, and then it ensures that designs can support clear evaluations in general. High quality implementation is essentially applying best practices in high quality engineering to actually make such systems, to create election technology. And it is organized around construction and reliability of election technology, implementations themselves.

You have generally seen folks list a principle and guidelines all on one slide. I am going to do that, but then I am also going to zoom in one guideline at a time, with a little bit of example materials, so that you can -- we can discuss in context.

So the first principle, high quality design, the voting system is designed to accurately, completely, and robustly carry out election processes. So this seemed to be the overriding goal that all technology is going to be implementing these processes. And so, in order to do that, that implementation is going to need a

commonly accepted election process specification.  And we will talk

a little bit more about that in a minute.  The voting system will be

designed to function correctly under all realistic operating

conditions.  And it should support evaluation methods so that

testers can clearly distinguish systems that correctly implement

election processes from those that do not.

So on that first guideline then, the voting system is designed

using commonly accepted election process specifications.

Essentially, the meaning behind this, there has been a number of

work in the election process area already from the election groups,

the use cases, and now in the CDF area.  And this will continue to

mature to the point where it can form a commonly accepted basis

for implementing those processes.

Examples where this shows up, functionality-wise, a system

should support the -- and these are just example bullets at the

bottom to contextualize -- it should support the entire voting

process and appropriate voting variations.  It should support the

integrity and maintainability of election processes and data.  And it

should reliably and accurately transfer voting-related information

when it does transfer it.

So with that I will stop and perhaps open it up for any

dialogue on that first guideline.

COMMISSIONER MASTERSON:

Lori?

MS. AUGINO:

Have we -- just on the under high quality implementation, 2.6 you use the word gracefully?

MR. LONG:

Yes, ma'am.

MS. AUGINO:

Have you -- are we there yet or I am getting ahead of myself?

MR. LONG:

No, no, we are -- so we are still on high quality design and we are stepping through…

MS. AUGINO:

Okay, I will hold my comments until we get there.

MR. LONG:

Not a problem whatsoever.  So we are on 1.1, for those who are following along.

COMMISSIONER MASTERSON:

She is ahead of the game.  I know, right, a hard charger.

Go ahead, other questions for Ben.  Go ahead.

MR. LONG:

So I am assuming this might be the most straightforward one here, but if you have any clarification…

COMMISSIONER MASTERSON:

Assume nothing Ben, assume nothing.

MR. LONG:

Yes, assuming nothing.

[Laughter]

COMMISSIONER MASTERSON:

Go ahead McDermot, see?

MR. LONG:

Yes.

MR. COUTTS:

Perhaps a bit more of a side note, how is the EAC's mapping of state specific requirements coming together, and how can that be interweaved into this process?  Because ultimately that is where all of our commonly accepted election processes and context comes together.  There are certain things that never get used together, whereas certain things always get used together.  Straight ticket is, of course, one of the biggest hot tickets, though thankfully Iowa has decided not to do it anymore.

COMMISSIONER MASTERSON:

So we can -- two things.  One is, tomorrow with the EAC staff, we can give a quick update on that.  It is progressing to the extent that states are sending us the information.  And mapping, I know Ryan has worked on it.

But, secondly, there are other sources of processes,

including the ones we identified as part of this work, right, and as

part of the common data format work, election process modeling

has gone on that can help us identify some of that as well.  And so,

to your point, I think we will, in evaluating this principle and

guideline, in order to write requirements, we will take all of that

information, including the mapping and other, in order to write some

requirements that will recognize, again, the commonly accepted

election, not the outlier election practices, processes,

specifications.  So hopefully that answers it.

MR. LONG:

Any other questions on this guideline and this principle so far?

COMMISSIONER MASTERSON:

Never ask twice, Ben, just go.

[Laughter]

MR. LONG:

Okay.  Moving on to 1.2, the voting system is designed to function

correctly under all realistic operating conditions.  So, in this case,

this particular guideline was constructed with respect to -- in

previous VVSG's there has been a concept of volume testing and

ensuring that voting systems that are built and deployed can

support realistic election sizes and complexities and workloads.

And this was the intent behind this one.

COMMISSIONER MASTERSON:

Including temp-power, stuff like that?

MR.LONG:

Now that actually is in implementation.

COMMISSIONER MASTERSON:

That is later?

MR. LONG:

Yes.

COMMISSIONER MASTERSON:

Okay, great.

MR. LONG:

Okay, so this is process specific.

COMMISSIONER MASTERSON:

Judd?

MR. CHOATE:

Instead of realistic, how about anticipated, anticipated?

MR. LONG:

Anticipated?

MR. CHOATE:

Realistic seems, I mean…

COMMISSIONER MASTERSON:

Unrealistic.

MR. CHOATE:

Yes, unrealistic seems like an unrealistic word. But I do not know.

MR. LONG:

Right, so I guess, the main point is that it reflects the conditions one would expect in a real election.

MR. CHOATE:

In real…

MR. LONG:

So, however that can be stated best, yes.

MR. RIDDLEMOSER:

Greg Riddlemoser. This is one of my favorite ones, because if you have a specification, and granted, that is down in the weeds, but high speed ballot scanners do not need to operate in 140 degrees with 100 percent humidity. They would never encounter that. So that is an unrealistic operating environment.

COMMISSIONER MASTERSON:

Have you been to New Orleans in August?

[Laughter]

COMMISSIONER MASTERSON:

It is -- no, point well taken.

MR. RIDDLEMOSER:

It is also unanticipated. So it is -- I guess that is where I was going.

MR. LONG:

So, certainly we can take wording into account, for sure.

COMMISSIONER MASTERSON:

The only issue I would raise, and this is for thought as we move

towards reviewing these, is anticipated your -- I mean, realistic

would fall under this, I guess, too, but your version of what you

anticipate and what I would anticipate, two very different things.

But this is meant to be high level, so that is okay.

MR. CHOATE:

Both words struggle with the same problem.

COMMISSIONER MASTERSON:

Right, yes, yes. So we will look at that and we can talk about it.

MR. LONG:

Okay. 1.3, so the intent behind this one is that this is essentially

guidance on specification of tests; that a good test can help you tell

the difference between a process that is correct and one that is not.

And in this case, at no matter what level an election process

touches in the implementation, that there should be a way for an

evaluator to tell whether or not an election process has been

preserved or violated. So I list the different levels here just as

examples. But essentially, election processes shall not be violated

and that those who are testing it should be able to tell that. And by

following this guideline they design their test so that that difference

is clear. So this is guidance for clear testing.

Any questions?

MR. GILES:

Just to jump back, would under real-world conditions be -- the prior

one instead of unrealistic or…

COMMISSIONER MASTERSON:

Does New Jersey count as real-world?

MR. GILES:

We like to believe so.

[Laughter]

MR. GILES:

Or maybe our own little world.

COMMISSIONER MASTERSON:

Yes.

MR. LONG:

I like that.

MR. CHOATE:

Real-world seems better to me than realistic.

COMMISSIONER MASTERSON:

Okay, we will take that down, yes.

MR. LONG:

Okay.  Principle 2, high quality implementation, following the same

format here I will list everything on one slide and then we will just

jump through each, one at a time.

The principle, the voting system is implemented using high quality best practices. And as we dive through here I, you know, want to emphasize that essentially we have extracted the essence of -- so this is the piece where you go and you make the system that implements that election process. It -- this is extracted from a review of previous guidance, and for example -- so in the first case voting system is implemented using trustworthy materials and methods. Whether you are talking about software or hardware, whether you are talking about quality assurance, you are following best practices there. And we will look at that. The second one is essentially best practice for user-centered design when you implement that. This is back to Sharon's human factors talk earlier. Third, the voting system logic is clear, meaningful and well structured. So this encapsulates the idea of logic, whether it resides in software, hardware, firmware, et cetera, that that logic is clear, meaningful, and well structured according to best practices and software. A voting system structure is modular, scalable, and robust. It supports the processes and data with integrity. This is Lori's, handle's errors robustly and gracefully recovers from failure. We will get there in just a minute. And then, the last one performs reliably in intended environments. This is Greg's.

COMMISSIONER MASTERSON:

Let me hold you there and see if we can create a little efficiency.

MR. LONG:

      Yes.

COMMISSIONER MASTERSON:

      And that is, are there any specific questions on any one of these

      that Ben can skip ahead to the slide and walk through, because

      each of the next slides is going to cover each one of these bullets.

      So…

MR. LONG:

      Precisely, yes.

COMMISSIONER MASTERSON:

      Is that right?

MR. LONG:

      Yes.

COMMISSIONER MASTERSON:

      Yes, so are there any questions on specifics?  So let's go to Lori's,

      to start.  So if you could skip ahead to the handles errors robustly

      and gracefully recovers from failure, first.

MR. LONG:

      Okay.

COMMISSIONER MASTERSON:

      Go ahead, Lori.

MS. AUGINO:

So my point on that was gracefully seems to be -- feels like odd

wording here, and I just wanted to know a little bit more about

where you were going with that.  Like, are you thinking quickly?  If

you could just expand on that a little bit and then I might be able to

come up with a word that I like better.

MR. LONG:

Sure, no problem.  This is sometimes language that is used to

describe this process, say, in reliability engineering.  But

essentially, in the first case -- so there is kind of two pieces to this.

The first is if you can avoid an error and get back to a place before

the error happened, that is handling it robustly.  The second case is

if an error is unavoidable, that you do not fail catastrophically.  You

do not have a hard stop where you have no information about what

happened, or what to do, or what it means, and that you actually fail

to a point where you have some information about what to do about

it to correct the situation.  So gracefully is you are organizing the

way you make the system so that when it fails that it also does not

damage any data, it does not damage any other critical part or

process of the system.

COMMISSIONER MASTERSON:

Mary?

MS. BRADY:

So, normally if you are programming, you know, there is a couple ways to go about this. Sometimes early programmers that, you know, maybe not, may not know so much about programming might just go about it and try an operation, and if it fails then, you know, it may be something at a lower level, a thrown error, or maybe a blue screen of death, who knows what you will get. But normally, the right way to go about programming would be to try something and have a catch phrase, for instance. So if an error gets thrown, you catch that error and then, you know, then you take the necessary steps. That is what we refer to as failing graceful and being able to recover.

MS. AUGINO:

So I am to understand then gracefully recovering is industry standard, people other than me understand that and know…

COMMISSIONER MASTERSON:

Yes.

MS. AUGINO:

…exactly what that means?

COMMISSIONER MASTERSON:

Yes.

MS. AUGINO:

Okay.

COMMISSIONER MASTERSON:

And it is also part of the current testing, either in 1.1 or in an interpretation as well. So gracefully -- graceful recovery is a known term of art, I would say. That does not make it good, by the way. It just makes it a thing.

[Laughter]

MR. CHOATE:

Is it the same for robustly? Is robust a term of art?

MR. LONG:

It is, it is actually, yes.

MR. CHOATE:

Because it usually means strong or forcefully.

MR. LONG:

Yes.

MR. CHOATE:

And handles errors strongly, forcefully?

MS. AUGINO:

And gracefully is attractive in an elegant way.

MR. CHOATE:

There you go.

[Laughter]

COMMISSIONER MASTERSON:

This is what you get for using Wikipedia to define things.

[Laughter]

MS. BRADY:

Yes, we obviously did not use Wikipedia in this case.

MR. COUTTS:

In this particular case, robustly is meaning that it is covering a

broad spectrum of…

COMMISSIONER MASTERSON:

Yes, thoroughly.

MR. COUTTS:

That you basically -- what it is saying, with robustly, is that you have

anticipated a large number of problems and have handled them

effectively.  In the case of gracefully, there are certain things that

you are expecting to happen and you handle it correctly.  A perfect

example of this is somebody putting a blank piece of paper into

your scanner instead of the ballot.  Generally, what -- it could be

that the scanner will just throw -- it will throw an error saying, I do

not understand what I have seen here.  But the effect of that, to

handle it gracefully, is to return it back out and say, we have had a

problem, we are now reset, let's move on.

COMMISSIONER MASTERSON:

Okay, if you could go back to your first slide, and then we will see if

people have questions on the other ones.  So, questions on the

remaining bullets or changes?  David.

MR. WAGNER:

I want to discuss something that is not exactly on any of these bullets, if that is appropriate.

Source code review, my understanding -- I have a hard time getting hard numbers on this, but we are talking about something that might be in the range of 10, 20, even 30% of the cost of certification and testing, if I understand right. And from what I understand of the source code review that is being done, I am not sure that is providing value that is proportionate to that cost. So this is one that has been on my mind, as it looks like an opportunity for us to do some cost reduction, facilitate innovation. And I have not heard anything about that and I do not see anything about that here. So can you talk a little bit about that? Is that something that is getting punted to requirements? Has there been discussion of looking again at the source code review that is done and the requirements that have necessitated source code review? Do you have thoughts on where you plan to go with that? Can you just talk about that subject at all?

MR. LONG:

So, to date, we have not had extensive conversations on that in specific, so far. The principle -- the guideline of voting system logic is clear, meaningful and well structured, is more at the what level. And so, this is something you would expect to be able to verify as a result of doing a comprehensive source code review. And so, it is a

valid point, though. In your feeling, do you feel that that belongs in this last?

MR. WAGNER:

My impression is that this came around as a result of good intentions, where there were requirements that required that the source code be modular and maintainable, because that is a good practice, which then led to some specific requirements that are about the syntax and the structure, which were then testable only by having a person read through the source code, which then led to the source coding being reviewed at a rather superficial level, but because there is a person doing it, is very expensive. It would be like having someone review your essay -- because I am a teacher, I like these teaching analogies -- review your essay, and they are liking checking the fonts you used, and the spelling of the words, not whether the essay was actually any fun to read or whether I learned anything from it, and spending a lot of money on that. So it feels like this is an issue we ought to confront. And I just would like to see us tackle this one rather than let it, you know, kind of sail by because it has not come up in any of these guidelines here, specifically. I think we might be able to save some cost by eliminating some requirements there.

MS. BRADY:

So I think Ben correctly points out that it is, you know, there is a

placeholder here, to ensure that you are using best practices in

terms of the way you develop your source code.  So the question

is, how should that actually be implemented?  How can we ensure

that it has been implemented the way that we think?  And that is

part of the reason that I want to move some of the requirements,

development for implementation to the testing group.  So, those

can be discussed where the manufacturers and the voting system

test labs are participating.

COMMISSIONER MASTERSON:

Yes, I would add, you have correctly identified exactly where this

would be.  And the reason that it does not specify is because I think

both NIST and the EAC, because we have had the same

conversations, identified this as that opportunity; that if we can

have, you know, trustworthy materials and methods, whatever it

may be, that there are more efficient ways of reviewing, to ensure

that via testing than a line-by-line code review by a human being,

and that cost savings can be found there as well as, by the way,

writing documentation in a way that is understandable and clear

can save -- because the two areas that cost the most in testing, and

McDermot, correct me if I am wrong, is source code review and

documentation review.  They take a long time.  There is a lot of

documentation.  And so, I think via these kind of high level

principles and guidelines, absolutely, we see an opportunity to

identify some efficiencies and cost savings.  And you are exactly

right.  I mean, the history there, is back when the 2005 were

written, the focus on manual source code review was a lot higher

than it is now, right?  There is other ways, including looking at

software independence and other things, that we could save money

on one end with the other.

So I think absolutely this guideline is intended to tackle that

and now it is the time to do that, both, programmatically from an

EAC standpoint, and requirements wise, as we build out.

MR. GILES:

I have two areas.  So in 2.2, where you talk about a wide range of

representative voters and poll workers, including those with and

without disabilities, should we make that, whatever language we

decide for 8.3, so, just so we are clear on that, so they match?

COMMISSIONER MASTERSON:

Yes, yes.

MR. GILES:

And then, the same -- and then, maybe in 2.7, the voting systems

performs reliably in intended environments, maybe that is what we

use in 1.2, pull that up and use it up in there?

COMMISSIONER MASTERSON:

So you would propose in 1.2 that it read the voting system is designed to function correctly under all intended operating conditions?

MR. GILES:

Yes, well, I mean, I said intended environments, so they are similar language. Whatever language we end up…

COMMISSIONER MASTERSON:

Environments, intended operating environments, okay.

MR. GILES:

Yes.

COMMISSIONER MASTERSON:

I just want to make sure we get it as we review it. Go ahead Diane.

MS. GOLDEN:

I was just going to say I do not think you want to -- the issue between 2.2, which is the upfront design using best practices, user-centered design, 8.3 is the actual summative user testing, and I think -- and the problem was having poll workers in that statement. The poll workers in 2.2 is fine because it is user-centered design. The hitch was putting the poll workers under 8 created issues because then that is under a principle that ensures accessibility and we have the whole issue of different accessibility standards. I think the resolution is to take poll workers out of 8.3.

MR. GILES:

And I guess my concern then, in 2.2, is, are we building it to meet

ADA requirements for poll workers, not just voters?

MR. COUTTS:

If I could…

MS. GOLDEN:

Well, it is user-centered design.  It is a whole -- we are not really

talking about accessibility requirements, per se.  It is user-centered

design, conceptually, which is very different from 8.3, which is

summative usability testing that includes accessibility.  It is two

different issues, I think.

MR. GILES:

See, I am lumping them together, because you are saying poll

workers, including those with and without disabilities.  So, if you are

saying you got to design a machine for a poll worker with a

disability…

MS. GOLDEN:

Usable, not meeting an accessibility requirement, and if it was an

accessibility requirement, here, under design, it would not be the

ones that are in the VVSG for the voting system for the voter.

MR. GILES:

Um-hum.

MS. GOLDEN:

That is where the difference is.  There is a different accessibility

legal requirement for a poll worker than there is for the voter

themselves.

MR. COUTTS:

Should we just move the last phrase after voters and leave and poll

workers at the end?

MS. GOLDEN:

So which one are you talking about?

COMMISSIONER MASTERSON:

Say that again, I am sorry.

MR. COUTTS:

A wide range of representative voters, including those with and

without disabilities, and poll workers?

MR. GILES:

I mean, if you are…

MS. GOLDEN:

That's fine.

MR. GILES:

If you are saying it does not -- I am just concerned somebody reads

this in a general sense, and says, well, it says right here, it has to

be designed for poll workers with disabilities, and just -- because if

we are staying at that high level, that  is my concern, somebody

reads it that way.

MS. GOLDEN:

It is fine editing, that one, and then, like I said, I think the fix over in 8.3 is to take poll workers out of that one and go to voters.  The summative usability testing is about voters.  And if you have a wide range of voters with functional limitations, you are going to cover poll workers with functional limitations, I mean, if that poll worker is voting, you know.  So…

COMMISSIONER MASTERSON:

So, here is what I recommend with this one, specifically and 8. -- what is it 8…

MS. GOLDEN:

3.

COMMISSIONER MASTERSON:

…3, when we take the break, to prepare, you and Diane can kind of talk through the differences, and then, when we pull it up we can talk through it some more.  But I see the difference between when we are talking -- a summative usability test is an actual test that is going to have to be administered, right?  And this is just talking about designing it with user-centered design methods as part of the design principles behind the system.  But let's -- we can have that conversation, but why do not you let Diane educate you a little further before we have that?

[Laughter]

MR. GILES:

Wow, okay, I thought that was why you sat me next to Cliff and he

gave up.

COMMISSIONER MASTERSON:

He did give up.

[Laughter]

MR. GILES:

He left.  So…

COMMISSIONER MASTERSON:

That is not a coincidence.

MR. GILES:

So you won't see Diane after the break, apparently, if I am not

trainable.

[Laughter]

COMMISSIONER MASTERSON:

Judd?

MR. CHOATE:

And I readily admit that this is -- it is certainly possible that there is,

but I do not see a difference between 1.2 and 2.7.  What are we

seeking in those two things which are different?

MR. LONG:

So, as I mentioned in my opening slide, the way to think about the

differences is -- in intent, between these two principles, is high

quality design is organized around the accuracy of that process.

And so, the intent was that 1.2 had to do with, I have, what was the

term, an intended realistic election workload, it is of an expected or

anticipated complexity, it handles anticipated voting variations all

process centric.  The one in 2.7 is specific to the physical

environment that it is in; the temperature, the humidity, the shock,

the electromagnetics, and so, that is very technology specific,

where the other is process specific.  Does that make sense?

MS. BRADY:

Let me just say, I mean, internally we have had a fair amount of

discussion on should we just combine these two and would it make

it a bit clearer if we did?

MR. LONG:

And if that is a desire, we can definitely do that, no problem.

MR. COUTTS:

I actually think that the distinction is important and -- because the

first one is more about your limits and your logical definitions; how

many voters, how many precincts, how many contests, how many

languages.  The lower part is truly about the physical locations, and

can it function under water or…

MR. LONG:

Right.

COMMISSIONER MASTERSON:

Is that an option?

[Laughter]

MR. COUTTS:

Well, the intended environment, that is possibly a distinction that you want to look at, because my intended environment is really San Diego, where it is 72 and sunny all the time, with low humidity. But I have to really force the other stuff.

COMMISSIONER MASTERSON:

Let me add from a programmatic standpoint, it matters, I think, to the EAC as well, in that we publish with certified systems system limit documentation; how many precincts or ballot styles or what not that the system can support. And so, it is important to have that clear delineation, so that we can tell the consumer, this is exactly what this system can do, how many languages, whatever the case may be, whereas, the environmental testing is we are talking about an ESD testing is separate from that limits document.

MR. CHOATE:

Ben had me at high quality design...

[Laughter]

COMMISSIONER MASTERSON:

We are going to keep going.

MR. CHOATE:

…about seven minutes ago.

COMMISSIONER MASTERSON:

>McDermot did you…

MR. COUTTS:

>There is a question.  So, I guess the question at this point is, can we -- how are we going to define intended environment?  And are we going to change where we currently sit, like with temp-power, et cetera?

COMMISSIONER MASTERSON:

>I think we could look at that, certainly.  And part of that, and Ben, correct me if I am wrong, is examining where the current set of common standards and mil specs and other things sit, depending and evaluating what is appropriate for the voting environment, right?  So this is a chance -- just as it is a chance to review source code review, this is a chance to look at that.  But I also think odds are good that we are going to try to follow already existing specs as best we can, because they are existing for a reason, rather than making up our own.  So, we are not going to put in a San Diego environmental spec, for instance.

[Laughter]

>That is too easy, and the folks in Louisiana or the folks in Arizona are not going to appreciate the San Diego environmental spec, right?  So that it's -- I think this is an opportunity to look at that in the requirements development stage.

Marc?

MR. GUTHRIE:

Yes, Matt, I just want to make sure that I fully understand this. This 2.2, it could be referring to poll workers with disabilities, correct? So, it is referring to a range of representative voters and poll workers, including those with and without disabilities. So, this could be referring to poll workers with disabilities?

MS. GOLDEN:

Well, that was the discussion. It is -- the way it is currently written, it could. And that was the question Bob raised then, about, well, there is a different accessibility standard that is going to apply to a voting system as it relates to voters, versus a voting system as it relates to poll workers, because the accessibility standards in the VVSG apply to voters, not poll workers. So, that was his point. It is confusing, at best, and that needs to be cleaned up, along with 8.3 that has the same confusing wording about voters and poll workers, so yes.

COMMISSIONER MASTERSON:

So we will come back with a way to either clarify that or answer that question better, I think.

MR. GILES:

And thanks for vindicating me, Marc.

COMMISSIONER MASTERSON:

Marc, you are now in the camp with Bob.

[Laughter]

Good luck.  Anything else with -- go ahead, David.

MR. WAGNER:

I thought I would note that I believe there was a request from the cybersecurity working group, from some of the people on the working group that secure software development be included among the high quality implementation principles.  And so, I do not see it there, so I thought I would cull that out as something that, at least, some members of the working group thought should be there.

MR. LONG:

Sure, I think we did have some discussion internally and perhaps Josh could correct me or Gema could correct me if I am wrong, but I think that was covered in system integrity under software assurance practices.

COMMISSIONER MASTERSON:

Yes, it does not -- no – so, under principle 14, which is, I think, what you were referencing, Ben…

MR. LONG:

Yes.

COMMISSIONER MASTERSON:

…there is not a specific reference to secure software development, what would you call it, procedures, techniques, skill sets?

MR. LONG:

So, I guess I would come back to, the other part, where I may have been, this was actually in 2.1, and so, I guess -- and that is trustworthy materials and methods. And I guess, the question is, if what you are saying is is, you know, Ben, I am not sure that is strong enough. Then, if you think you need more strength in that, then we should think about strengthening that piece right here.

COMMISSIONER MASTERSON:

Yes, so David, I guess my request to you, we are going to -- we will put it in the notes, as a comment, and my request to you is, when we take the break, identify whether it best belongs in the implementation portion or in the system integrity portion. But we could look at an appropriate place where we might be able to add that and what that means, as well. So, you may be asked to explain what the heck that might mean. So, I am sure McDermot will ask that.

MR. LONG:

Thank you very much.

COMMISSIONER MASTERSON:

Other questions? Okay, so here is the plan. We have, what, about two pages? We will call it two pages worth of notes on your comments, some of them easy, some of them not as easy. And so, we will take a 20-minute break, so that will put us back just after

four.  We have about an hour when we come back, unless you

guys want to work late, totally your call, and then we have about

two hours tomorrow morning, as well, to work through it.  And in the

end, this is what we are here to do.  And so, if we need to shuffle

around presentations or what not, that is what we need to do in

order to work through your comments and identify.  The goal would

be, whatever changes we make today will be reflected in a

document you see tomorrow.  We will continue to work through

them tomorrow, and then, present to you a document that reflects

those agreed upon changes as we work through it, hopefully

reflecting a document that you call can agree on being the goal.

So we will take a 20-minute break, 4:05 or so, and then, we

will come back, ready to roll, at looking at your comments.

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[The EAC/TGDC committee recessed at 3:41 p.m. and reconvened at 4:04 p.m.]

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COMMISSIONER MASTERSON:

So, we have about an hour to go through your comments.  So, I

kind of want to talk about process, very briefly, on how we are

going to go through this, and I am open to suggestions if there is a

more efficient way.  But what Ryan has done is, as you all were

going through and offering your comments, Ryan documented

them, and we will be able to pull them up to show what the options

are or what the suggested change was. Several of these will be easy. They were, you know, for instance, some of Lori's correction on commas or titles to accurately reflect that. Mary also took notes during it so we can make sure we synch, if there is disagreement on exactly what was suggested. And, again, what I would propose for us to, at least consider as a construct, so that we are not spending our time on each one forever is having four categories or buckets to put these into. One is, accept them. If everyone is like, yes, let's roll, good to go, we can accept it and make the change. Reject it, if everyone kind of says you know what? We think it looks good, we will go ahead and just keep it the way it is, that's fine. The third option is to document it as something that needs to be included as part of the public comments so that it is out there. The third to consider is, again, documenting that this was a comment, but there was not agreement reached, but the ability to move forward and keeping that as a public comment, which would need to be resolved by the EAC and NIST before adoption of the final document, so that it is documented and shown, and we can make sure whoever raised it or whoever agrees with it is shown. It is also a place that the Standards Board and Board of Advisors could look at those comments and say, okay, we can weigh in on that, as well. And then, the fourth is just grammatical, where it is grammatical fixes, we move through them and go forward.

So does that construct -- go ahead Greg.

MR. RIDDLEMOSER:

Mr. Chairman, in the interest of time, both today and tomorrow morning, I am assuming that there will be a preamble or a coversheet or a something to the VVSG what it is, what it is not, why it is high level and that it is not meant to circumvent in any way, shape or form one or more state laws in the 50 states, you know that kind of stuff. So if there is something like that on top of it, what we are -- what we have and have not done, you know, that kind of a thing.

COMMISSIONER MASTERSON:

So, absolutely yes, there is an introductory document that would not be part of the principles and guidelines, per se, but would accompany it, explaining what the VVSG is, why it exists, what the purpose is or isn't, as the case may be. And in addition, as I said before, there will be a corresponding education effort on behalf of the EAC and NIST on this VVSG, and that education effort will be both to the election community, but also, the general public at large, to explain those types of things. For instance, the scope is voting systems only, it is not voter reg systems, things like that, so we have a clear understanding of what it is and is not in that regard. So it would be twofold. Yes, we are going to have a document like

that but also there is going to be corresponding educational efforts on it.

Anything else on process or strategy? Great, so Ryan and Mary and Sharon or Brian, and we can call up any one of …

MS. BRADY:

What order are we going in?

COMMISSIONER MASTERSON:

I think we are going to start from one. So Ben would be the best person to have up here to start, and we will just roll through each one and your comments. If anyone has anything to add, hopefully several of them will be, you know, sort of without objection or conversation and we will move on. Again, we have about an hour and then two hours, or so, tomorrow morning. And when we come back tomorrow, the changes we make here in this next hour will be reflected in the document so that we keep a working document in that way. And we are working off of the document that you have in front of you. So to the extent there were discrepancies between slides and the document in front of you, we are working off the document in front of you.

MR. HANCOCK:

We will provide a copy to everyone here in the morning.

COMMISSIONER MASTERSON:

Right, Brian Hancock, from the EAC, just said that a new working

version of this document will be provided to you in the morning to

reflect whatever changes we make here this afternoon, good?

MR. COUTTS:

Could you email one tonight?

COMMISSIONER MASTERSON:

Sure McDermot, we can email one tonight, yes, you're welcome or

early tomorrow morning.

[Laughter]

MS. GOLDEN:

At 1 a.m?

COMMISSIONER MASTERSON:

We do not want you editing after dinner is the key.

[Laughter]

So Ryan and Ben with that let's walk through -- so Ryan, you

walk us through the proposed change and then we can address

them as we go.  So…

MR. MACIAS:

All right, so it looks here the first question came up on the word

realistic in 1.2.  And there was three suggested edits.  The first was

anticipated, the second was real-world, and then the third came in

after for intended operating environments.  So currently it reads,

"All realistic operating conditions," and it sounded like all intended

operating environments was the agreed upon language, but we will

open that up.

COMMISSIONER MASTERSON:

So thoughts on all intended operating environments for 1.2, any

objection?

MR. CHOATE:

So you just -- you explained -- no Ben explained that these -- that

1.2 and 2.7 are very different things, so maybe they should not use

the same language.  I really like when Bob brought up real-world.  I

think real-world is what we are trying to say.

COMMISSIONER MASTERSON:

Okay.

MR. CHOATE:

So I would propose that we use real-world.

COMMISSIONER MASTERSON:

So Judd's proposed change would read "The voting system is

designed to function correctly under real-world operating

conditions."  So the suggestion is real-world operating conditions.

Does anyone object to that?

MR. RIDDLEMOSER:

Strike the word all and realistic and inserting real-world?

COMMISSIONER MASTERSON:

Correct.  Hearing no objection, we will make that change.

Next?

MR. MACIAS:

All of the easy and easilies have been highlighted because we said we were going to table them. So they are highlighted in red. But 1.3 shows the first easily, voting systems design supports evaluation methods enabling testers to clearly and easily distinguish systems that correctly implement specified properties from those that do not.

COMMISSIONER MASTERSON:

So the proposed change in this one, but to be reflected in other ones, is to remove easily from here as unclear. And so, it would read, "Testers to clearly distinguish systems that correctly implement specified properties." So taking out easily in this case and other cases, any thoughts or objections on that? That was easy.

[Laughter]

Terrible, that is terrible. Yes, that is too easy, so bad.

Go ahead, 2.1.

MR. MACIAS:

2.1..

MR. RIDDLEMOSER:

Matt, Ryan?

COMMISSIONER MASTERSON:

Yes.

MR. RIDDLEMOSER:

Just a housekeeping thing for tomorrow, if we are hopeful that

eventually this is going to result in a motion to adopt and move

forward, may I suggest, sir, that we adopt them one at a time today,

and then again, when we are done/done adopt all?

COMMISSIONER MASTERSON:

So you may suggest that and I am open to whatever the committee

would like to do. My -- our thought was that instead of doing that

you are presented with a new, full document tomorrow after edits,

that you have one vote on everything that reflects those changes.

But we could go one by one and sort of by consensus agree on

each change if that is important to the committee.

MR. RIDDLEMOSER:

I just do not want to re-litigate any of this stuff again tomorrow.

COMMISSIONER MASTERSON:

You and me both. Does anyone have thoughts on that?

MR. GILES:

If we do it today, I am fine with getting the one document tomorrow

if we go through and we all -- if we all agree on each thing.

COMMISSIONER MASTERSON:

Okay. And Greg to your point, if there are any that need to be

"litigated" so there is not agreement, someone has a concern and

just cannot -- and our threshold measurement, and you all will have to decide for yourselves, are any of these an item that you won't be able to vote in favor of the proposed VVSG unless a change is made? And to the extent there is one of those or two, or however many, those are the ones that we can have an actual voice vote on tomorrow, if necessary, in order to document that. But to the extent that the rest are just by consensus agreement, we can do that.

Go ahead Ryan.

MR. MACIAS:

All right, so under 2.1, the voting system is implemented using trustworthy materials and methods. This is the one that came up from David Wagner about the cybersecurity working group and we pulled the language from David's email. And so, the new proposed language from the email was, the voting system and its software are implemented using trustworthy materials and best practices in software development.

COMMISSIONER MASTERSON:

Comments, objections, or thoughts on that? David, did you have anything or good? And that reflects the cybersecurity working group's recommendation on that one.

Okay love it, next.

MR. MACIAS:

2.2.

COMMISSIONER MASTERSON:

Will you scroll over it so we could see the comment with it?  Sorry.

MR. MACIAS:

Yes.

COMMISSIONER MASTERSON:

That is helpful.

MR. MACIAS:

The voting system is implemented using best practices user-centered design methods for a wide range of representatives, voters and poll workers, including those with and without disabilities.  Bob had suggested to use the same language that was used in 8.3, whatever that is when we get to it, and McDermot had suggested moving and poll workers after including those with and without disabilities so that it would read "for a wide range of representative voters, including those with and without disabilities, and poll workers."

MS. GOLDEN:

That is -- the latter is the recommended change I believe.  "The voting system is implemented using best practice user-centered design methods for a wide range of representative voters, including those with and without disabilities, and poll workers."  So it is separate from.  Yes, I think that is the agreed upon fix.

COMMISSIONER MASTERSON:

Any discussion or disagreement with that?  Awesome, okay, and

Bob, I would like to note for the record, both Cliff has returned…

[Laughter]

…and you got what you wanted out of this.  So congratulations.

Diane is still here.

MR. GILES:

Yes and I got schooled.

MR. TATUM:

Mr. Chair, if I may, I was dealing an elections issue in New Jersey.

COMMISSIONER MASTERSON:

In New Jersey.

[Laughter]

MR. GILES:

That is because I was not there.

COMMISSIONER MASTERSON:

Yes.  Next one Ryan.

MR. MACIAS:

One second.

COMMISSIONER MASTERSON:

No problem, Ryan is making changes as he is walking us through

these.

MS. BRADY:

Ben, you are done.

COMMISSIONER MASTERSON:

Ben, you are done.  Ben is the first one to happy hour.

[Laughter]

COMMISSIONER MASTERSON:

Linda?

MR. RIDDLEMOSER:

The re-attack on 2.7 with intended environments, intended

operating environments.

COMMISSIONER MASTERSON:

So there was a -- do you have that one, 2.7?  So the question from

Linda is the voting system performs reliably in intended operating

environments.  You would like to use…

MS. LAMONE:

I thought that is what somebody had suggested.  I wrote it down.

So I thought somebody suggested it because I wrote it down.

MR. MACIAS:

So I think that was in the discussion between 1.2 and 2.7 having

similar language.  But that is up for discussion right now.  I am

going to minimize it a little bit so you can see both, because here in

1.2 it had realistic operating conditions, and then, down here it had

intended environments, and to make them similar in nature the

discussion was to make both of them intended operating

environments.  However, as the discussion was that they are two

distinctly different things, the change was made to 1.2.  But it is

open for discussion.

COMMISSIONER MASTERSON:

Yes, so 1.2 became real-world as we just discussed.  So the

question is, is there a need to either make them match, so 1.2 and

2.7 match?  Or is anyone interested or feels strongly about adding

operating to intended operating environments?  Go ahead, Ben.

MR. LONG:

It was suggested that if we added physical environment here that

that would drive home the distinction.

COMMISSIONER MASTERSON:

So it would be intended physical environments?

MR. LONG:

Yes.

COMMISSIONER MASTERSON:

Okay, so the new proposal is to say in intended physical

environments.

MR. COUTTS:

Or anticipated physical environments.

COMMISSIONER MASTERSON:

Discussion?  So McDermot's suggestion is the voting system

performs reliably in anticipated physical environments.  Any

objection?  Okay, this time you are really done Ben, run.

[Laughter]

All right, next up I think is John Wack.  Is John still here?

Go ahead Ryan, while we get John.  So this one -- I mean, this is

the removal of easily first.  So, again, to make it more readable and

understandable, and other aspects of the voting system could be

read and understood.  So start with the easily first, and then, we will

get to the strikethrough.  Does everyone agree to remove easily,

any objection to that?  Okay, hello John.

So, then the next change was a recommended

strikethrough.  So the -- as you can see on the screen, it would

read "and other aspects of the voting system could be read and

understood."  So we would take out "by election officials, testing

labs and independent auditors."  And this I believe was raised in

order to address David Wagner's concern that it should include

voters, the general public, whoever else that understand, instead of

limiting it just to election officials, test lab and independent auditors,

so any thoughts on the strikethrough?  Greg?

MR. RIDDLEMOSER:

Mr. Chairman, only if that caveating stuff that is on the first page

addresses things that the states can kind of do what they need to

do.  Like security measures in Virginia are not subject to FOIA.  So

if I put my security measures in something that has to be readable

by everybody that is not going to work.

COMMISSIONER MASTERSON:

So I cannot say that an introductory document would speak to state

FOIA regs but it certainly would speak to the scope and limit of

scope of the VVSG, right?  We cannot force any state or local

election official to disclose anything under their own public records

laws, right?  They are going to follow their own laws.

Any other discussion on that?  Okay, next.  This is

awesome, by the way.  I am waiting for the…

MR. COUTTS:

The shoe?

COMMISSIONER MASTERSON:

Yes, I am nervous.

MR. MACIAS:

I did miss one.  We had the discussion of changing the word

transparency to transparent.  And so, that was not highlighted here

and I skipped over that.  And luckily Lori gave me her notes.  So…

COMMISSIONER MASTERSON:

Any objection to changing this to transparent?  Okay, next.

MR. MACIAS:

"The process and transactions, both physical and digital,

associated with the voting system are readily available for

inspection."  So there was a discussion of by whom, for whom, and

when and where.  And somehow I got the transparent language

there.  I do believe -- let's see…

COMMISSIONER MASTERSON:

I do not know that there was a suggested edit, was there?  I think

the question was just raised, probably by me.

MR. CHOATE:

I was concerned about that, including ballots.

COMMISSIONER MASTERSON:

Were you satisfied with the discussion or is there a proposed

change you would like to make?

MR. CHOATE:

I have no proposed change.

COMMISSIONER MASTERSON:

Does anyone have a proposed change given the discussion around

readily?  And, again, as a reminder, the idea is that the system

supports, you know, these items being readily available, not

whether or not a state or locality has to make them readily available

under their laws, just that the system would support that.  Any

discussion on that?  Okay, no change.

MR. MACIAS:

Another easy, "The operation of the voting system are easy for the

public to understand and verify during pre-election setup and post-

election audits."

COMMISSIONER MASTERSON:

So it would just read, "The operations of the voting system are" --

we got to think about how to write that one.

MS. GOLDEN:

That is what I am saying.  We cannot just…

COMMISSIONER MASTERSON:

Yes.

MR. RIDDLEMOSER:

Are understandable to the public.

COMMISSIONER MASTERSON:

Go ahead David.

MR. WAGNER:

The operation…

COMMISSIONER MASTERSON:

Please use the mic, I am sorry.

MR. WAGNER:

How about the operations of the voting system can be understood

and verified by the public during pre-election setup and post-

election audits?

COMMISSIONER MASTERSON:

Any objection to that?  Will you read that again Ryan?

MR. MACIAS:

Yes, so I got "The operations of the voting system can be understood during pre-election setup and post-election audits."

COMMISSIONER MASTERSON:

Can be…

MR. MACIAS:

However, I did not hear anything about the verify.

COMMISSIONER MASTERSON:

…understood by the public.

MR. WAGNER:

I think I said understood and verified by the public.

COMMISSIONER MASTERSON:

Go ahead, Lori.

MS. AUGINO:

I like that less.

COMMISSIONER MASTERSON:

Okay.

MS. AUGINO:

I would propose, in this case, that we keep easy.

COMMISSIONER MASTERSON:

Okay.  So we have one proposal with David's language and Lori would propose that, in this case, we keep easy, that it is a word to keep.  And so, I guess my question to David is, are you comfortable with keeping easy?  It captured…

MR. WAGNER:

Yes.

COMMISSIONER MASTERSON:

Okay.  Is anyone uncomfortable with keeping easy in this case?

Go ahead, Neal.

MR. KELLEY:

I am not uncomfortable.  I actually like the suggestion.  But I just

would like clarification on the comment made earlier about how do

you test easy?

MS. GOLDEN:

Can you…

COMMISSIONER MASTERSON:

Easily.

MS. GOLDEN:

Can you not revise the sentence to start with the public is able to

understand and verify the operations of the voting system during

pre-election setup and post-election audits?  The problem is you

are trying…

COMMISSIONER MASTERSON:

That is interesting.

MS. GOLDEN:

…to rephrase this as a passive tense and you need to do it the

other…

COMMISSIONER MASTERSON:

Say that -- for Ryan's purposes, can you say that slowly?

MS. GOLDEN:

The public can understand and verify the operations of the voting

system during pre-election setup and post-election audits?  Just

turn it into a declarative sentence.

COMMISSIONER MASTERSON:

David is nodding his head.  Any -- John, go ahead.

MR. WACK:

Well, when you say, are easy, it is sending a signal that this has to

be easy.  And so, I am not sure that it comes through -- if you say,

you know, can be understood, you know.

MR. GILES:

Is there any term of art that easy -- that the easy word or there is a

replacement that would be considered a term of art we could use?

MS. GOLDEN:

Well the sentence above it used readily, so you can say the public

can readily understand and verify.

MR. MACIAS:

And I would second that -- or I would go further and say that, again,

these are the principles and guidelines, to keep that in mind, that

there will be requirements that are going to get down to the nitty-

gritty of how you must meet them.

COMMISSIONER MASTERSON:

So we have in front of us a proposed rewording that would say,

"The public can understand and verify the operations of the voting

system during pre-election setup and post-election audits."  There

was a suggestion that we could add readily understand, the public

can readily understand, if that helps clarify.  I see some heads

nodding, some not.

MS. AUGINO:

Readily is a synonym for easy, so there you go, Merriam Webster.

COMMISSIONER MASTERSON:

Or we could just say…

DR. LASKOWSKI:

I am going to add a comment, if I might.

COMMISSIONER MASTERSON:

Sure.

DR.  LASKOWSKI:

I think just saying can understand implies it is easy.  Otherwise,

they would not be able to understand it.  I think it is sufficient.

COMMISSIONER MASTERSON:

The usability expert has spoke.

[Laughter]

MS. GOLDEN:

Spoken.

COMMISSIONER MASTERSON:

Spoken, thank you.

[Laughter]

It is late in the day.  My mom is an English teacher.  Well, she did

not teach Montessori, but, yes, right.  So the suggestion from

Sharon is to keep it at, "The public can understand and verify the

operations of the voting system during pre-election setup and post-

election audits."  Does anyone object to that language?  None,

okay, go.

MR. MACIAS:

Interoperable, instead of interoperability.

COMMISSIONER MASTERSON:

Good, next.

MR. MACIAS:

"Commercial off-the-shelf devices can be used when their usage

meets applicable requirements."  Judd had mentioned other VVSG

requirements, and that was the only one I had.

COMMISSIONER MASTERSON:

Yes, so the idea here was that defining what requirements we were

talking about; that it was the applicable VVSG requirements, to

hone in exactly what we were talking about, so you could not

introduce a piece of COTS that blatantly violates some other

requirements within the VVSG.  So we would add other VVSG

requirements to show that the COTS has to be consistent with this.

MR. GILES:

We just add applicable VVSG requirements?

COMMISSIONER MASTERSON:

We would say their usage meets -- go ahead Ryan.

MR. MACIAS:

Yes, the term was to strike applicable and put, other VVSG

requirements, but it could be strike other and just have applicable

VVSG requirements.

COMMISSIONER MASTERSON:

VVSG requirements.  That is what I recommend, yes.

MR. WACK:

You could also say can be used if their usage meets applicable

requirements.

DR. LASKOWSKI:

If they meet.

MR. WACK:

If they meet, yes if they meet applicable VVSG requirements.

COMMISSIONER MASTERSON:

Okay.  So John's proposal would be "Commercial off-the-shelf

devices can be used if their usage meets applicable VVSG

requirements."

MR. MACIAS:

If they.

COMMISSIONER MASTERSON:

Okay?  If they, thank you.  Ryan if you get us all the way through,

there is a bonus.

[Laughter]

Keep going.

MR. MACIAS:

So are we good -- is everyone good with that, the "Can be used if

they meet applicable VVSG requirements?"

COMMISSIONER MASTERSON:

Yes.

MR. MACIAS:

We have the strike of the extraneous comma under principle 6.

COMMISSIONER MASTERSON:

Good, I didn't even see that.

MR. MACIAS:

So we have the bold…

COMMISSIONER MASTERSON:

Can you pull up the comment so that we can see it?

MR. MACIAS:

Yes.

COMMISSIONER MASTERSON:

I am sorry, I know it is a pain but it is important.

MR. MACIAS:

We have the bolding of the three words perceivable, operable, understandable. And there was a question as to why these were in bold and whether or not they needed to be. There was a suggestion to move them to the end of each respective sentence and put them in parentheses describing what the sentence is -- basically describing what the sentence is stating.

COMMISSIONER MASTERSON:

So this was…

DR. LASKOWSKI:

Or to just remove them.

COMMISSIONER MASTERSON:

Or to remove them. And this was Greg's comment, in which we do not do this anywhere else in the document. And the thought was, the reason it was done is because these terms are familiar to a specific community, that they are important to a specific community and so that desire was to cull them out. But they do not have to be done this way or there may be another way. So are there any thoughts on ways to do this? Or are people – Greg, specifically are you comfortable with doing it this way or do you feel strongly about making this change?

MR. RIDDLEMOSER:

I have no objection, I just had a question.

COMMISSIONER MASTERSON:

Diane?

MS. GOLDEN:

Okay, is there something intrinsically valuable about the sentence that elaborates on the principle which says, ballots and vote selections are presented in a clear, understandable way and instead are ballots and vote selections are perceivable, operable, understandable and can be marked, verified and cast by all voters? And that way you have got the words there and you take them out below.

COMMISSIONER MASTERSON:

I hear a lot of yes'ing. So the suggestion from Diane is to take the words out of the guideline portion, move them up to the principle section, such that it reads, "Ballots and vote selections are presented in a perceivable, operable, and understandable way and can be marked, verified, and cast by all voters." So that language is in there present which was important, but it is not culled out with the bolding that concerned Greg, any thoughts or objections to that?

MR. GUTHRIE:

I think there is agreement.

COMMISSIONER MASTERSON:

Okay, all right, a great compromise.  Well done Diane.  That will be on your performance review for later.

[Laughter]

MR. CHOATE:

100%  raise.

MS. GOLDEN:

Yes, zero times zero is still zero.

COMMISSIONER MASTERSON:

You cannot put a price on the improvement of Democracy.  You cannot put a price on that.

[Laughter]

Okay, next.  We are already on 8.

MS. BRADY:

8.

MR. MACIAS:

Principle 8, "The voting system and voting processes provide a robust, safe, usable, and accessible experience for all users." There was some discussion around whether this truly meant all users, everybody who interfaces with the voting system, or whether it was just strictly for the voters.  There was a suggestion to strike out users and change it to voters.

COMMISSIONER MASTERSON:

Diane?

MS. GOLDEN:

I think the suggestion is to just put a period after experience.

COMMISSIONER MASTERSON:

So it would read, "The voting system and voting process provide a robust, safe, usable, and accessible experience." Thoughts, comments, concerns on that?

All right, good, next.

MR. RIDDLEMOSER:

And then, in 8.1, having said that, wouldn't we change voters now to users? Because I would like my election officials and election administrators to also be safe from harm.

COMMISSIONER MASTERSON:

So Greg suggests a change as a reflection of the change up above in order to ensure that his workers, and otherwise, are safe would be "The voting systems hardware and accessories protect users," instead of voters, "from harmful conditions." No objection.

Go ahead Marc, microphone please.

MR. GUTHRIE:

I can go along with…

COMMISSIONER MASTERSON:

Can you use the mic? I'm sorry.

MR. GUTHRIE:

I can go along with Diane's proposal, but I just wanted to say that I thought it would sound a little more inclusive if you said, and accessible experience for all.

COMMISSIONER MASTERSON:

So the proposal would be to strike users up above. So, "The voting system and voting processes provide a robust, safe, usable, and accessible experience for all."

MR. GUTHRIE:

Is that acceptable to you, Diane?

COMMISSIONER MASTERSON:

Go ahead, Bob.

MR. GILES:

Well I guess my concern is we get back to, now, are we including poll workers and election officials? When we talk about accessible are we getting back into that ADA world of making certain aspects of it ADA compliant for somebody who is programming the election? That is my concern once you start putting that all in there.

MR. GUTHRIE:

I just guess I thought we were talking about voters.

MR. GILES:

I mean, if we need to cull out the voters, then or not, I just -- I just get concerned when we say 'all' or 'users', where somebody can interpret that a different way.

COMMISSIONER MASTERSON:

Diane?

MS. GOLDEN:

Yes, and for me, the challenge is the requirements that will fall

underneath this, and if you put all in the stem, and accessible is in

there, then you are almost forcing the requirements to include,

these are the accessibility requirements for voters, versus it is a

different set of accessibility requirements for everybody else who is

not a voter, because it really is different, in terms of setup and

behind-the-scenes and blah, blah, blah.  And I am just -- just from a

structural perspective I do not -- those are not currently in the

VVSG and they -- I do not know that they should be.  And so, that is

where the problem comes in.  So, I mean, it is not a problem,

theoretically,  in that stem.  It is just when you put requirements

underneath this that I am afraid it is going to get really complicated.

COMMISSIONER MASTERSON:

Marc?

MR. GUTHRIE:

I want to grow up and be like Diane some day, so that is fine.

[Laughter]

COMMISSIONER MASTERSON:

Do not we all?  Okay, we are good.  Keep it where it is at, ending in

experience.

Back to Greg's, "The voting systems hardware and accessories protect users from harmful conditions," not just voters, so that Greg's workers do not get electrocuted.

[Laughter]

Okay, approved.

MR. MACIAS:

So this is similar to the one that we addressed earlier, "The voting system is measured with a wide range of representative voters and poll workers, including those with and without disabilities, for effectiveness, efficiency, and satisfaction." There has been a couple suggestions. One was to move the poll workers to "after with and without disabilities," as we did earlier. And then there are two suggestions to just strike out poll workers.

COMMISSIONER MASTERSON:

Diane has a plan.

MS. GOLDEN:

And I think we have suggestion -- door number three, which is to remove poll workers from this guideline, because this is the summative usability testing for the voting system itself for voters. And then, there needs to be a separate usability -- summative usability -- I do not even know if summative is the right word, but -- yes…

DR. LASKOWSKI:

A similar guideline just for poll workers has been talked about.

MS. GOLDEN:

Yes, just for poll workers because that usability is different. It is about setup. It is not about voting, per se, it is a different -- yes.

COMMISSIONER MASTERSON:

So…

MS. GOLDEN:

So there is two different guidelines. There should be an 8.4 added. This -- you take "and poll workers" out and it reads fine. And then, there is an 8.4 that needs to be added and there is one in the existing VVSG.

COMMISSIONER MASTERSON:

Mary has language and we will give you a second here Ryan. But the suggestion is to pull out any reference to poll workers in 8.3, because this is directed at the summative usability test on behalf of voters. To add an 8.4, which Mary has language for which we will say in just a second when you are ready, that would add a usability requirement, not a summative usability test but a usability requirement for poll workers. And as it was put to me, that usability requirements intent is just that given the instructions the poll worker can set the dang thing up; that it is not un-implementable by the poll worker. And we have similar requirements currently in the VVSG, so this is not outside the box in any way, shape or form.

So let's have Mary read the proposed language and then we can do that.  Go ahead, Mary.

MS. BRADY:

Are you ready, Ryan?

MR. MACIAS:

Um-hum.

MS. BRADY:

Okay.  It is 8.4 "The voting system is measured for usability for poll workers."

COMMISSIONER MASTERSON:

Again, the intent being, you can take the documentation corresponding with the voting system and the poll worker can set it up and implement it, deploy it.  Thoughts, comments, concerns?

MR. MACIAS:

It is on the screen right here.  "The voting system is measured"

COMMISSIONER MASTERSON:

That makes it harder to read.

MR. MACIAS:

Yes.

MS. BRADY:

"Is measured for usability for poll workers."

MR. MACIAS:

Yes.

COMMISSIONER MASTERSON:

"For usability for poll workers."

MR. MACIAS:

"The voting system is measured for usability for poll workers."

COMMISSIONER MASTERSON:

So that would be 8.4, instead of falling under 8.3 summative

usability test.

MR. CHOATE:

Can we take out one of those propositional phrases, maybe say…

COMMISSIONER MASTERSON:

Microphone.

MS. BRADY:

I do not really like for and for.

COMMISSIONER MASTERSON:

Yes.

MR. CHOATE:

How about the voting system is measured for poll worker usability?

COMMISSIONER MASTERSON:

Okay.

MS. AUGINO:

I would like to ask that we refer to them as election workers instead

of poll workers.

COMMISSIONER MASTERSON:

Oh my god, she went the entire day without even quasi-referencing

vote-by-mail, so we will give her a pass.

MS. AUGINO:

It was only a quasi-reference.

COMMISSIONER MASTERSON:

It was a quasi, it was.

[Laughter]

MS. AUGINO:

But if you would like for me to talk about the merits of vote-by-mail,

I would be happy to do so.

COMMISSIONER MASTERSON:

Yes.

DR. LASKOWSKI:

A small nuance and I am not sure if it matters or not, but if you

say…

COMMISSIONER MASTERSON:

Will you turn your microphone on, I'm sorry?

DR. LASKOWSKI:

There we go.  A small nuance, I am not sure if it matters or not, but

when you parse it that way, you are not -- you do not mean election

workers themselves are usable to use as election workers.

COMMISSIONER MASTERSON:

Well, that would be quite the test.

[Laughter]

DR. LASKOWSKI:

I am not sure that matters or not, but it could be parsed that way.

COMMISSIONER MASTERSON:

That is an interesting point. Way to go, Sharon.

DR. LASKOWSKI:

But with the voting system is measured for, so is…

COMMISSIONER MASTERSON:

I think -- or tested? Why do not we just say what we are going to

be doing to it, right? You are testing it. That is what we do.

MR. MACIAS:

For the usability of election workers?

MS. GOLDEN:

No.

MR. MACIAS:

Sorry, for…

DR. LASKOWSKI:

I might use the word evaluated rather than test it, to not confuse it

with the VSTLs.

COMMISSIONER MASTERSON:

Okay you want, okay, evaluated. So the proposed language now is

"The voting system is evaluated for the usability by election

workers." Ironically, it sounds like election workers will be

evaluating the usability of the system, which they kind of will in their

own way.

MS. BRADY:

I think for the -- can we get rid of usability?

COMMISSIONER MASTERSON:

Yes, take the "the" out.

MS. BRADY:

"The."

COMMISSIONER MASTERSON:

"The voting system is evaluated for usability by election workers."

Put me put an "S" at the end, thank you. So any objection to that?

So that would be 8.4, so we are clear.

MS. BRADY:

We do not use poll worker anywhere else, do we?

COMMISSIONER MASTERSON:

We can go back and look to see if we use poll worker anywhere

else. So we will check for consistency tonight to make sure we use

election worker or election workers.

2.2. Ryan has poll workers in it and we should change it to

election workers, which will be at the end of the sentence now. 7.2,

as well? Yes, 7.2, as well, Ryan, once you get that…

MR. MACIAS:

Got it.

COMMISSIONER MASTERSON:

Take your time.  You got it?

MR. MACIAS:

Yes, I got 7.2, as well.

COMMISSIONER MASTERSON:

Okay.  So go back to 8.3, if you do not mind.  All right, so we have

removed any reference to poll workers or election workers in 8.3 to

make clear that the usability test is for voters, and then added an

8.4 that will read, "The voting system is evaluated for usability by

election workers."  Any objections or comments on that?  Okay,

cool.

DR. LASKOWSKI:

You need to back up.

MR. MACIAS:

Yes, so we need to jump back up to another one of those

grammatical errors under principle 6, voter privacy.

COMMISSIONER MASTERSON:

We do not go back, Ryan.

MR. MACIAS:

I know.  We have, "Voters can mark their ballot and verify and cast

their vote selections privately and independently."  There was a

suggestion to put a comma after ballot and strike and.

COMMISSIONER MASTERSON:

So it will read, "Voters can mark their ballot, verify, and cast their vote selections privately and independently." Is that correct? Go ahead, Lori.

MS. AUGINO:

I think it would read appropriately, if it is "Voters can mark their ballot, verify, and cast their vote selections privately and independently."

MR. RIDDLEMOSER:

Same problem in 6.2.

COMMISSIONER MASTERSON:

So, yes, we will fix it in 6.2, as well.

DR. LASKOWSKI:

Well, I think that we didn't have a comma after -- you want verify and cast together because they are…

MS. AUGINO:

No, "Voters can mark their ballot, verify, and cast their vote selections privately and independently."

DR. LASKOWSKI:

So what are they verifying? They are verifying their…

COMMISSIONER MASTERSON:

Their marked…

DR. LASKOWSKI:

…vote selections, right? So verify and cast goes together.

COMMISSIONER MASTERSON:

The idea -- well, for what it is worth, the idea is still the same. They

are verifying their marked ballot, or whatever, and their cast -- their

vote selection is part of it. Do you have any thoughts on that?

DR. LASKOWSKI:

Yes, that is fine. That is fine.

MS. GOLDEN:

No.

COMMISSIONER MASTERSON:

No? Okay.

MS. GOLDEN:

Yes, I understand that for those people that want to parse out the

difference between the ballot -- everything on the ballot and just the

ballot selections. That is what this is getting to for all of those

systems that want to verify just the selected parts of the ballot, not

the whole ballot. Do you see what I am saying? So that is why the

voters can mark their ballot. That is the whole ballot. Verify and

cast their vote selections, it is -- the verify and cast goes with the

vote selections which may not be the entire ballot. It is just the vote

selections. Now, I mean, technically, I think you could probably

eliminate "mark their ballot," I mean, because they are marking their

selections. I mean, when you are marking, you are selecting your

selections.  I do not know that it is all that critical that you could not just say "voters can mark, verify, and cast their vote selections."

COMMISSIONER MASTERSON:

The simplicity -- I mean, let's get that down and make sure that that does not change anything in your mind.

DR. LASKOWSKI:

But you are not necessarily marking the vote selections, I do not know.

MS. GOLDEN:

Well…

COMMISSIONER MASTERSON:

Voters can mark, verify, and cast their ballot privately and independently?

MS. GOLDEN:

Works for me, too, you know.  It is just I know -- I know people get all hung up about the whole ballot versus just my selections.  Okay, whatever, anyway.  That is why this is…

COMMISSIONER MASTERSON:

Well and we do not have to define what the ballot is because that is going to depend…

MS. GOLDEN:

Yes.

COMMISSIONER MASTERSON:

But -- so "Voters can mark, verify, and cast their ballot privately and independently."

MS. GOLDEN:

Yes.

COMMISSIONER MASTERSON:

Any objection to that?  Good work, good work.

DR. LASKOWSKI:

6.2 has to be changed, too.

COMMISSIONER MASTERSON:

Who says you cannot wordsmith on the fly?

DR. LASKOWSKI:

6.2, too, has the same…

COMMISSIONER MASTERSON:

Yes.

DR. LASKOWSKI:

…verbiage.

COMMISSIONER MASTERSON:

We need to make 6.2 consistent, as well.

MS. GOLDEN:

And this is sort of unrelated, but we did have some discussion, Sharon and I, and internally within NIST, about 6.2 and, I mean, it seems clear to me what independent means, but apparently, that is not all that clear to everyone.  So, you know, without assistance

from others, you know, yes, or the expectation that you have magic

toes or something which seems to be -- anyway long story that, you

know, someone without hands, well, I just assumed you could, you

know, mark your ballot with your feet.  Well, no, that is not exactly

what we mean either.  So, I do not, it is very difficult to come up

with enough words to -- but that is, yes, the best we could do.

COMMISSIONER MASTERSON:

I think it is clear.  And when you are ready Ryan, we will go to 8.3.4

and, actually, to auditability.

MS. GOLDEN:

Auditable.

COMMISSIONER MASTERSON:

Auditable, excuse me, we changed that.

[Laughter]

COMMISSIONER MASTERSON:

So, the first suggestion is to change auditbility to auditable.  Any

objection to that?

Okay, all right, this may be our first longer discussion.  So a

concern was raised -- well go ahead, Ryan, walk through it and

then let's see if I can summarize.

MR. MACIAS:

"An undetected error or fault in the voting system software or

hardware cannot cause an undetectable change in election results."

McDermot raised, is the first undetected necessary. Diane brought

up the initial saying about a double negative, you know, having

cannot and undetected, undetectable, and I was trying to wordsmith

on the fly down at the bottom. So there is a suggestion down there,

but that is mine.

COMMISSIONER MASTERSON:

So the concern raised was the double negative nature in this,

whether it was necessary or not. Josh raised, I think, during the

discussion that this definition is the definition commonly understood

as software independence in all -- you know, in the original SI

document as well as in the proposed, what, 2007 VVSG, I believe,

the same language was in there that was passed by the TGDC

then. And so, the question is do we want to touch the software

independence definition? And, if so, how would we clear it up? So

Ryan has proposed language in there that we can either entertain

or not that says, "The voting system software and hardware must

be able to detect all errors or faults in the voting system that can

change the election results." I do not -- it is up to you all to decide

whether that captures the same idea as "an undetected error or

fault in the voting system software or hardware cannot cause an

undetectable change in election results. " So David, I think I will kick

to you first to see if you have any thoughts on changing the

definition, not changing the definition and thoughts on that.

MR. WAGNER:

Yes, the background is this is taken from a paper that then analyzes it in depth and it has been pretty vetted by the security community, so I think there is a lot of comfort with this language. So the more we get into the larger the changes then the more concern I would have that I think we would probably want to take it back to that group and give them a chance to find out if we did something dumb. So it is not something to change lightly. I think the suggestion to remove undetected, the second word that is fine, if that reduces some of the double negativeness. I understand the suggestion is to change the later part. I think it is a little tricky to figure out how to do that. If we do that, we end up with something that is more wordy and longer because the kind of -- what we are trying to convey here is that it might not cause any change in the election results, and that is okay, or if it does cause a change in the election results then that has to be detected. So that is what is trying to get conveyed by this. So if we tried to spell that out, we might end up with something wordier. I am not entirely sold on Ryan's proposal. It is not horrible, but it maybe gets at a little bit a slightly different nuance.

[Laughter]

Wow that was really faint praise, wasn't it? I am sorry, Ryan.

MR. MACIAS:

No, I actually agree. It was an amalgamation of what a lot of people were throwing out in trying to…

COMMISSIONER MASTERSON:

Right.

MR. MACIAS:

…basically make it a positive. And, as Greg pointed out, by making it a positive, it actually may hinder. So…

MR. WAGNER:

Right, yes, it is a plausible attempt. The part that I am not -- that I have a little bit of hesitation about is that there is a nuance between do we want to detect the original error or fault, or do we want to detect the change in the election results? And what we are saying for software independence is, it is enough to be able to detect the change in the results. We do not need to require that you also pinpoint, oh, it was, you know, that line of code, or exactly what the source of responsibility was. That is not a requirement to meet the software independence. So it kind of, maybe, changes the meaning a little and potentially could be viewed as making it stronger to the point where maybe it is harder to meet. So my inclination would be to leave it alone, or if you prefer to remove the word undetected. But I am more hesitant to change the later parts of the sentence.

COMMISSIONER MASTERSON:

Diane and then Lori.  Did you -- oh I thought I saw you -- Lori.

MS. AUGINO:

I think you have gracefully recovered from…

MS. GOLDEN:

I was just going to use the same thing.  I was going to say that was not very graceful is what he is saying.  That is exactly where I was going.

[Laughter]

MR. MACIAS:

Do not worry my code was not very robust.

[Laughter]

COMMISSIONER MASTERSON:

This is not good.

MS. AUGINO:

I would support leaving it as is.  And I appreciate the background.

COMMISSIONER MASTERSON:

Okay, so there is a proposal to leave it as is.  Any objection to that?

MR. CHOATE:

Can you just clarify, this is in 1.0, or it is not in 1.0?

COMMISSIONER MASTERSON:

No, it is not in 1.0 or 1.1.  It was a part of the 2007 TGDC recommended guidelines that went out for public comment back

then, but were never implemented.  Portions of them were used to

make 1.1, but this was not included as part of that.

MR. COUTTS:

If we are planning on keeping it as is, it might make sense to

reference the source of the statement in the VVSG to provide a

larger context to it.

COMMISSIONER MASTERSON:

Yes, so I think that is a good suggestion.  I think that perhaps the

way to handle it, to go back, is in creating a white paper between

the security group and the usability/accessibility group,  just on

software independence alone, will reference that history, which I

think will be important, and then we can refer to that.  I just hesitate

to add a footnote because we have a footnote nowhere else in this

entire document on that.  But I think there is, again, through the

education and work that the accessibility/usability group and the

security working group can do in the requirements development

and education, that is part of it, to understand that history.

MS. GOLDEN:

And I was going to say almost the opposite, perhaps, just because

for me, at least, there is so much baggage -- and I am just being

brutally honest -- there is so much baggage -- I would prefer this

never be associated with the term software independence, because

there is so much baggage around that term, and it means so many

different things to different people as -- I would say, if you look at the folks sitting in this room, it means very -- they already have something in their mind about what is they have to stop doing or they have to start doing because of software independence. And yet, I do not think we have any unanimity on what that actually means or does not mean. And that is -- I mean, that is my biggest concern. I would just like -- I would like to do exactly the opposite say but we do not mean whatever you think software independence is for this. We are going to tell you what it means later, but do not use your preconceived ideas. Anyway…

MR. GILES:

Is this where the end-to-end cryptograph comes in? Like this is where I am getting a little confused when you say an undetected error does not change the results. So, if you do not have paper, are you saying that that is possible?

COMMISSIONER MASTERSON:

So, I think his question, and tell me if I am wrong, I think Bob's question is understanding that end-to-end encrypted voting systems, as proposed, or thought about, would not contain a paper record but would have a way to detect or to, what, to detect a change in the election results, correct?

MR. GILES:

That is exactly right, yes.

COMMISSIONER MASTERSON:

And to be clear, and we can perhaps discuss this more tomorrow as part of the conversation, the reason that this is technologically neutral, at least as discussed, and Josh and David, please weigh in the security working group, is to allow for folks to come up with ways to meet it that may include paper, right, or may not, but not to lock into one. Because that was part of the discussion in the security/accessibility discussion is that this is not a paper mandate, per se, that there may be other ways to do this. Is that correct?

MR. GILES:

And that is exactly what I was getting at, that this does not lock us into paper if technology gets us to a point where we do not need paper to do what you are asking.

COMMISSIONER MASTERSON:

Okay. So the proposal on the table is to not touch this definition as it is understood, although David is open to removing the first undetected if it is important to folks for clarity.

MR. CHOATE:

Okay, so I am the rookie. As Neal said, I am ninth inning. But sort of, is it necessary? I am looking at 9.2, 9.3, 9.4, seems like it covers a lot of the various things which might encompass 9.1. Do we really even need that language? And it is going to give us -- it is going to get us into a big quagmire

COMMISSIONER MASTERSON:

So the question from Judd, which it is not ninth inning, but it was

discussed, what, two meetings ago, the importance to the security

working group on why this is important. And essentially -- and

David and Josh, I am trying to summarize the thought -- having this

guideline in there allowed the security working group to move

forward, what, with more flexibility as they viewed other security

requirements; that there would have been a need to add quite a bit

more security wise, that software independence brought a robust

level of auditing and verifiability necessary to do that, that 9.2,, 9.3.

and 9.4. Did I -- is that correct?

MR. WAGNER:

Yes, that is correct. 9.1 is essential I think.

COMMISSIONER MASTERSON:

And, again, if we want to revisit that tomorrow we can have that

discussion as part of it.

MR. GILES:

So you are talking about getting rid of the first undetected, an

undetected error or fault?

COMMISSIONER MASTERSON:

That was a proposal, is to say "An error or fault in the voting system

software or hardware cannot cause an undetectable change in the

election results."

MR. GUTHRIE:

Yes, because an undetected error means we never found it.  So I

am kind of -- yes, that is where I am…

COMMISSIONER MASTERSON:

Go ahead, David.

MR. WAGNER:

I completely agree it would be fine to remove the word undetected.

That is perfectly fine if anybody would prefer to do that.

COMMISSIONER MASTERSON:

Any objection or thought on that?  Okay.

MR. MACIAS:

So we are deleting the first undetected, so it reads "An error or

fault…"

COMMISSIONER MASTERSON:

Yes, "An error or fault in the voting system software or hardware

cannot cause an undetectable change in the election results."

Okay, next.

MR. MACIAS:

All right.

COMMISSIONER MASTERSON:

Wait, hold on one second.  So it is 5:00.  So we could either finish

out this section, and I am not sure what remains, or we can adjourn

and take back up at 9.2 tomorrow.  And I am not sure the level -- go

ahead.

MR. MACIAS:

I was just going to add, the only one left -- 9.2 was a question that

was not fully addressed, which Neal had asked whether 9.2 was in

1.0 or not.  We did a search and it was not in 1.0 or 1.1.  It is a new

requirement.  But there was no change to the language or no

suggested change at that time.

COMMISSIONER MASTERSON:

Do you want a discussion on that?  Go ahead.

MR. KELLEY:

So just do it now or do you want to…

COMMISSIONER MASTERSON:

Well, we could do -- why do not we pick up on 9.2 tomorrow so that

we can look at that?  So, tomorrow.

MR. GILES:

So, my only concern waiting until tomorrow is if we only have a half

a day and we get hung up for awhile, by the time we get a clean

copy back to look at…

COMMISSIONER MASTERSON:

We can keep going.  I am open to that, too.

MR. GILES:

I am fine with keep -- I would rather finish this tonight, so we show

up tomorrow with a clean copy in front of us ready to go…

COMMISSIONER MASTERSON:

Okay.

MR. GILES:

…and have a two-hour discussion on that so we are ready.

COMMISSIONER MASTERSON:

Does anyone have objection to continuing through besides the

audience who does not get a vote…

[Laughter]

…but has the option to leave.

MR. MACIAS:

Can I first and Josh second?

COMMISSIONER MASTERSON:

What?

[Laughter]

You do not have the option to leave either.  Marc, go ahead.

Microphone, please.  Oh you got it.

MR. GUTHRIE:

Yes, I just -- I have a question, you are going to shoot me for this,

regarding 3.3.  And I can do it in the morning if you want.

COMMISSIONER MASTERSON:

Let's -- so save it and we will come back around to it when we finish the other ones, if that is okay, but we will come back to 3.3.

MR. GUTHRIE:

Thank you.

COMMISSIONER MASTERSON:

So let's do 9.2, and Neal, if you want to engage that discussion.

MR. KELLEY:

So the concern that I have with that is there are instances and there are systems currently on the market today where you can definitely detect that or figure those problems out, but sometimes without -- you have to have the help of the vendor or you have to have assistance in the extract or how you are going to get that data. So my concern is that again leaves that open to continuing down that path for manufacturing those…

COMMISSIONER MASTERSON:

So if I am understanding your concern, what you would like to see reflected in here or reflected in a corresponding requirement, if not in here, is the clear indication that it cannot be dependent -- vendor dependent to be able to get that information, that it just needs to be available. Is that correct?

MR. KELLEY:

Correct.

MR. MACIAS:

And would that be handled in the interoperability section where --
no?

COMMISSIONER MASTERSON:

Do we know that?   Yes, you just passed it.  I think we already did
it.  All right, let's read…

MR. MACIAS:

I was thinking the publicly available format.

MR. KELLEY:

I do not think that does it.

COMMISSIONER MASTERSON:

Neal does not think it does, so let's scroll back down.  So you would
like to see -- so let's ask ourselves the question, so you would like
to make sure it is clear that you, as an election official, can get the
data yourself without needing the manufacturer to be able to do this
step.  Is that correct?

MR. KELLEY:

Correct, by any user, by the user of the system.  There is words I
am sure that…

COMMISSIONER MASTERSON:

Yes, so "The voting system produces records that provide the
ability to check whether the election outcome is correct and, to the
extent possible, identify the root cause of any irregularities."  Go
ahead Lori.

MS. AUGINO:

So election officials have access to those records that provide the

ability to check whether, blah, blah, blah.

COMMISSIONER MASTERSON:

So you would say the voting system…

MS. AUGINO:

Start by saying the election official has access.  So starting with

who has access to that information.

COMMISSIONER MASTERSON:

So the election official has access to records that provide the ability

to check whether.

MS. AUGINO:

Or the election official can produce records through the system that

provide the ability to check whether the election outcome is correct

and, to the extent possible, identify the root cause of any

irregularities.

COMMISSIONER MASTERSON:

Linda?

MS. LAMONE:

I do not like the…

COMMISSIONER MASTERSON:

Microphone please.

MS. LAMONE:

It is on.  I do not like the use of election officials because you now

amended poll workers to be election officials and I do not think we

want our poll workers to have access to…

COMMISSIONER MASTERSON:

We had election worker, right.

MS. LAMONE:

Election workers.

MR. GILES:

What if we use -- because we talk about it in 14.4, an administrator.

We use language referring to an administrator.  I do not know if that

is an election administrator versus a worker or official.  I am just

saying, because we use administrator in 14.4.

MR. WACK:

Then there is an easier way to put administrator in.  The voting

system produces records that provide an administrator the ability to

check.

COMMISSIONER MASTERSON:

Whoa, there we go.

MR. GILES:

Yes.

COMMISSIONER MASTERSON:

Look at you, "The voting system produces records that provide the

ability for an administrator to check whether the election outcome is

correct and, to the extent possible, identify the root cause of any

irregularities." Is that what you are proposing?

MR. GILES:

That ties right into 14.4.

MS. GOLDEN:

Yes.

MR. GILES:

Because that says "Software updates are authorized by an

administrator prior to installation." So…

MS. GOLDEN:

You can put an administrator before that, provide an administrator

the…

COMMISSIONER MASTERSON:

Provide, yes, cool.

MS. GOLDEN:

Yes.

MR. CHOATE:

David has a comment, Matt.

COMMISSIONER MASTERSON:

Go ahead David.

MR. WAGNER:

I am thinking out loud. I wonder if we might consider door two,

which is instead of trying to say, for an administrator, instead insert

a clause without vendor assistance.  So in other words maybe it is -

- after is correct without vendor assistance.

COMMISSIONER MASTERSON:

Okay, so the voting…

MR. WAGNER:

Because I think that was the essence of what you are getting at.

COMMISSIONER MASTERSON:

So the proposal from David – Ryan, will you move the box out of

the way just a little bit?  The proposal from David, instead of adding

in administrator the ability to, is to add, without vendor assistance,

where did you say?  I am sorry.

MS. GOLDEN:

You can put it after records just as a…

MR. WAGNER:

We could discuss where.

MS. GOLDEN:

Voting system produces records without vendor assistance…

COMMISSIONER MASTERSON:

Okay, so…

MS. GOLDEN:

…the provide the ability to…

COMMISSIONER MASTERSON:

The voting system produces records without vendor assistance that provide the ability to.

MR. WAGNER:

I would probably put it after to check…

COMMISSIONER MASTERSON:

Okay.

MR. WAGNER:

…or after is correct.  I do not know how others feel.

COMMISSIONER MASTERSON:

So "The voting system produces records that provide the ability to check without vendor assistance whether the election outcome is correct."

MS. GOLDEN:

Well, then it is modifying the checking, not the records, you know.  What -- you want the system to produce the records without vendor assistance, not check the, you know, results or -- yes.

COMMISSIONER MASTERSON:

What if we said, without vendor assistance the voting system produces records?  What if you said, I mean, not we.

MR. COUTTS:

Speaking as a guy who is going to have to actually build this, I can see providing those records, but there are certain places where state statutes prevent their use.

COMMISSIONER MASTERSON:

So…

MR. COUTTS:

Is that a problem?

COMMISSIONER MASTERSON:

I would leave that question open to others, but I think the idea is states and locals would still follow their own statutes, but where someone like Neal Kelley would like to be able to get at those records and it is allowable, he is able to do so without vendor assistance.

MR. GILES:

But, I guess my concern is how far do you have to take that? Because sometimes you have to look at the backend and you have to dig way deeper than any of us could possibly do, and I do not think you could generate a report necessarily to find that stuff. So I am not quite sure now that we are getting deeper into what specifically you want it to do.

MR. KELLEY:

Well, that is a very open ended question, right, and it is a valid question. But, I mean, there is certain circumstances today in the audit world that I have dealt with where it has been difficult to pull, I think, basic reports. And I do not want to get into the very specifics of that here, but I think that like in the other areas where we have

made it a little bit broad, can we do that without getting down into

the specifics and have a broad statement?  I think that covers it if

you are saying that, you know.

MR. GILES:

Yes, I mean, if it is just I guess basic auditing type stuff, yes, then I

-- yes.

MR. KELLEY:

Yes, which is why, under the auditability part of it…

MR. GILES:

Got you.

COMMISSIONER MASTERSON:

Yes, keep in mind we are talking about auditable -- the auditable

section, right?  We are not talking about everything.  And, I mean,

again, even though it is not clear in the inoperability section, there

are system logging data formats now being developed, and what

not, that will help support this very notion, so that someone like

Neal can parse his own logs and do the kind of auditing that he is

looking to do.

MR. COUTTS:

Well, that is in the current 1.1 where you need to provide analytics

against that.  I guess the point I would make is that, hopefully, you

have the tools already in your system that allows you to detect an

irregularity. But there will be situations where the root cause will
require vendor assistance.

MR. KELLEY:

No, I recognize that. And I am not trying to get down into those
weeds and, plus, I do not want to cull out anything very specific
here with respect to this. I am just trying to give something with a
very generic language where we do not hit the basic roadblocks.
That is what I am concerned about.

MS. GOLDEN:

And I do not know if this helps or is even worse, but you could fall
back on your readily available words, the voting system produces
readily available records.

COMMISSIONER MASTERSON:

So that is similar, my recollection, to what is in the VVSG, currently,
as far as the need to have readily available logs or whatever else,
and actually came up, because at least one older voting system
prints on a dot matrix printer the logs, and it is hundreds and
hundreds of pages. So that is another option. So let's first
entertain this option and then we can try that one if there is -- so
right now it would read, "Without manufacturer assistance the
voting system produces records that provide the ability to check
whether the election outcome is correct and, to the extent possible,
identify the root cause of any irregularities."

MR. RIDDLEMOSER:

Mr. Chairman, I am some having problems with this from the idea

that there are localities, and indeed, states, that do almost

everything they do through vendor support.  And to cull out this one

point out of all of the 15, and all of the sub-bullets, to say without

vendor support is interesting to me and a little bit unnecessary,

because this almost smacks of saying that you must buy the

management support software that comes with your manufacturer's

proprietary equipment.  I do not want to buy the election

management software that comes with my vendor's proprietary

equipment.  If I find myself in this kind of environment, yes, I want

the machine to make those records and have the log files and all of

those kinds of things, but I want the vendor assistance, if you will,

to do some of the reports and other things like that.  So, what

reports were in the management package that I was forced to buy,

versus what reports were in the management package that is only

available at the vendor level, et cetera, et cetera, et cetera, so I am

totally opposed to adding vendor at this level.

MR. KELLEY:

What you are doing is culling out an exclusion for yourself then, as

well.  I mean, I am not trying to say that it should be one way or the

other.  I am just trying to have something that is in the middle and if

we take out the manufacturer, the vendor piece, I want the ability to

be able to pull that out as an election official on my own.

MR. GILES:

Do we go back to administrator then? Instead of culling out vendor,

to say an administrator will have the ability?

COMMISSIONER MASTERSON:

Sure, so two things quickly. One is, we have a hard stop at 5:30,

because of closed captioning services.

MR. GILES:

Okay.

COMMISSIONER MASTERSON:

And so, let's keep that in mind, which does not mean we need to

rush through, but let's keep that in mind, 15 minutes. And two,

perhaps the way to solve that so you are not culling out any one

individual, because to Neal's point, it is not a requirement that you

not use the vendor. You could certainly choose to use the vendor if

you wanted to, but you could choose not to, is just to make them

readily available, and whether you choose to use the vendor or not,

they are readily available to you. Is that something that this group

would entertain? So we are not culling out a specific group of

people, but instead, just saying the voting system produces readily

available records that provide. And that is similar to the language

that exists now in the VVSG. Any objection, Neal?

MR. KELLEY:

No, I am good.

COMMISSIONER MASTERSON:

Good?

MR. CHOATE:

So not to go back to ten minutes ago, but I think the voting system produces records that provide the administrator the ability to check, blah, blah, blah. It gets you exactly where Greg wants to go and where Neal wants to go.

COMMISSIONER MASTERSON:

Okay. So Judd's proposal is, the voting system produces records that provide the administrator the ability. Any objection to that? Is there a preference, one being readily available, one being the administrator?

MR. COUTTS:

I like them both.

COMMISSIONER MASTERSON:

We can make it both.

MR. GILES:

Because if you do not put administrator, they could say it is available, but you have to get it through me.

COMMISSIONER MASTERSON:

Okay. So this would read "The voting system produces readily available records that provide the administrator the ability to check."

So we are doing both. Any objection to that?

MR. COUTTS:

No.

COMMISSIONER MASTERSON:

Okay, Ryan, you got that pal? Ready available records…

MR. MACIAS:

Records that provide the administrator…

COMMISSIONER MASTERSON:

Yes, the ability…

MR. MACIAS:

...the ability…

COMMISSIONER MASTERSON:

…to check.

MR. KELLEY:

Or an administrator.

COMMISSIONER MASTERSTON:

Or an administrator, if there is multiple.

MR. MACIAS:

All right, let me…

MR. GILES:

David has…

COMMISSIONER MASTERSON:

Yes, David.

MR. WAGNER:

I feel like I am being problematic here, so you are welcome to tell me to set this aside.

There is a little bit of hesitancy that I want to air, and may not be valid, which is, by adding for the administrator, it adds an implication that is is only for the administrator, which could then lead to systems that prevent you from -- one of the goals is we would like to enable the election administrators to hold a public audit to convince people the election result was correct. And so, by adding the for an administrator, I am wondering if it could lead to a situation where the voting system -- we are not highlighting that we want the voting system to be able to support that; that the voting system might only allow an administrator, but it is not something that anyone else could observe, that you could show to anyone else.

MR. GILES:

I think the point was that you do not have to go to the vendor to say, hey, can you generate these reports for me? I want -- as an administrator I want to do it, so if I want to have a public meeting or public hearing on it, I can do it without relying on a vendor. I think that is where this is coming from.

MR. WAGNER:

Right I understand the goal and the goal is not a problem.

MR. GILES:

Yes.

MR. WAGNER:

It is the unintended consequences of the language might end up

meaning that the records now have information in them that can

only be -- that cannot be shared with the public, it does not highlight

that -- I mean, it just gives a different emphasis that now suggests

that it is only for the administrator's consumption, and so, therefore,

it might limit your ability to then take that and go do…

MR. GILES:

Right, I guess right now it is still -- I guess to Neal's point, I do not

want to speak for him, but it only exists now if you ask a vendor for

it.  So this at least gets it to the level of the administrator.  So I am

not sure that we have to say it is for election workers.  I do not

know that we -- I would want to give those rights out below an

administrator level.  Is that what you are getting at?  I am not quite

sure.

MR. WAGNER:

What I am getting at is that I think that part of the purpose of the

auditability is transparency, to enable not only you as election

officials to know that the election results were correct, but to be

able to convince the public of that fact.  And so, the -- for

administrators maybe tilts the seesaw a little bit towards only the

end point of allowing election officials to verify without allowing any

kind of transparency or for the public, could lead to records that

cannot be consumed by the public, because maybe they have

information that would violate ballot secrecy or something like that.

It is maybe a nuance, a shift in emphasis.

COMMISSIONER MASTERSON:

So let me see if I can offer at least a different way, but I think your

suggestion is valid.  But what this allows, or would allow, is to

empower the election official to support that level of transparency

that you are looking for, that currently is not as supportable as it

should be.  And so, there is not a scenario in which, I do not think,

but please tell me if I am wrong, in which you would want the voting

system to produce these records without an administrator deciding

to produce them, so like just pumping them out, right?  And so, the

idea here is it is empowering the administrator to produce this

evidence-based elections to show the public what is there, instead

of having to rely on a third party to do so.  And so, I see what you

are saying and I am trying to think of a way to capture what you are

saying, because I understand by putting administrator it seems like

it is limiting, but what it is actually doing is empowering the kind of

thing that you would like to see as opposed to what may or may not

go on now. Does that make sense? Mr. Tatum?

MR. TATUM:

I think whether -- I cannot determine whether he is asking if the

data that is being displayed is proprietary. So he is asking about

the data that is being displayed versus the function -- are you

asking about the functionality of the system?

MR. WAGNER:

I was not actually asking. I was more saying that this change, while

accomplishing one good thing, may have an unintended side effect

of maybe losing something, having a downside to it.

COMMISSIONER MASTERSON:

Diane?

MS. GOLDEN:

So I am going back now to the statement as it reads and I think

what I am hearing David Wagner say is that perhaps the

interpretation of the original statement is the voting system

produces publicly available records that provide the ability to check

whether, blah, blah, bah. And I am not saying -- but I am just

saying, with it not specifying any of that, I think what he is saying is

there may be some people who were assuming that, and we are

going in a completely different direction. I mean, when you read it

the voting system produces records, it does not say for whom or

how, so on one end that could be records that are publicly posted. On the other end, it could be records that you can only get to with a special run by the vendor. So I think that is where all of this confusion is coming from because it just says it produces records, not for who or how or when or why.

COMMISSIONER MASTERSON:

So -- and I think the reason for that, right, wrong or indifferent, again not arguing one way or the other, is because that is largely dependent on state laws and otherwise whether or not that data is or is not public. And so the VVSG cannot dictate what is or is not publicly available, because that is going to depend largely on state laws. But the idea is to the extent it is allowable under those laws, an administrator should have the ability to get that data and share it with the public if that is what is allowed. But David I do not -- I want to not put the focus on the administrator because I hear your point, as well, that you do not want to exclude the public from that data if it is allowed to be made available.

MR. KELLEY:

So, David, you and I actually are on the exact same page, and give me a way to do that without being locked out in any way, shape or form. That is what I am asking. And if there is a way to make that language different, I am all for it. So…

MS. AUGINO:

Can I suggest we go back and look at the original way that – well, one of the original ways, in which we phrased that, by keeping it readily available, taking out administrator  I think by making it readily available gets you to where you want to go, and ultimately could get more publicly available audit information available, as well.

COMMISSIONER MASTERSON:

So the suggestion on the table is to remove the administrator part that we had proposed before and simply read, "The voting system produces readily available records that provide the ability to check whether" and removes the administrator function.  One, are people okay with that?  And David does that address your concern by not identifying specifically who those records would be for?

MR. WAGNER:

Yes, it absolutely addresses my concern.  Does it address your concern Neal?

MR. KELLEY:

I think so, because I think the language readily helps to provide a different set of documents that we might not have access today or records, right?  So -- and it is broad enough, like everything else in this document, that it can be interpreted in a different way.

COMMISSIONER MASTERSON:

Right, so as currently written, it would read, "The voting system

produces readily available records that provide the ability to check

whether the election outcome is correct and, to the extent possible,

identify the root cause of any irregularities. "

Okay, next. And I will say we got a reprieve from the 5:30

number, but that does not mean we should take until eight. So the

more efficiently -- but I mean, the discussion is important. That one

was very important.

So, next one Ryan.

MR. MACIAS:

"The voting system supports efficient audits." The suggestion from

McDermot was to change the word efficient to usable.

COMMISSIONER MASTERSON:

So it would read, "The voting system supports usable audits"

instead of efficient. Thoughts or objections?

MR. WAGNER:

I feel that that is more than a wordsmithing change. That is a

substantive change about what this is actually saying. And this is

an interesting principle, so maybe this is a longer discussion. If we

need to leave at 5:30, maybe it would make sense to go through

the other things where we can make progress. I think that the

working group was, with efficient, they were envisioning the audit

process talked about cost or time. That, in other words, that it is

not an incredible burden to construct the audit. So, rather than what I would normally think of as like usability, like good usability practices per se. Of course, cost or time could be considered an element of usability. So, I do not know whether you want to have a discussion on this now or whether you want to move onto the other ones that...

COMMISSIONER MASTERSON:

Well, let's give it a run and we will see how strong the objection is. But I think what I hear you saying is within the working group, and both Josh and David weigh in, there was a discussion around supporting essentially more efficient auditing, risk limiting audits, other techniques that the system could help support those. Is that correct? And that is different than usable certainly. So McDermot, I do not know if you want to respond to that as you are the one that raised it.

MR. COUTTS:

I do not have an objection of it as long as we can come up with a method by which we can test and measure efficiency. And that is, ultimately, my concern.

COMMISSIONER MASTERSON:

Josh?

MR. FRANKLIN:

I mean, yes, audits that can be performed in a timely manner, I do

not know, something like that.

MR. CHOATE:

What if we went to something like various types of audits, too

loose?

MR. WAGNER:

I think that gets to something different.  I -- and I agree with

McDermot, we do need a way to measure that, yes, so -- and this is

one of the challenge of doing this without the requirements in front

of you.  So I think that that is something that has to -- to the extent

that is backed up by the requirements, they have to be measurable.

It is just not negotiable.  They have to be measurable.

COMMISSIONER MASTERSON:

Yes, my thought on that, and just thinking is as the requirements

are written, there is a certain understanding about what efficient

audits would look like per se, so an inefficient audit would involve

pulling every single ballot in the entire jurisdiction, one by one,

right?  That would be pretty inefficient versus finding statistical

ways to pull certain numbers of ballots.  That is just an example of

a way to conduct it.  So I think that can be handled in the

requirements development process as you look at efficient auditing

practices that, quite frankly, some are still in development and you

do not want to box out newer ones that may come.  I mean, we

may reach a level of efficiency with auditing where only a handful
have to be viewed or pulled.

MS. BRADY:

But I think, you know, an important point here is not the audit itself,
but being able to being produce the data that is going to be used in
the audit.

COMMISSIONER MASTERSON:

That is a good point, to support the audit.

I mean, if you wanted a modifier, McDermot, to help reign in
where the requirements would go, you could, in theory -- do not
type this yet because I am off the top of my head, who knows
where it will go -- the voting system supports efficient and
something to the effect of and time and cost audits, or something
like, that to capture what we mean by efficiency, to narrow in what
we mean by efficiency.  I do not know that that brings anything to
the table.  We have never measured cost as part of the VVSG.
That would be an interesting new one and kind of ugly but -- or just
time.

MR. GILES:

Because, time, then you can say, you know, all , if it is 30 hours
times "X" number of dollars, you can figure that out later.

COMMISSIONER MASTERSON:

So you could say the voting system supports time efficient audits.

MR. COUTTS:

That helps.

COMMISSIONER MASTERSON:

David or Josh do you have thoughts, concerns about that?

MR. FRANKLIN:

That just sounds weird to my ear.

COMMISSIONER MASTERSON:

Yes, that is fair enough.

MR. FRANKLIN:

The -- voting system supports efficient audits that can be performed

in a timely manner.

COMMISSIONER MASTERSON:

Timely manner that is great.  So it would read "The voting system

supports efficient audits that can be…

MR. FRANKLIN:

Performed in a timely manner.

COMMISSIONER.MASTERSON:

…performed in a timely manner."

MR. RIDDLEMOSER:

So it does not support inefficient audits that are slow and

cumbersome?

MR. FRANKLIN:

What was the proposal? Sorry?

MR. RIDDLEMOSER:

I was being flip.

MR. FRANKLIN:

Oh.

COMMISSIONER MASTERSON:

I do not know if anyone has noticed, by the way, but being a federal building, the air conditioner goes off at 5:00, so we are also -- this is quickly becoming some sort of torture that is being conducted.

[Laughter]

MR. GILES:

It forces us to agree.

COMMISSIONER MASTERSON:

This was not a technique.  This was not…

MR. FRANKLIN     :

Let's just remove the word efficient.  So it is "The voting system supports audits that can be performed in a timely manner."   I am in a jacket here, so…

COMMISSIONER MASTERSON:

Yes.  All right, so it would read "The voting system supports audits that can be performed in a timely manner. " David does that -- I want to make sure we capture what the working group was attempting to do.

MR. RIDDLEMOSER:

Yes, that sounds good.

MR. WAGNER:

But it is really the case that efficient, isn't efficient the code work for a risk limiting audit?

MR. FRANKLIN:

Not necessarily.

MR. WAGNER:

It is not?

COMMISSIONER MASTERSON:

I want to -- I do not think so, no.  I think there are various types of audits, including risk limiting audits that this envisioned, but I do not think it -- I mean, you all were part of the larger discussions, so please speak.  I do not think it envisioned just one auditing type, I do not.  Is that correct?

MR. WAGNER:

I would agree with that is how I would interpret it, what I think would be reasonable.  I cannot tell you that all members of the security community feel that way.  There are some members of the working group who would like to see a requirement, that says that it has to be risk limiting, but I view efficient as, you know, in a timely manner.  For instance, an example of inefficient would be a complete recount.

MR. CHOATE:

So I do not read it -- I read it as a -- your system has to produce the data necessary for somebody to do a risk limiting audit. It does not foreclose doing other kinds of audits because that -- those other kinds of audits largely do not need data to complete. So that is why the -- so that is why its current language with efficient was fine with me, but whatever.

COMMISSIONER MASTERSON:

Lori?

MS. AUGINO:

I am good with the efficient language and the time-saving language. I would hate to cull out risk limiting audits, specifically, because I do not want to limit any future capability that has not been discovered yet. And I think that can be addressed in the – I am losing it, it is late -- in the requirements as we get into that development.

MR. COUTTS:

I mean, my only concern with the word efficient was, again, how do I measure it.

COMMISSIONER MASTERSON:

Yes. So…

MR. COUTTS:

How do I test it? What is a pass/fail on efficient?

COMMISSIONER MASTERSON:

Right, David?

MR. WAGNER:

Maybe I can make one comment on that. Maybe I can make a comment that make will us feel comfortable with efficient.

COMMISSIONER MASTERSON:

That would be great.

MR. WAGNER:

We do need to get to testable requirements, but the premise behind these high level principles and guidelines is that they were not necessarily testable.

COMMISSIONER MASTERSON:

Um-hum.

MR. WAGNER:

So I agree we need to get there and that will have to happen when we get to the requirements, but maybe we are comfortable with the efficient language right now, because the testable comes when we write the requirements.

COMMISSIONER MASTERSON:

Yes, so what I would propose is we keep efficient and we revisit it tomorrow as part of our review. And if you want to muse on your concerns and others' concerns, I do not know, there is an elegance in the word efficient I think that allows for it, but I understand your concern about testable.

MS. GOLDEN:

Is it graceful?

[Laughter]

COMMISSIONER MASTERSON:

I do not know if it is graceful. The word graceful and me are never used in the same sentence, so I do not know.

All right, next. And thank you for opening the doors in the back.

MR. MACIAS:

"The voting system protects the secrecy of voters' ballot selections." The suggestion was to change to anonymity instead of secrecy.

COMMISSIONER MASTERSON:

So the voting system protects the anonymity of voter's ballot selections. Thoughts, comments, concerns?

MR. RIDDLEMOSER:

I think you can leave the overarching, and then, change 10.1 and actually use McDermot's word there if I can speak for him.

COMMISSIONER MASTERSON:

So Greg's proposal is to leave the higher level principle, go down to the guideline and say "Ballot anonymity is maintained throughout the voting process," so to change 10.1.

MR. GILES:

Or would that be voter?

MS. AUGINO:

It has to be voter.

COMMISSIONER MASTERSON:

Oh okay, so excuse me.  So it would be "voter anonymity is
maintained throughout the voting process".  McDermot?

MR. COUTTS:

Yes.

COMMISSIONER MASTERSON:

And you can remove the comment on secrecy above, as well.  I do
not believe we have ever gone overtime at the TGDC, so kudos to
you.

MR. MACIAS:

Oh, this was the discussion about adding produce and contain, but
that was tabled for public comment was my understanding.

COMMISSIONER MASTERSON:

So the comment, and Josh and David may be able to -- the
comment was made after these were sent to you all, that the
security working group -- at least some portion of the security
working group made a comment that, and please open it again, that
-- to update 10.2 to read, "The voting system does not produce and
contain records, notifications, information."  That was a comment by
some, at least, right, in the security working group.

MR. FRANKLIN:

Indeed

COMMISSIONER MASTERSON:

That can be made now if there is no objection or we can save it.

MR. CHOATE:

Is the right word contain or retain?  Voting system does not produce

nor retain notifications?

MS. BRADY:

Is that correct, was it contain or produce?

COMMISSIONER MASTERSON:

Go ahead, David.

MR. WAGNER:

The language that was discussed at the working group meeting,

and that was proposed, was, does not contain or produce records,

contain or produce.

COMMISSIONER MASTERSON:

So the voting system does not contain or produce records,

notifications, information?  Okay, the voting system does not

contain nor produce records.  Thoughts on that and the implications

of that?

MR. COUTTS:

Just going back there, as we talked about, there are exceptions to

this.

COMMISSIONER MASTERSON:

So McDermot raised during the conversation -- thanks McDermot -- and I think this was raised at least as part of the cybersecurity working group discussion that there are state laws and regulations that are impacted by this, this may conflict. And so, the question is to add this now, knowing that or to explore that. Go ahead, Ryan.

MR. MACIAS:

And not just state laws, but provisional ballot. The implementation in systems, currently, today, in order to be able to identify whether or not a voter who had a voted a provisional ballot, whether or not to submit that ballot on past the casting into tabulation, you have to be able to tie that to a voter through a third part system or through another process, in order to release that ballot into tabulation. And so, one of the discussions that I know that was taking place and has not made it back to the cybersecurity working group yet, but was being discussed amongst some members, including myself, was, if it is going to have the contain nor produce, would be after tabulation, because at no point do you pull it back after it has been tabulated versus when it is sitting in storage after being cast.

COMMISSIONER MASTERSON:

Go ahead, David.

MR. WAGNER:

I can provide some background about what I think was the concern or what this is getting at. One of the things that we are doing with

this new standard is trying to ensure that we can support

requirements for some new kinds of voting, including, for instance,

online, online ballot -- ballot marking and voting systems, and

remote voting systems that we anticipate might come up in the

future.  And with those, there is a concern that you might start to

see a situation where if we are not careful we might have a voting

system that is recording on the server the identity of each voters

and their selections stored in some file there for all the voters, and

now that would be a concern that you have got a big database that

if it got hacked it might reveal how everyone voted.  And we

probably do not want to leave that laying, around because that is a

pretty high risk thing to have laying around.  And so, that is why this

contain or produce was to make clear that it is not just like

producing not just what the reports are at the end but that we do

not want to have that sitting around there as a risk factor.  So that is

the concern that it is trying to get at, and I understand the points

you are raising is valid, as well.

MR. GILES:

Could you put some kind of language that it supports that method?

Then that would -- to McDermot, where you have states that do not

want that.  So is there some language that would say that it has to

have that ability, but it is not a requirement, because you may have

to build it both ways is what you are saying.

MR. RIDDLEMOSER:

      Well, just a question for the group.  When there are states and/or

systems that do that -- and to me, the word in this sentence that is

appropriate here is associate -- are there any states that actually

associate the transaction with the voter's intent?

COMMISSIONER MASTERSON:

      Yes.

MR. RIDDLEMOSER:

      So, we know how we voted and then we pull that vote out of a

hopper because he was not allowed to vote, and we know

specifically it was that voter?

COMMISSIONER MASTERSON:

      Yes, because of both what Ryan raised with provisional voting, and

then, David raised a sort of unintended consequence, if a system is

not designed, or is designed in a way that the selections are stored

on a server unintentionally, or otherwise, that you may be able to

associate it back, specifically, with ballot marking, online ballot

marking.

MR. RIDDLEMOSER:

      Mr. Chairman, so having asked the question that should not have

been asked, it makes 10.1 non-sequitur and ought to be dropped

entirely from this discussion, regardless of how we have worded it

or reworded it.

COMMISSIONER MASTERSON:

So, it is a fair point. I think 10.1 still applies, depending on when you view the ballot secrecy, which is why 10.2 was written.

MR. MACIAS:

The other thing to note, at least, systems currently, do not directly do that association that it was you were talking about. It does not have the voter's name in it. It is rather an ID that would then be ID'd in a separate process, such as your poll book or somewhere else. And so, there is no direct association.

COMMISSIONER MASTERSON:

So if you think about it, outside of a voting system context, at least with provisional ballots, if a voter votes provisionally and puts it in the envelope, you have that ballot sitting in the envelope, but you are also able to associate that full packet of information back to that voter because if they are not, what, allowed, you know, the provisional is not approved, right, you can, you know, get rid of it. But for that time being, that ballot is still sitting within that provisional envelope until such time as it is allowed. Then, they are separated and disassociated, right? And so, there is a system process that allows for that, too, outside of an envelope and paper process, and that is the concern, is that there are some systems that need to, or some states that need the support to be able to do that.

MR. COUTTS:

And there are certain situations where the retraction occurs after

tabulation.  There are certain areas where retraction is allowed after

you tabulate because of something that has come up in certain

states such as death before Election Day, if they voted early.

COMMISSIONER MASTERSON:

Per state law.

MR. COUTTS:

Per state law.

COMMISSIONER MASTERSON:

That is something.

MS. GOLDEN:

Wow.

COMMISSIONER MASTERSON:

Let's come back to that one.  If we have one hanging out there, we

can revisit that one specifically tomorrow.

MR. MACIAS:

Oh, this was just a typographical error.

COMMISSIONER MASTERSON:

Perfect, that's a good one.

MR. MACIAS:

Just to make sure, it should state, "The voting system or other hardware has the ability to detect any unauthorized physical access." The word "or" is missing.

COMMISSIONER MASTERSON:

Okay, good. Next?

MR. FRANKLIN:

And other hardware?

MR. MACIAS:

So I am getting an "and" back here.

MR. COUTTS:

And I think Bob's comment earlier was that we should add the word access to a sealed voting system or associated hardware, because prior to its sealing -- in other words -- that would imply the need to be able to seal it.

COMMISSIONER MASTERSON:

Yes, the idea is to support the sealing or whatever else, not that the system itself does the sealing itself, right?

MS. GOLDEN:

It needs to be an or not an and.

COMMISSIONER MASTERSON:

So please read the sentence as you think it -- microphone.

MS. GOLDEN:

It needs to be or -- any authorized physical access to the voting

system or other hardware, unless you mean, if it is an "and" then it

has to be both of them…

MR. FRANKLIN:

At the same time?

MS. GOLDEN:

…at the same time and if that is what you mean…

MR. FRANKLIN:

Okay.

MS. GOLDEN:

…then it is an "and" but if you do not mean – if you are saying there

is hardware other than the voting system than it is an "or."  So I do

not know who wrote -- whose this is but…

MR. COUTTS:

It has to be "or."

COMMISSIONER MASTERSON:

So the proposed…

MS. GOLDEN:

Yes, if it is not an "or," then it just should be the voting system and

get rid of the rest of it.  But if you are saying there is hardware that

is not part of the voting system that you also want secured, then it

is an "or."

COMMISSIONER MASTERSON:

So it would read, "Any authorized -- unauthorized physical access to the voting system or other hardware leaves physical evidence." Go ahead.

MR. GILES:

And that is what I was bringing up. Are we saying that the system has to do it or -- because now you are bringing in seals, so are we saying we are going to test the system that it shows that it can demonstrate some type of an attempt? Or are we just saying it must have the ability to? Because the way it reads here is the system itself, when they present it to you has to show, okay, we can show how it has been tampered.

COMMISSIONER MASTERSON:

So…

MR. GILES:

But that may be a third party after

COMMISSIONER MASTERSON:

Your suggestion would be that – well, what is your suggestion? You would like to see that the system itself supports or allows for the proper physical protection?

MR. GILES:

Yes, supports, something like that, because otherwise your -- I am reading it as you are actually testing those seals. So it must

support a system or -- I am not quite sure.  I will let Diane pick out

the words.

MS. AUGINO:

And I would like to not include other hardware.  Unless it is part of

the voting system, I do not think the VVSG should go there.

COMMISSIONER MASTERSON:

Okay, let's start with that one, and then, we will think through Bob's.

So the suggestion from Lori is to remove the other hardware.  So

"Any unauthorized physical access to the voting systems leaves

physical evidence."  We will deal with Bob's in just a second.  But

removing other hardware because it would take it outside of the

realm of the VVSG, is there an objection to that?

MR. FRANKLIN:

What would be an example of hardware that we would want to

protect would be the question to ask, I guess.

COMMISSIONER MASTERSON:

So if we -- so by removing it, what are we leaving out…

MR. FRANKLIN:

Yes.

COMMISSIONER MASTERSON:

…that would be outside of the voting system, but still important to

include in the VVSG?

MR. FRANKLIN:

I am not sure.

COMMISSIONER MASTERSON:

Is there any…

MS. AUGINO:

That is up to the state to determine.  As far as the VVSG is

concerned, I think it should be left to the voting system.

MR. FRANKLIN:

I have no issue.

COMMISSIONER MASTERSON:

Okay, so back to Bob.  So now we read "Any unauthorized physical

access to the voting system leaves physical evidence" and we need

to capture the idea that the system itself supports the application of

some sort of protocols that allow for physical evidence to be left.

MR. FRANKLIN:

How about the voting system supports – oh, you have something...

MR. MACIAS:

So, actually as it was written earlier from Bob's suggestion earlier

was "Any unauthorized physical access to the voting system has

the ability to detect any unauthorized physical access."

COMMISSIONER MASTERSON:

No.

MR. FRANKLIN:

No, I think it is the…

MR. CHOATE:

Just start with the voting system.

COMMISSIONER MASTERSON:

Yes, we need to start with the voting system.

MR. MACIAS:

Sorry, sorry.

COMMISSIONER MASTERSON:

Yes.

MR. MACIAS:

"The voting system has the ability to detect any unauthorized

physical access."

COMMISSIONER MASTERSON:

No.

MR. GILES:

Not the system.

MR. FRANKLIN:

I like the word supporting.

COMMISSIONER MASTERSON:

Yes.

MR. FRANKLIN:

The voting system supports tamper detection mechanisms or…

COMMISSIONER MASTERSON:

So what about this, "The voting system supports mechanisms to detect any authorized physical access?" And then, those mechanism are up to the jurisdictions.

MS. GOLDEN:

"The voting system supports mechanisms or a mechanism to identify unauthorized physical access."

COMMISSIONER MASTERSON:

To detect unauthorized, so take out – well, any can stay. So now it would read, "The voting system supports mechanisms to detect unauthorized physical access." Thoughts? David is contemplating. Feel free, go ahead.

MR. WAGNER:

It is fine with me. I think it is going to come down to the requirements. The -- I will spell out the nuance, but then, I think we can move on, which is, I do not think we need the voting system to proactively detect. The idea is just that it leaves behind some physical evidence that then if the election workers are looking at it, they could detect. So it is not like -- we are not trying to go so far as to say the voting system is responsible for detecting.

COMMISSIONER MASTERSON:

Right.

MR. WAGNER:

If you are all comfortable with the language you proposed, I am fine.

MS. AUGINO:

But I think you are also not locking out any future capability that might allow for -- right now we are relying a lot on physical security, but there could be additional securities in the future. ..

MR. WAGNER:

Okay, fair enough.

MS. AUGINO:

…maybe.

COMMISSIONER MASTERSON:

So it is all in the -- I see your point David.  I think it is all in how we view mechanisms, right, which could be outside seals or what not, or if there is some technology provided in that way.

MS. BRADY:

Can we start with the sentence with "Mechanisms, mechanisms to detect unauthorized physical access"?  You can finish it off.

COMMISSIONER MASTERSON:

Go ahead, say it.

MS. BRADY:

I have "Mechanisms to detect unauthorized physical access -- or how about, mechanisms exist to detect unauthorized physical access"?

COMMISSIONER MASTERSON:

Well, but that is not a way to test the voting system, right? The key

is that the voting system is going to support the ability to use

whatever physical security techniques that the jurisdictions want to

use. So, I mean, in a really absurd, because it is almost 6:00,

example, if you built the voting system out of Teflon, such that the

seals won't adhere or what not, that is unacceptable, which would

be fascinating, because then you can get an omelet bar out of your

voting system, which I am for.

[Laughter]

All right Ryan, next.

MR. RIDDLEMOSER:

12.2, Mr. Chairman, can we put a period after voting operations and

drop testing and auditing? And here is why. Ports -- accessible

ports -- I know that there needs to be different kinds of accesses

inside the equipment for testing or auditing or what have you, but

they ought to be integral inside of the administrative control

measures, for lack of a better word. So the accessible ports ought

to be limited to Election Day operations only, is my point. And I will

yield that to David, because they clearly talked about it.

COMMISSIONER MASTERSON:

So the question for Josh and David is, Greg's question is, the

voting system only exposes physical ports and access points that

are essential to the voting operations, period. And his suggestion is the testing or auditing -- that essentially, you should not be exposing the ports for testing or auditing.

MR. FRANKLIN:

Yes, just off the top of my head, there was a VVSG requirement that, you know, basically needed a port exposed purely for external software verification. And so, that would remove that if we wanted to keep that capability within the VVSG.

COMMISSIONER MASTERSON:

So there is an already existing VVSG requirement that recognizes the need for a port for some sort of third party auditing. Is that what you are saying?

MR. FRANKLIN:

There is a VVSG requirement that says that. I am not sure if the security working group found a lot of benefits from, you know, mandating that, honestly. So I do not know if it would be the biggest thing if we removed that.

MR. COUTTS:

There are other requirements that require the system to be functioning in a non -- I guess, nonproduction way. The fact that we have to, for example, have a reciprocate mode in order to move ballots around when it is going through emission -- radiation testing

that is not necessarily -- we are never going to have a real-world

example of a -- something other than a person putting the ballot in.

Another example is where we have to verify that the

counters are zeroed out, other than having the report that says,

hey, they are zero. That is another requirement that we have to

test to that requires us to move the system out of a normal

production mode. And, I guess the question is, should we be

writing requirements that would require us to move the system out

of production as it is intended to be used?

COMMISSIONER MASTERSON:

So I guess the question on the table is does -- to McDermot's point,

does anyone object to removing testing or auditing with a

recognition that we are referring to securing -- that we are only

exposing those ports necessary in the voting process, or in the

voting operation, and not testing or those other, you know, for,

what, securing it during lab testing. Is that your point?

MR. COUTTS:

The point is that we actually kind of have to unsecure it for lab

testing, and then, put it back in for production mode as it will be

used. So the question is, should there even be the capability to

expose those ports? Is that not a security risk, that those ports can

be exposed?

COMMISSIONER MASTERSON:

Besides the ones necessary or essential to voting operations?

MR. COUTTS:

Exactly.

COMMISSIONER MASTERSON:

So you would be in favor of striking this?

MR. COUTTS:

As long as we can provide alternates for the -- or those

requirements are no longer in place to…

MR. GILES:

Well, I mean, to the point of -- with Greg, what about like pre-

election testing and post-election testing?  So, you are in, basically,

a voting mode, but you are in pre-lab, versus official election mode.

So…

MR. COUTTS:

There may be trapdoors inside of the vendor's equipment, where

you open them with keys as an administrator and do various things;

for acceptance testing, when you first bought it from the factory, L &

A testing prior to setting it and locking it for the election, with the

election media loaded.  And then, once you have locked all of these

compartments, the only peripheral ports that ought to be available

directly support something to do with the Election Day operations.

That is all I am saying, because it is all these empty ports that

people are talking about all the time, what do you use that for, what

do you use that for, what do you use that for? Now, that is -- they

are not asking those questions, but those are the kind of, you know,

things that we could preclude by simplifying this point.

COMMISSIONER MASTERSON:

Any objection to it? Okay, take it out.

How many more do we have? We -- I cannot in good

conscience ask the camera folks and other folks to stay past six.

So how many more do we have?

MR. MACIAS:

We have three, but they look simple. They look simple.

COMMISSIONER MASTERSON:

Okay, go. You have five minutes.

MR. MACIAS:

Judd asked if well-vetted was a term of art. There was no

suggested change, just a question.

COMMISSIONER MASTERSON:

Yes, next question.

[Laughter]

MR. MACIAS:

This one was just asked to put a comma after the word ports.

COMMISSIONER MASTERSON:

Done. Next?

MR. FRANKLIN:

I do not know.  No, I'm joking.

COMMISSIONER MASTERSON:

Not funny, now is not the time my friend.

[Laughter]

Okay, go ahead Ryan.

MR. MACIAS:

Diane just suggested that remediate was not the correct word here.

COMMISSIONER MASTERSON:

So "The voting system provides mechanisms to detect and

remediate anomalous or malicious behavior."  And the concern was

remediate has an expectation of some sort of action or fix

immediately, where the real point, at least of this principle, is that

detect and monitor or what not, I do not know.

MR. FRANKLIN:

Detect and respond to?

MS. GOLDEN:

Yes, well somebody suggested respond to, take action, address.

COMMISSIONER MASTERSON:

All right, so let's start with respond to and see if we can get there in

three minutes or less. "The voting system provides mechanisms to

detect and respond to anomalous or malicious behavior," thoughts

on that?  And please speak up.  We do not want to -- I mean, I

know

-- we got time, but it is important.  Does anyone have thoughts on

that?

MS. AUGINO:

I do.

COMMISSIONER MASTERSON:

Okay, go.

MS. AUGINO:

I think you could say "The voting system provides mechanisms to

detect anomalous or malicious behavior so that that may be

remediated by election officials."

MR. FRANKLIN:

I like just -- I like the first thing you said.

MS. AUGINO:

So that they may be remediated.

MR. FRANKLIN:

Oh, no, sorry, just stop after…

COMMISSIONER MASTERSON:

"The voting system provides mechanisms to detect anomalous or

malicious behavior," any objection to that?  I see a head nodding.

MS. AUGINO:

Done.

COMMISSIONER MASTERSON:

Boom.  Okay, Diane?

MS. GOLDEN:

And realistically, that is all the voting system can do.

MR. FRANKLIN:

Yes.

MS. AUGINO:

Right.

MS. GOLDEN:

I mean, that is all it can do is detect it and let you know.  It cannot

tell you anything about what to do as a result, so…

MR. GILES:

Do you want detect and report?

MR. COUTTS:

Detect or communicate?

COMMISSIONER MASTERSON:

The question was "The voting system provides a mechanism to

detect and indicate or detect and report."  Is there any desire to

have that, so that it is not just detecting, but it is telling somebody?

MS. AUGINO:

Well, it is the mechanism.  The mechanism, you do not need to

define it.

COMMISSIONER MASTERSON:

Okay, yes, good point that, underneath in the guideline section -- so

you got the principle up above -- in the guideline section it lays out

what that means.  Okay, so we are going to remove remediate and be on our way.

Okay, thank you.  Thank you for your commitment, for sweating it out in here.  I really, really want to thank the staff, the EAC staff, the NIST staff, in particular, those folks running the camera.  You all have been standing for a very long day.

We will provide to you either tonight or early tomorrow morning a revised copy that reflects these changes that we will walk through.  To my memory, the one major thing to continue to discuss is 10.2 and what to do with that.  But other than that, we can walk through the changes and see where we are.  So look for a copy.  We will also have physical copies available for everyone and the audience tomorrow.  And until then, we are adjourned until 9 a.m. tomorrow, adjourned until 9 a.m. tomorrow.

I do want to thank just very quickly Robin Sargent and Shirley Hines.  They have done yeoman's work.  Sargent and Shirley set up the whole room…

[Applause]

…did all the work to get us here.  And you have no idea how much time and effort they put in.  So we greatly appreciate it.

All right, adjourned until nine tomorrow.

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[The EAC/TGDC meeting recessed at 6:00 p.m.]