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Transcript of Joseph Havlicek, Ph.D.

Date: February 16, 2026

Case: Asustek Computer, Inc., et al. -v- Nokia Technologies OY (PTAB)

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1 UNITED STATES PATENT AND TRADEMARK OFFICE

2 -----
3 BEFORE THE PATENT TRIAL AND APPEAL BOARD

4 -----
5 ASUSTEK COMPUTER INC. and
6 ASUS COMPUTER INTERNATIONAL

7 Petitioner,

8 v.

9 NOKIA TECHNOLOGIES OY,

10 Patent Owner,

11 -----
12 Case IPR2025-01153
13 U.S. Patent No. 10,536,714

14 -----
15
16 REMOTE DEPOSITION OF
17 JOSEPH HAVLICEK, PH.D.
18 February 16, 2026

19
20
21 Reported by: Susan S. Klinger, RMR-CRR, CSR

22 Job No. 618828

February 16, 2026

8:03 a.m.

Remote Deposition of JOSEPH HAVLICEK, PH.D.,
held before Susan S. Klinger, a Registered Merit
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I N D E X

WITNESS	PAGE
JOSEPH HAVLICEK, PH.D.	
EXAMINATION BY MR. MICHELI	5

E X H I B I T S

No.	Description	Page
Exhibit 1	Deposition notice	18
Exhibit 2	Havlicek declaration	18
Exhibit 3	Rusert US Patent Application Publication 2011/0194609	19
Exhibit 4	Karczewicz US Patent Application Publication 2011/0249721	20
Exhibit 5	Lin US Patent Application Publication 2014/0092981	22
Exhibit 6	US Patent 10,536,714	33
Exhibit 7	Drawing 1.1	100
Exhibit 8	Drawing 1.2	107

1 P R O C E E D I N G S
2 JOSEPH HAVLICEK, PH.D.,
3 having been first duly sworn testified as follows:
4 EXAMINATION
5 BY MR. MICHELI:
6 Q Good morning.
7 A Good morning.
8 Q Could you state your name, sir?
9 A My name is Joseph Paul Havlicek.
10 Q And, Dr. Havlicek, have you been deposed
11 before?
12 A Yes.
13 Q About how many times have you been deposed
14 before?
15 A Approximately 12 or 13 prior depositions.
16 Q Okay. So you're fairly familiar with the
17 standard rules of deposition I would imagine; is
18 that right?
19 A I feel familiar with the process, yes,
20 sir.
21 Q Well, I won't go into the details then,
22 but I'll hit a few overview items to start.

1 While we're going through these questions,
2 if I ever ask one that you don't understand, will
3 you please let me know so that I can clarify that
4 question?

5 A I will endeavor to do so, yes, sir.

6 Q And I'm going to try to take regular
7 breaks throughout this deposition, but if you need
8 one, please let me know so that we can take a
9 break and make sure you're feeling comfortable.
10 Does that sound good?

11 A Yes, sir, thank you very much.

12 Q And the only thing I do ask is that if
13 I've asked a question at the time that you need a
14 break, will you please answer that question before
15 we do take that break?

16 A I agree to do so to the best of my
17 ability.

18 Q Dr. Havlicek, what degrees do you hold?

19 A I hold a bachelor of science in electrical
20 engineering, a master of science in electrical
21 engineering, and a philosophical doctorate in
22 electrical and computer engineering.

1 Q Where did you obtain your doctorate?

2 A That was the University of Texas at
3 Austin.

4 Q And when did you obtain your doctorate?

5 A December 1996.

6 Q What was your research focus during the
7 time that you were studying for and obtaining your
8 doctorate?

9 A My research during my doctoral studies was
10 in the field of image processing.

11 Q Did you write a thesis in order to obtain
12 your doctorate?

13 A Technically, it was a dissertation, a
14 thesis being for the master's degree.

15 Q I appreciate the clarification. So you
16 wrote a dissertation in order to obtain your
17 doctorate?

18 A As part of the degree requirements, yes,
19 sir.

20 Q What was the subject of your dissertation?

21 A The title of the dissertation was AM/FM
22 Image Models, and the subject was a new visual

1 perception-based framework and mathematical
2 foundation for modeling, processing, and
3 representing images.

4 Q And where are you currently employed?

5 A Currently I am employed by the University
6 of Oklahoma at the main campus in Norman,
7 Oklahoma.

8 Q You're taking this deposition from
9 somewhere other than Oklahoma; is that right?

10 A Yes, sir, that's correct.

11 Q Where are you located currently?

12 A Currently I am in the offices of Fish &
13 Richardson, PC on Main Avenue in Washington, D.C.

14 Q As a professor, do you teach any classes
15 on video coding?

16 A We don't have a specific course on video
17 coding. I did, years ago, teach a course in
18 multimedia communications that was primarily
19 focused on video coding and image coding. That
20 course, however, has not been taught for a long
21 time.

22 So what I do now is I have a module on

1 image coding and a module on video coding in the
2 graduate level image processing course that I
3 teach every year.

4 Q Have you written any papers on video
5 coding?

6 A I have a couple of papers where I was
7 author or coauthor on video coding, yes.

8 Q What subjects do the papers you have
9 written regarding video coding pertain to?

10 A So there -- I am currently a director and
11 a founding member of the OU, meaning University of
12 Oklahoma, Center for Intelligent Transportation
13 Systems. We designed, integrated, and work in
14 partnership with the State of Oklahoma on a video
15 network that's distributed across the entire
16 state. This is hundreds of cameras over, you
17 know, the highways and so on. I can give more
18 details, but let me spare you in case it's not
19 relevant.

20 And so we have -- I have a paper where,
21 for example, we've made -- people working for me,
22 engineers and graduate students, made

1 modifications to H.264 encoders and decoders to
2 leverage some of the specific attributes of
3 traffic video in order to improve performance on
4 those. This paper was published in the IEEE
5 International Conference on Intelligent
6 Transportation Systems.

7 And I have a paper in -- I think it's the
8 2020 IEEE Southwest Symposium on Image Analysis
9 and Interpretation regarding specifically the use
10 of a -- a transform called the Hirschman Transform
11 for use in video coding and studying the
12 quantization properties of that transform.

13 Q I have to admit that's pretty interesting.
14 What -- what aspects of H.264 did you modify in
15 order to exploit certain aspects of traffic video
16 in particular?

17 A It was dynamic rate adjustment because the
18 traffic videos -- the important -- I'm sorry. Let
19 me speak more clearly.

20 Compared to, say, consumer entertainment
21 video, it's not as important in a traffic video to
22 have full capture of smooth motion in everything.

1 So we were making modifications in order to do
2 a -- a dynamic bit rate adjustment in order to --
3 to throttle down bit rates when necessary and to
4 sacrifice full motion for that.

5 And -- and it's -- it's just that the
6 constraints and traffic videos are a lot different
7 than consumer video, so we were able to make some
8 mods to the codecs to -- to profit from that.

9 Q And -- and I guess from the way you
10 described that, it sounds like you were making
11 modifications to an encoder; is that right?

12 A And -- and a decoder, yeah.

13 Q Were you working from a base like the
14 H.264 library or something similar?

15 A Oh, it's been a couple of years ago, but
16 we used -- we did make modifications in the -- you
17 know, the -- the reference codec. But as far as
18 what was actually deployed, I would have to go
19 back and look at the paper to remember the
20 details, but I believe that we were able to put
21 some modules in front of and behind the actual
22 boxes that were deployed in the field in order to

1 alter the video frame rates before they arrived
2 into the actual standardized codec rack unit. You
3 know, these are rack units that are out on the
4 highway.

5 Q Fair to say you're someone who's
6 comfortable with the C level implementation of an
7 encoder, then?

8 A I'm not sure I know what you mean by the C
9 level implementation, but, I mean, I -- I have had
10 a master's degree student who, again, made
11 extensive modifications to the Fraunhofer
12 Institute reference codec for 264. And so, yeah,
13 I mean, I've supervised students and staff
14 engineers in working on those things if that's
15 what you mean.

16 Q Do you have any experience working with
17 standardization committees for video coding
18 standards?

19 A I have not done that myself. I will add
20 to the answer that I happened to actually be
21 working for a company that you've heard of called
22 International Business Machines in '93 where my

1 job was to implement JPEG codecs for IBM's
2 Ultimedia multimedia products line. And during
3 that time, there was a lot of discussion, for
4 example, in my group.

5 I worked in a group called Department E51
6 Still Video Products in Austin. And, you know,
7 there was a lot of talk about the IBM people from
8 our organization who were on the committee, but I,
9 myself, was never on the committee, never in any
10 capacity.

11 Q You know, I should have asked you, when
12 did you start your current role as a professor?

13 A January 1997.

14 Q And were you at IBM from '93 until you
15 started that role?

16 A I was -- technically my job title was
17 programmer analyst working. As an onsite
18 contractor, I was employed directly by a company
19 called Ralph Kirkley Associates and working for
20 IBM. And that was January 1 to December 31 of
21 1993 when I was also still working on my Ph.D.

22 Q And did you work any industry roles

1 between obtaining your Ph.D. and becoming a
2 professor?

3 A I defended December something, '96 and
4 started January 1, '97. I -- I -- I should point
5 out that, you know, as detailed in my curriculum
6 vitae -- and I know you have it, but I'll just
7 very briefly summarize. I worked as a programmer,
8 you know, for a -- not in video coding prior to
9 that, prior to starting even graduate school.

10 And I also worked for the Naval Research
11 Laboratory where I worked on a lot of video, but
12 it was a different -- it was defense -- you know,
13 defense weapon systems video, so a different sort
14 of application area.

15 Q And you consider yourself an expert in
16 video coding; is that right?

17 A Yes, sir.

18 Q I believe that you are also familiar with
19 a Dr. Creusere, right?

20 A I know him, yes.

21 Q You know him personally?

22 A Well, I know him professionally. Let's

1 just say I -- I don't go to his house, but I -- I
2 know him, and I'm on a first name basis with him
3 when I see him at meetings and so on.

4 Q Am I pronouncing Dr. Creusere's name
5 correctly?

6 A You are. And I would also offer, just for
7 what it's worth, that it turns out that he was a
8 China Lake Naval Weapons Center when I was at NRL,
9 and I was doing a lot of work out there. But I'm
10 not sure that I ever crossed -- I don't remember
11 knowing him then. I don't think I -- I don't
12 remember knowing him until I was working as a
13 professor.

14 Q And would you consider Dr. Creusere to be
15 an expert in video coding?

16 A Yes.

17 Q Are you familiar with a Dr. Ian
18 Richardson?

19 A I am, yes.

20 Q How are you familiar with Dr. Ian
21 Richardson?

22 A I'm familiar with Dr. Ian Richardson

1 through two primary avenues. The first one, and
2 where I first became aware of him, is from the
3 book on H.264 which he wrote. And that's a -- a
4 book that is a -- in my opinion, a good reference,
5 and -- and I make students read it. I read it
6 myself.

7 And then also I have run into him through
8 various patent litigation matters.

9 Q And would you consider Dr. Richardson to
10 be an expert in video coding?

11 A I would, yes.

12 Q What qualities does a person need to have
13 to be an expert in video coding, in your view?

14 A Well, it's a very broad term, video
15 coding. In the context of, let's say, you know,
16 for developing contributions to discuss in a
17 standards body meeting, I would say that, you
18 know, a person would need to have some years of
19 experience in working with practical video coding
20 standards, methods, be familiar with the
21 literature. And I think it's preferable to have
22 some industry experience or some practical

1 experience.

2 And besides that, I think unless we can
3 provide some more context, it's hard to say,
4 because the term "expert" can be expert in a
5 niche, you know.

6 Q That's fair. I'm going to provide you
7 with a document in the chat now. I'd like you to
8 confirm when you've received that just to make
9 sure everything's working.

10 A I'm going to have to re-find the chat, so
11 I'm -- I'm looking for it. Give me one second.

12 Q That is why that we're doing this early.

13 A Okay. I do see that there is an
14 ASUS-1003.

15 Q Could you please go ahead and open the
16 document labeled ASUS-1003, Dr. Havlicek?

17 MR. FLEMING: Hey, Joe, just for marking
18 purposes, I know you-all had previously uploaded
19 the notice of deposition. Do you want to mark
20 that Exhibit 1 and this Exhibit 2, or is this
21 Exhibit 1.

22 MR. MICHELI: Sure. We can mark the

1 notice of deposition, which was previously loaded
2 into the chat, as Exhibit 1, and we will mark
3 ASUS-1003, which is the declaration of Joseph
4 Havlicek, as Exhibit 2.

5 (Exhibit 1 marked.)

6 (Exhibit 2 marked.)

7 A And I will inform you that I have
8 ASUS-1003 open in Adobe Acrobat on my computer
9 here.

10 Q Dr. Havlicek, could you please take a look
11 at that document and confirm that this is a copy
12 of the declaration that you submitted in this
13 proceeding?

14 A It appears to be precisely that document
15 that I submitted in this proceeding.

16 Q And in this declaration, you offer
17 opinions on a number of references, specifically a
18 Rusert, Karczewicz, and Lin reference, correct?

19 A Correct.

20 Q I'm going to introduce another document
21 now. This should be ASUS-1004. Please let me
22 know when you have opened it, and I'll mark this

1 as Exhibit 3.

2 (Exhibit 3 marked.)

3 A I am currently looking at ASUS-1004. I,
4 of course, don't have the markings, but if we can,
5 you know, refer to them as the exhibit number and
6 as the ASUS-1004, I'll -- I think I'll be able to
7 keep up. And I'm looking at that one right now.

8 Q And is Exhibit 3, or Rusert, a -- a copy
9 of that first reference we mentioned, the -- the
10 Rusert reference?

11 A Yes, sir, it appears to be the Rusert
12 patent publication.

13 Q And this is the document that you provide
14 opinions on in your declaration, correct?

15 A Correct.

16 Q Looking at the top of Exhibit 3, you can
17 see a list of the authors of this document,
18 correct?

19 A I do see them, yes, sir.

20 Q Are you familiar with Thomas Rusert, the
21 first named author of this reference?

22 A I am not.

1 Q In your view, would Thomas Rusert be an
2 expert in video coding?

3 A I don't think I have a basis to -- to say
4 that because I don't know exactly what Thomas
5 Rusert's contribution is to this patent. However,
6 I can see that he's listed as first inventor on a
7 patent application publication that proposes to
8 make improvements to a video coding method. So
9 there's evidence here that Thomas Rusert could be
10 an expert.

11 But I -- I don't know anything about the
12 individual, other than the fact that his name, or
13 assuming it's his name, is listed as first
14 inventor.

15 Q I will introduce an additional document.
16 You should now have a document labeled ASUS-1005,
17 which I will mark as Exhibit 4.

18 (Exhibit 4 marked.)

19 A I have got that exhibit, ASUS-1005, open,
20 and I'm looking at it currently.

21 Q Is Exhibit 4 a copy of the Karczewicz
22 reference upon which you provide opinions?

1 A It appears to be so.

2 Q Are you familiar with the first named
3 inventor of this reference, Dr. Marta Karczewicz?

4 A I am aware of Marta Karczewicz, and -- and
5 I have seen many patents upon which she is a named
6 inventor, and I have seen many papers on which she
7 is an author. And so I have never met her. I
8 have never spoken to her, but I am aware that she
9 is a -- she -- her name is on many contributions,
10 yes.

11 Q Based upon what you know about Marta
12 Karczewicz, would you consider her to be an expert
13 in video coding?

14 A I'm going to say yes. Notwithstanding the
15 fact that we haven't really, you know, defined
16 exactly what we mean by expert, I think she's made
17 many -- her name is on many, many contributions.
18 I think it is fair to say that she's universally
19 acknowledged as an expert in video coding, yes.

20 Q She's extremely prolific, that's fair.

21 I'll introduce one additional document
22 now. You should have a document beginning

1 ASUS-1006, which I will mark as Exhibit 5.

2 (Exhibit 5 marked.)

3 A I can see ASUS-1006 on my screen right
4 now.

5 Q And is ASUS-1006, which is marked as
6 Exhibit 5, a copy of the Lin reference upon which
7 you offer opinions?

8 A It appears to be so.

9 Q Are you familiar with the first named
10 inventor here, Jian -- excuse me -- Jian-Liang
11 Lin?

12 A I am not.

13 Q And perhaps I know the answer, but would
14 you consider Lin to be an expert in video coding?

15 A Well, I -- again, of course, as you said,
16 I -- I have no basis to know that, other than the
17 fact that Mr. Lin, assuming it's Mr., is listed as
18 first inventor on a United States patent
19 application publication. So one would assume that
20 that's evidence that -- that this person would be
21 an expert.

22 But I have -- I have no independent basis

1 for knowing that or not. I only know what was in
2 the publication.

3 Q Fair enough. I'd like to turn back to
4 Exhibit 2, which is your declaration in this case.
5 And before we do that, I -- I'll note that I see
6 you have two binders in front of you on the table
7 there. Could you tell me what the contents of
8 those binders are?

9 A Yes, sir, I would be happy to.

10 There -- there's a small binder, which --
11 I'm assuming you can see me -- I'm holding up.
12 And in this is a clean, hard, two-sided printout
13 of the '714 patent.

14 Then there's a tab. There's a clean,
15 two-sided, black-and-white printout of Rusert,
16 which I'm not going to try to remember the number,
17 but I think we all know what we're talking about
18 here.

19 Then there's another tab, a clean,
20 black -- or it's a black-and-white, two-sided
21 print of what we have referred to as the
22 Karczewicz reference.

1 Another divider and then a clean,
2 two-sided, black-and-white printout of what we
3 have referred to just now as Lin.

4 That's the small binder.

5 When I go now to this large binder, which
6 I'll hold up just for the record for a second,
7 this large binder has in it -- I believe that it's
8 just the declaration. It's a two-sided, color
9 print, clean, no marks whatsoever, of what we're
10 currently looking at as ASUS-1003, but it has some
11 tab stops in it.

12 So the first tab stop occurs at the end of
13 my CV, which is on page 74, and it separates that
14 from Appendix A, Appendix A being Dr. Creusere's
15 first declaration.

16 And then there's another tab stop which
17 occurs at the end of that right in front -- or
18 right subsequent to the page numbered 338, which
19 is -- goes between the page that says Appendix B
20 and page 1 of Dr. Creusere's second declaration.

21 And that is the complete contents.

22 Q I -- and -- and, Dr. Havlicek, you should

1 feel free to use either the hard copy you've got
2 there or the soft copy I've uploaded in the chat,
3 whichever one is most convenient for you, whenever
4 I refer to Exhibit 2.

5 A Thank you very much.

6 Q I'd like to look at page 4 of your
7 declaration.

8 A I am at the page that is numbered 4. It's
9 also the PDF page 4.

10 Q Here you state that you agree with the
11 technical opinions in substance of Dr. Creusere's
12 declarations from the Amazon IPRs as for issues
13 related to the grounds advanced in this petition,
14 right?

15 A Yes, sir. Those words almost exactly
16 appear in that paragraph numbered 4.

17 Q And you've adopted Dr. Creusere's opinions
18 that he expressed in the two declarations you've
19 attached as appendices to your declaration, right?

20 MR. FLEMING: Objection, form.

21 A I -- I have documented Dr. Creusere's
22 technical opinions in substance as -- as related

1 to the grounds that I am offering opinions on.

2 Q You do say here that you -- you adopt them
3 unless otherwise noted, I suppose. But is there
4 any particular aspect of Dr. Creusere's opinions
5 on the grounds which you're opining on here that
6 you take issue with and would not adopt?

7 A Sitting here right now, I'm -- I'm not
8 aware of any.

9 Q How did you go about preparing this
10 declaration?

11 A I was asked to consider the references
12 that we are so far referring to as Rusert,
13 Karczewicz, and Lin and formulate opinions on
14 whether they could render obvious the claims of
15 the '714 patent. And I did that, and I studied
16 those references and met with counsel several
17 times during that process.

18 And I was asked then to review -- I was
19 vaguely aware that there had been prior IPR
20 proceedings involving this patent and involving
21 another petitioner, specifically, I guess, Amazon.
22 And so then after I had performed that initial

1 analysis, I was given these declarations of
2 Dr. Creusere, and I was asked to read them. And I
3 found that when I read them, he seemed to have
4 come to many of the same opinions that I had.

5 And I think -- I -- I don't remember
6 exactly the sequence of events, like, when
7 actually I first started putting pen to paper. I
8 had probably started writing, you know, certain
9 introductory sections before I had finished
10 reading Creusere, for example, my background, you
11 know.

12 But it became clear that it could be
13 parsimonious to simply adopt Dr. Creusere's
14 already stated opinions since they agreed with
15 mine.

16 Q Well, let's go back just one step. When
17 were you first contacted regarding this case?

18 A So I -- I don't remember precisely, but it
19 was by some fairly early point in May of 2025.

20 Q And from the time that you were first
21 contacted to when you began preparing your
22 declaration, about how long was that?

1 A I don't recall exactly, but I'll
2 guesstimate it as, you know, approximately a month
3 or maybe five weeks, something in that ballpark.

4 Q And I -- I know you said you don't know
5 exactly, but ballpark, about how long did you
6 spend preparing this declaration?

7 A Could you clarify? When you say preparing
8 the declaration, do you mean the entire
9 preparation or the actual writing of it?

10 Q Well, let's go with the entire preparation
11 of the declaration to start with. How long did
12 you spend for the entire preparation of the
13 declaration.

14 A I'm going to guess about six weeks.

15 Q And how long did you spend for the actual
16 writing of the declaration?

17 A Less than a month, I -- maybe three weeks.

18 Q In the process of preparing this
19 declaration, did you consult with anyone?

20 A In the process of preparing this
21 declaration, I met with counsel from Fish &
22 Richardson, PC.

1 Q Did you ever speak with Dr. Creusere
2 regarding this deposition?

3 A I did not.

4 Q You mentioned counsel from Fish &
5 Richardson. Who did you consult with regarding
6 preparing this declaration?

7 A I spoke with an attorney named Linhong
8 Zhang and an attorney named Kyle Fleming and an
9 attorney named Jeremy Monaldo, and I may have
10 spoken with an attorney named April Park.

11 Q When you were reviewing Dr. Creusere's
12 previous declarations prior to determining that
13 their contents should be incorporated into yours,
14 did you review each of the documents that
15 Dr. Creusere reviewed for his declarations?

16 A I believe that I have laid eyes on them.
17 Some of them I did not review in quite some time
18 since -- since I first looked at them, but I think
19 I've looked at them all, yes.

20 Q As an example, if you were to go to page
21 309 of the declaration -- I'll wait for you to get
22 there.

1 A Yes, sir, I am at page 309.

2 Q Here on page 309 of Exhibit 2, we have the
3 materials considered by Dr. Creusere in preparing
4 his prior declaration, correct?

5 A That is what -- I'm not sure, from 309, if
6 we're on the first one or the second one, but I
7 think the materials considered are the same, so it
8 probably doesn't matter.

9 Q That's fair. And I think -- I think
10 earlier you had said that the second one started
11 around page 396.

12 A So this would make this the first one.

13 Q You see here that Dr. Creusere has listed
14 at item 1007 Nakamura, et al.?

15 A I see that, yes, sir.

16 Q Did you review that document in preparing
17 your opinions?

18 A I have reviewed that document.

19 Q And if you look at items 1008 and 1009,
20 those are two other items also labeled Nakamura.
21 Do you see that?

22 A I do.

1 Q Did you review those documents in
2 preparing your opinions as well?

3 A I have reviewed -- I have reviewed both of
4 those documents. I want to say that I can recall
5 off the top of my head right now certain elements
6 of what were in 1009. 1008, I'm sure that I
7 looked at it, but I don't off the top of my head
8 remember what was in there.

9 Q Do you -- well, first, if I were to refer
10 to 1007 through 1009 here on this page
11 collectively as Nakamura, would you understand
12 what I'm meaning?

13 A I would understand you to mean the packet
14 of materials that Nakamura brought to one of those
15 meetings of the standards body, yes, sir.

16 Q And -- and you understand that Nakamura
17 was a portion of one of the grounds that
18 Dr. Creusere offered opinions on, right?

19 A Yes, sir, I believe his ground 3.

20 Q And you do not offer opinions on a ground
21 that incorporates Nakamura; is that right?

22 A Correct, I do not.

1 Q Do you offer any opinions regarding
2 Nakamura?

3 A My declaration submitted in this IPR
4 proceeding offers no opinions on Nakamura.

5 Q What did you do to prepare for today's
6 deposition?

7 A I reviewed the '714 patent. I reviewed
8 the references we have been discussing, including
9 Rusert, Karczewicz, and Lin. I did read again the
10 main Nakamura document. I forget the number.
11 It's F419. So I did read that document, and I did
12 look at the slide deck.

13 And I read my declaration. I read the
14 petition that was submitted on behalf of ASUS. I
15 read patent owner's preliminary response, and I
16 met with outside counsel at Fish on multiple
17 occasions both remotely by Zoom and in the
18 Washington, D.C. office of Fish.

19 Q About how long did you spend preparing for
20 today's deposition?

21 A Slightly more than one week.

22 Q And just to make sure I'm -- I'm

1 understanding, you're saying that you had multiple
2 meetings over the course of slightly more than one
3 week to prepare for today's deposition?

4 A That is correct, yes, sir.

5 Q During those meetings, which counsel did
6 you meet with?

7 A During the meetings which have transpired
8 in the last -- I -- I -- I'm going to say roughly
9 eight days or so, I met with Mr. Monaldo,
10 Mr. Fleming, and Mr. Zhang.

11 Q Other than Mr. Monaldo, Mr. Fleming, and
12 Mr. Zhang, did you meet with any other attorneys
13 in order to prepare for this deposition?

14 A I did not.

15 Q I'm adding in another document into the
16 chat now. This is labeled ASUS-1001, and I'll
17 mark this as Exhibit 6.

18 (Exhibit 6 marked.)

19 A I am currently viewing that document in
20 Adobe Acrobat, and I'll represent to you that it
21 appears to be the '714 patent.

22 Q You've reviewed '714 patent. I think you

1 said that, right?

2 A If I didn't, I should have. Yes, sir, I
3 reviewed it.

4 Q You've reviewed each of the challenged
5 claims of the '714 patent?

6 A Yes, sir, I have.

7 Q What is your understanding of the problem
8 that the '714 patent seeks to solve?

9 A In the context of what we call hybrid
10 video codecs, one way that compression can be
11 achieved is by predicting pixel values in a video
12 frame or picture so that you don't have to encode
13 the full values. You can predict and then only
14 encode differences from the predictions. There
15 are two large categories for how that can be done
16 called intra and inter-prediction.

17 And this claimed or alleged contribution,
18 if you will, in the '714 patent, is concerned with
19 inter-prediction. Inter-prediction is where
20 blocks in a picture or a video frame are predicted
21 using blocks from other pictures. And, in
22 general, there's -- there's motion involved.

1 I like to make an example of watching a
2 Flinstones cartoon, and, you know, the Flinstone
3 Mobile may be going across the screen, but it's
4 not changing very much from picture to picture.
5 So great economy can be achieved, instead of
6 recoding the Flinstone mobile in every picture,
7 you simply say where did it move. And that
8 quantification of where did it move is called a
9 motion vector.

10 When one is doing such coding, it can
11 occur, especially in low bit rate applications,
12 that the coding of the motion vectors becomes a
13 very large percentage of the bits that have to be
14 expended to encode the video.

15 So the '714 patent acknowledges that
16 people were thinking about and practicing the
17 prediction of motion vectors. And the specific
18 contribution alleged in the '714 patent is methods
19 and apparatus for how to reduce the number of
20 comparisons that need to be made in order to
21 formulate a list of candidate motion vector
22 predictions that could be used to predict a

1 current block in a video frame that is being
2 encoded or decoded.

3 Q The '714 patent is related to a technique
4 known as merge mode, right?

5 A Certainly merge mode is one application.
6 I'm -- I'm not sure it's the only application. I
7 don't know that the claim -- I'm not sure. I'll
8 have to look to see if the claims are restricted
9 to merge mode.

10 Q Are you looking at that right now --

11 A Yes, sir.

12 Q -- Dr. Havlicek?

13 A Yes, sir.

14 Q I'll let you continue.

15 A I'll attempt to be expeditious.

16 I do not believe that the claims are
17 specific to merge mode.

18 Q What is your understanding of merge mode?

19 A Would you like for me to answer that in
20 the context of say, for example, H.264 or H.265 or
21 more generally?

22 Q What is your understanding of merge mode

1 in the context of H.264?

2 A In H.264, coding occurs, and processing at
3 an encoder and decoder occurs in terms of units
4 which are referred to as macroblocks, which for --
5 I will be happy to go into in detail if you want
6 me to, but for right now I'm just going to leave
7 it at that and say that a macroblock has in it
8 units of pixels from different components of a
9 video frame, for example, luminance and
10 chrominance components, that may be subdivided
11 into smaller pieces for performing the motion
12 estimation and motion compensation for computing
13 motion vectors and finding the predictions.

14 And merge mode generally refers to the
15 case where a motion vector can be used -- a -- a
16 motion vector from one piece can be used for
17 another piece so that the two -- the two pieces,
18 the two prediction units can effectively be merged
19 into one.

20 Q You mentioned prediction units just now.
21 It -- prediction units is not a concept in H.264;
22 is that right?

1 MR. FLEMING: Objection, form.

2 A I don't want to go look at the standard
3 and see if that term occurs in the standard, but
4 a -- a block -- let's just say this. An 8-by-8
5 block of pixels from, for example, a luminance
6 component in an H.264 macroblock can be subdivided
7 for motion estimation.

8 Q And -- and merge mode would be when one of
9 those subdivided blocks shares motion with a --
10 another subdivided block from that macroblock,
11 right?

12 A I believe so, again, without going and
13 reading the standard.

14 Q And with respect to the H.265 standard
15 now, how does your understanding of merge mode
16 differ from what you described for H.264?

17 A The big difference is this: In the
18 evolution of, you know, primarily, in my opinion,
19 consumer video to -- to larger picture sizes,
20 H.265 sought to have a larger fundamental
21 processing unit than the macroblock.

22 And so what emerged was the concept called

1 the coding tree unit, and the coding tree unit can
2 be larger. And then the coding tree unit can be
3 divided in more ways than a macroblock could be
4 divided.

5 And so this led to a new terminology
6 including CTU, or coding tree unit, as you pointed
7 out, PU, prediction unit, transform unit, coding
8 unit, so on.

9 And merge mode in H.265 is when a
10 prediction unit inherits a motion vector
11 prediction from another prediction unit.

12 Q Is it fair to say that in merge mode a
13 merge list is constructed, and then one of the
14 members of the merge list is signaled as the
15 motion vector to be used for a block that is being
16 coded?

17 A Almost fair in -- in the following sense.
18 It may not be used without a -- what's called a
19 motion vector difference. It might be used
20 directly, or it might -- I believe it can have a
21 difference. But, yes, it's used.

22 Q I see. So -- so the distinction you're

1 drawing is that you could simply use a motion
2 vector without any sort of change to it, and that
3 would be one option. Another objection would be
4 to apply some modification to that prediction
5 motion vector and then use the post-modification
6 version?

7 A Correct, whether -- whether you are
8 accepting the prediction with -- as the motion
9 vector or whether you are accepting the prediction
10 as a prediction which must be refined.

11 Q And the '714 patent describes a process
12 which assesses individual candidates that could be
13 included in that merge list and determines whether
14 they should be included in the list; is that
15 accurate?

16 A I believe I got it. Could you read it
17 back so I make sure?

18 Q The '714 patent describes a process which
19 assesses individual candidates that could be
20 included in that merge list and determines whether
21 they should be included in the list.

22 A In part, yes.

1 Q How would you describe the process
2 disclosed in the '714 patent more completely?

3 A So in the '714 patent there is a notion of
4 a set of candidates who could be considered. By
5 candidates, I mean blocks that have been
6 previously coded, and those blocks may have a
7 motion vector associated with them. And that
8 motion vector may be considered as a candidate --
9 as a candidate to be a motion vector prediction
10 for the current block that we're working on,
11 whether we're encoding or decoding.

12 And then there's a notion that we're going
13 to make a list, which is referred to as a motion
14 vector prediction list. And so of the blocks that
15 are in the set that are being considered, there's
16 going to be a decision about whether individual
17 members of that set can be allowed to become
18 members of the motion vector prediction list.

19 And in making that decision, there is yet
20 another set which is referred to as a subset. The
21 subset is a subset of the first set.

22 The '714 patent claims methods and

1 apparatus where a motion -- a -- a motion vector
2 candidate associated with a block from the first
3 set that I mentioned is compared to members of a
4 subset to decide whether the first one that I said
5 can be allowed on the list of motion vector -- the
6 motion vector prediction list, which is referred
7 to -- since there are so many words, it's referred
8 to in column 31, at line 25, motion vector
9 prediction list. And specifically one of the
10 stated goals is to reduce the number of
11 comparisons that have to be made to the subset
12 members.

13 And then finally, once there is such a
14 motion vector prediction list, then one of the
15 candidates from that list is signaled from the
16 encoder to the decoder to be the motion vector
17 prediction that was chosen by the encoder, and the
18 decoder then also uses that prediction.

19 Q Earlier you alluded to how it's -- it gets
20 a little confusing referring to the set and the
21 subset. Maybe if we look at a picture, it will
22 make it easier to put a pin on exactly what we're

1 talking about. Could you look at Figure 9 of the
2 '714 patent, which appears on PDF page 14, I
3 believe?

4 A I am looking at Figure 9.

5 Q And in Figure 9 there's a large square
6 structure in the middle labeled 900. Do you see
7 that?

8 A I do.

9 Q The item labeled 900, that would refer to
10 the current block, the one that's being either
11 encoded or decoded, depending on which of the
12 methodologies in the patent is being followed,
13 right?

14 A Correct.

15 Q And each of the items surrounding that
16 block, A0 through B2, is that what you consider to
17 be the set for the purposes of understanding the
18 '714 patent?

19 A That is one example of what I referred to
20 as the set. I think that the claims do not
21 require it to be that, but that is an exemplar
22 set, yes.

1 Q And that set, would you say it consists of
2 the blocks which are labeled with the locations
3 A0, A1, B0, B1, and B2?

4 A Well, we have to be careful. There's a
5 set of blocks, and there's a set of the motion
6 information from those blocks, but they certainly
7 have a one-to-one correspondence.

8 Q In the sense that, for example, block A0
9 may contain motion information which is one-to-one
10 related with A0; is that right?

11 A Correct. And I'll just clarify that, for
12 example, the block A0 may be a previously coded
13 block. It may have been inter-coded. It may be
14 in the same slice of the same frame, and,
15 therefore, it may have an already determined
16 motion vector that could be considered as a
17 candidate for predicting block 900's motion
18 vector.

19 Q And I want to make sure I understand. In
20 your view, the set, does that consist of the block
21 A0 or the motion information which is associated
22 with A0?

1 A I understand the question, and I'm going
2 to have to read a little bit to make sure I answer
3 accurately. (Reviewing document.)

4 So you have -- let me just say it this
5 way. How about if I ask you to repeat the
6 question, and then I'll try to answer it
7 expeditiously.

8 Q Sure. The set to which you're referring,
9 does that set include the block A0, or does it
10 include the motion information which is associated
11 with the block A0?

12 A According to the claim language, it is the
13 set of spatial motion vector prediction
14 candidates.

15 Q And so to make sure I understand your view
16 on this, are you saying, then, that the motion
17 information of A0 is what is a member of the set
18 as opposed to the block itself?

19 A As I read the claim language, it is the
20 motion information that is the set.

21 Q And continuing to look at Figure 9, if we
22 were to take a different block that's labeled

1 here, for example, B0, it would be possible that
2 B0 has been intra-coded, correct?

3 A Yes, that is possible.

4 Q In that instance, the block B0 would not
5 have motion information associated with it, right?

6 A Correct.

7 Q And so in your view, would the block B0
8 and any information associated with block B0 then
9 not be a portion of the set for the purposes of
10 the claims of the '714 patent?

11 A In the event that the block B0 of Figure 9
12 is intra-coded, then the block B0 has no motion
13 vector. The motion vector of block B0 therefore
14 does not exist and cannot be part of a set of
15 motion vectors.

16 Q And, Dr. Havlicek, I think we've been
17 going perhaps a little longer than an hour. Would
18 you like to take a break?

19 A At your discretion, sir.

20 MR. MICHELI: Let's go ahead and go off
21 the record.

22 (Recess, 9:14 to 9:26 a.m.)

1 Q Dr. Havlicek, before we took our break, we
2 were talking about Figure 9 of the '714 patent,
3 but I'd like to look now at the claims.

4 I think earlier you referenced a line in
5 claim 1 which appears in column 31 of the patent.
6 Claim 1 is an encoding apparatus -- excuse me --
7 an encoding method, correct?

8 A Yes, sir, that's my understanding.

9 Q Let's look also at claim 23, which is in
10 column 37. Claim 23 is a decoding apparatus; is
11 that right?

12 A Yes, sir, claim 23 is decoder apparatus.

13 Q Claim 23 is one of the claims that you
14 challenge in your declaration, correct?

15 A Correct.

16 Q I'd like to look at the first substantive
17 step of claim 23, the one that begins with:
18 Select a first spatial motion vector prediction
19 candidate.

20 Do you see that?

21 A I do.

22 Q It says here that you select a first

1 spatial motion vector prediction candidate from a
2 set of spatial motion vector prediction
3 candidates.

4 That's the set we were talking about prior
5 to the break, right?

6 A It is. And in -- I'll just tell you,
7 in -- in my mind, I think of that as the big set.
8 That's how I call it to myself.

9 Q The big set being contrasted with the
10 subset discussed in the following limitation, is
11 that -- is that what you mean?

12 A Yes. And -- and also let me just be
13 completely accurate. Yes, you're correct, and
14 there's a lot of sets here, well, and also as
15 distinct from the motion vector prediction list,
16 which is also -- I mean it's a set because it's a
17 list, so, yes.

18 Q And -- and I think we established that the
19 set discussed here, the set of spatial motion
20 vector prediction candidates, is a set consisting
21 of motion information, not of blocks or locations,
22 right?

1 A Yes.

2 Q When the claim recites, select a first
3 spatial motion vector prediction candidate, what
4 is your understanding of selecting something in
5 the context of the claim?

6 A My opinion is that an ordinarily skilled
7 artisan, reading this language and applying plain
8 and ordinary meaning, would understand that word
9 "select" to be synonymous with "designate."

10 Q And I guess I'm -- I'm asking on a real
11 chromatic level. What would you understand an
12 apparatus implementing this claim to do in order
13 to select or designate the first spatial motion
14 vector prediction candidate from the set that we
15 discussed previously?

16 A I'm going to adopt your language here and
17 say "the set" and assume that we all understand
18 that we mean the way that you've been using it and
19 that I have been using it as -- what I said was
20 the big set, you're calling it the set. So I'll
21 call it the set right now.

22 And generally the set has more -- well, it

1 has at least one candidate in it, and there may be
2 more than one, and they're going to be considered.
3 And in order to consider one, we have to pick one.
4 And if we're going to pick one and consider it, we
5 have to have a way to talk about it in the claim
6 language.

7 And so the patent claim language says I'm
8 going to select a first spatial motion vector
9 prediction candidate. That means I'm going to
10 designate one of them that I'm going to be working
11 on or considering for inclusion on a motion vector
12 prediction list.

13 Q So I'll -- I'll paraphrase it a little.
14 Let me know if I have this right. In your view,
15 select a first spatial motion vector prediction
16 candidate occurs when that consideration process
17 begins on that -- one of the members of a set or
18 the big set, to use your terminology?

19 MR. FLEMING: Objection, form.

20 A Now -- now, I've -- I've read, and I --
21 and I ask you to forgive me because I have to ask
22 you to repeat the question.

1 Q In your view, select a first spatial
2 motion vector prediction candidate occurs when the
3 consideration process that you had referred to
4 begins for one of the members of the set or the
5 big set, to use your terminology?

6 MR. FLEMING: Objection, form.

7 A I'm not sure I know the precise meaning of
8 the word "consideration," but the selection here
9 means considering, evaluating whether or not a
10 specific candidate is going to be allowed on the
11 list.

12 Q Looking at the next limitation of claim
13 23, the claim recites: Determine a subset of
14 spatial motion vector prediction candidates based
15 on the location of the block associated with the
16 first spatial motion vector prediction candidate.

17 Do you understand that determining of a
18 subset to be the designation of one or more
19 candidates from the same big set that we were
20 talking about previously?

21 A Yes.

22 Q And that subset is the set of candidates

1 which will be used to compare to the selected
2 first spatial motion vector prediction candidate,
3 right?

4 A Yes.

5 Q When we refer to the first spatial motion
6 vector prediction candidate, what do you
7 understand -- strike that.

8 When we refer to the first spatial motion
9 vector prediction candidate, what candidate do you
10 understand that to refer to?

11 A The one that is currently under
12 consideration.

13 Q So if we were to think about Figure 9 from
14 the '714 patent, the first spatial motion vector
15 prediction candidate could be the motion
16 information or candidate at any one of those A0,
17 A1, B0, B1, or B2 locations; is that right?

18 A It could be, and, you know, it depends on
19 the specific conditions. For example, as we've
20 said, I -- I think it's fair to say that they can
21 all be considered, although some of them may be
22 immediately not allowed. But, yes, there are

1 circumstances that come up where any one of those
2 five could be first candidate.

3 Q After that comparison is performed, the
4 claim recites: Determining to include or exclude
5 the first spatial motion vector prediction
6 candidate in the motion vector prediction list
7 based on that comparison.

8 Is it -- is it your understanding that at
9 this stage in the claim, the first spatial motion
10 vector prediction candidate has not yet been
11 placed into the motion vector prediction list?

12 A I think -- again, I -- I keep asking you
13 to repeat, and I apologize. I think I understood.
14 I was flipping back from Figure 9. Could we go
15 through the question again and let me reconsider
16 it?

17 Q Absolutely. And I might rephrase just a
18 little.

19 What I'm wondering is, do you understand
20 this determine to include or exclude step to mean
21 that until that determination occurs, the first
22 spatial motion vector prediction candidate isn't

1 on the list yet?

2 A That is my understanding, yes.

3 Q And based on what happened in the
4 comparison, it will either remain not on the list
5 or it will be inserted into the list?

6 A In claim 23 that's correct.

7 Q And to your knowledge, are there any
8 claims in the '714 patent that you've analyzed for
9 the purpose of your opinions where that is not the
10 case?

11 A Yes, there are claims where other factors
12 could lead to exclusion besides that comparison.

13 Q So, for -- for example, claim 25, which is
14 a dependent claim, is -- is that what you're
15 referring to?

16 A Dependent claim 25 is -- is one example of
17 another condition, yes, sir, that could lead to an
18 exclusion that is not exactly the same as the one
19 in claim 23.

20 Q Claim 25 describes exclusion based on the
21 way in which the -- a coding unit has been divided
22 and the particular prediction unit for which the

1 claim process is being performed; is that
2 accurate?

3 A Could you repeat, please?

4 Q Claim 25 describes exclusion based on the
5 way in which a coding unit has been divided and
6 the particular prediction unit for which the claim
7 process is being performed; is that accurate?

8 A Well, I'm not sure I know exactly what you
9 mean by the claimed process is being performed,
10 but the idea is -- is pretty simple. It's just
11 that if it's been divided and you have a redundant
12 candidate who's in the second unit, PU, then you
13 don't allow it on the list. That's pretty much
14 all there is to claim 25. So it's a different
15 kind of exclusion than claim 23.

16 Q Not based on a comparison based on the
17 prediction units index?

18 MR. FLEMING: Objection, form.

19 A Based on the -- it -- it's actually based
20 on the location of where it's coming from. It --
21 it's based -- so you're considering -- in claim 25
22 your -- your first candidate is going to be

1 excluded if it comes from the second prediction
2 unit in a pair. And -- and so it's -- it's really
3 based on spatial location of the block from which
4 it came from.

5 Q Understood. Turning back to claim 23,
6 we -- we talked about the selecting step, and
7 we've discussed each step going down to the
8 determining step.

9 Earlier you said that the selecting step
10 consists of designating one of the members of the
11 big set for potential inclusion on the motion
12 vector prediction list, right?

13 A Yes.

14 Q And this determining step at the -- once
15 that's been performed, that's the end of that
16 consideration, right? It's either going to be
17 included or not?

18 A I disagree, because if -- if we're looking
19 at the same limitation, the determining step is a
20 step of determining the subset to which
21 comparisons will be made. So that doesn't end it.
22 It's -- it's sort of more starting it.

1 Q I apologize. I could have asked that
2 question more clearly.

3 The select step begins a consideration
4 process, and then a subset is determined. A
5 comparison is performed, and there is a
6 determination to include or exclude the first
7 spatial motion vector prediction candidate, right?

8 A I'm -- I'm with you now. You're on line
9 44.

10 Q That's correct. And that determination
11 step that starts on line 44, is that the
12 conclusion of the consideration of that selected
13 first spatial motion vector prediction candidate?

14 A It could be, but it isn't necessarily,
15 because there are -- as we've said, there are
16 other conditions that may be evaluated that could
17 lead to exclusions.

18 And also I -- I'd like to point out that
19 I'm -- I -- I don't think that there's an
20 implication of sequentiality here. The steps --
21 the limitations need to be met, but I don't think
22 that there's a hard requirement for ordering.

1 And there are other, you know, claims here
2 that have other exclusion tests, and whether one
3 of them is the last to be performed I don't think
4 is specified by the claim language.

5 Q In your view, you can't include or not
6 include a first spatial motion vector prediction
7 candidate on the motion vector prediction list
8 until it has been selected to be considered for
9 inclusion, right?

10 A Yes, I agree in the sense that that word
11 "selecting first candidate" -- the phrase
12 "selecting first spatial motion vector prediction
13 candidate" means I'm going to subject it to the
14 tests to determine if it gets to be on the list.

15 Q I see. And making sure I have this right,
16 you're saying that claim 23 describes one test,
17 but there could be additional tests that must
18 first be performed before that final determination
19 has been made as to whether the candidate will be
20 placed onto the list or not?

21 A Correct.

22 Q And this -- this final limitation here,

1 this one is a bit different, it seems to me.
2 It -- it describes selecting a prediction
3 candidate from the motion vector prediction list
4 for use in decoding, right? How do you understand
5 that step?

6 A I understand that step as follows: We
7 know -- again, this is with reference to claim 23,
8 the apparatus decoder claim. We know that in
9 column 37 -- I'm going to be as precise as I can.
10 In column 37, line 27 and reading on from there,
11 we have a motion vector prediction list.

12 And so through the functioning of this
13 apparatus or the method in claim 1, which is
14 almost the same thing, we're going to arrive at
15 that list that -- that claimed a motion vector
16 prediction list.

17 Now, one of the motion vectors on that
18 list is going to be signaled from the encoder to
19 the decoder as the prediction. And this list will
20 have been constructed in absolute synchronization
21 at the encoder and the decoder, so the list is the
22 same both places. That's the whole point.

1 And so then the encoder will -- will --
2 will encode an index which says I made a list.
3 For example, maybe there's five motion vectors on
4 this list. We're using the third one for block
5 900 in Figure 9.

6 And that is my understanding of select a
7 spatial motion vector prediction candidate from
8 the motion vector prediction list at line 50 in
9 column 37.

10 Q Let's take a look at Exhibit 3 now, if we
11 could. That's the Rusert reference.

12 A And could you remind -- oh, I've got it.
13 It's 1004.

14 Q Yes, that's right.

15 A I'm there.

16 Q So this reference is -- is directed to --
17 and I'm -- I'm looking at the abstract here. It's
18 a method of selecting PMV candidates, right?

19 A PMV being predicted motion vector.

20 Q And throughout this reference, the term
21 PMV_CANDS with an underscore between PMV and
22 CANDS, so an example of that would be a paragraph

1 4, is -- is referenced.

2 Do you understand the PMV_CANDS in
3 paragraph 4 to be the PMV candidate that is
4 discussed in the abstract?

5 A Well, I will say a couple of different
6 things. The term "PMV candidate" or "PMV
7 candidates" occurs three times in the abstract.
8 And then your question also refers to paragraph 4
9 where we have, you know, this string which is
10 supposed to be PMV_CANDS and sometimes appears
11 with a typo in it.

12 The first thing I would like to say is
13 that my understanding of the PMV_CANDS in
14 paragraph 4 is that it is a list of candidate
15 predicted motion vectors, one of which may be
16 signaled from the encoder to the decoder by an
17 index to be used as the predicted motion vector
18 for a block that's currently being encoded or
19 decoded.

20 So my -- I think where I'm going to answer
21 and stop and let you clarify, because I expect
22 you'll want to, is that I understand PMV_CANDS in

1 Rusert to be equivalent to the claim term "a
2 motion vector prediction list" in the '714 patent.

3 And I think that wasn't exactly the
4 question you posed, so I'll -- I -- I'll conclude
5 there and wait for you to follow up.

6 Q No. I appreciate the description. You --
7 you actually mentioned something I was going to
8 ask about.

9 Occasionally in the -- the Rusert
10 reference the phrase PMV_SANDS, with an S instead
11 of a C, occurs. It's your understanding that
12 that's just a typographic error, and that's
13 intended to read PMV_CANDS?

14 A That's correct. And I will say that this
15 is my understanding of Dr. Creusere's reason for
16 wanting to include Rusert's provisional, because
17 that typo isn't in there. But from my point of
18 view, a person of ordinary skill would have
19 understood this, that when it says SANDS, it meant
20 CANDS.

21 Q At a high level, how does Rusert construct
22 what we're calling PMV_CANDS?

1 A At a high level, Rusert, like the '714, is
2 seeking to encode or decode a block like block 900
3 in Figure 9 of the '714. And Rusert wants to make
4 a list of candidates that will be constructed
5 synchronously, in perfect synchronization by both
6 the encoder and the decoder so that nothing has to
7 be transmitted about constructing the list.

8 And then Rusert wants to signal from the
9 encoder to the decoder an index that will select
10 one of the candidates from that list, the
11 PMV_CANDS it's called, to be used as the
12 prediction for the block that's currently being
13 encoded or decoded.

14 Q You said that Rusert wants to make a list
15 of candidates that will be constructed
16 synchronously with the encoder and the decoder.
17 How does Rusert describe making that list of
18 candidates?

19 A Rusert has a scanning pattern that will
20 consider blocks which have already been encoded
21 for inclusion or exclusion on that list. And
22 Rusert goes through many different ways that that

1 scanning pattern can be implemented with I think
2 what we should -- what we could fairly refer to as
3 a best all around choice being depicted in Figure
4 3n of Rusert.

5 Q And there's other ways that the scanning
6 pattern could be implemented. Those are the
7 depictions in Figures 3a through 3m, right?

8 A I think to be very precise about it, my
9 recollection is that 3a is just sort of declaring
10 what the names are going to be, and then the
11 specification describes scanning patterns through
12 3b and 3h and so on up through n, yeah. I'm not
13 sure that there's an actual scanning pattern
14 described for 3a. I could go back and read it,
15 but I -- I think there's not, off the top of my
16 head.

17 Q Well, looking at 3a, you can see that
18 there's this notation in the figure. You have
19 numbers surrounding a dot, right?

20 A Correct.

21 Q What's your understanding of the dot in
22 Figure 3a?

1 A The dot in Figure 3a corresponds to block
2 900 in Figure 9 of the '714 patent. It is the
3 block that is currently being encoded or decoded.

4 Q Paragraph 52 of Rusert says that there's a
5 block marked with a dot in Figure 3a, and it is
6 the one to be coded. You understand that to mean
7 encode or decoded when it says coded, right?

8 MR. FLEMING: Objection, form.

9 A I understand it to be that it could be the
10 one to be encoded or one to be decoded, yes.

11 Q And the numbers that surround the block to
12 be coded, what did those represent?

13 A I understand your question to be
14 specifically with reference to Figure 3a, and
15 those represent a distance that I believe maybe
16 Rusert refers to as Chebyshev distance. But
17 it's -- it is a distance from the dot. So each --
18 let me be more clear and apologize for speaking
19 unclearly.

20 When we look at Rusert's Figure 3a,
21 there's a dot in the middle. Each -- each
22 character in this apparent dot matrix figure

1 represents a block in a video frame. The dot is
2 the one that is currently being encoded or
3 decoded. The other ones depict the distance by
4 one distance metric calculation of the block where
5 the symbol appears to the dot. So, for example,
6 the one to the immediate right is one step away.

7 Q And I think at paragraph 52, Rusert is
8 describing how the distance is computed based on
9 the square of the X and Y displacements from the
10 dot. Does that seem accurate to you?

11 A Could you repeat, please?

12 Q So in paragraph 52, Rusert seems to be
13 describing that the distance is computed as the
14 sum of the X and Y displacement from the dot.
15 Does -- does that appear accurate to you?

16 A That -- that calculation that you just
17 articulated is given in the second line of
18 paragraph 52, and -- and that is, of course, what
19 we call the Euclidian distance, and it's -- it's
20 one of many distances.

21 You know, there's different ways to define
22 distance, and Rusert goes through a bunch of them.

1 But you're -- you are correct, sir, that the one
2 in the second line of paragraph 52 is what's
3 called the Euclidian distance. And it's what --
4 you know, it's what's taught in high school
5 geometry as the notion of distance, for example.

6 Q And starting from that basis in Figure 3a,
7 Rusert describes a process of visiting individual
8 blocks based on their distance such that nearer
9 blocks are visited first, and further blocks are
10 visited later, right?

11 A In principle, I agree with your statement.
12 In details, I will just -- you know, because it's
13 a deposition and I have to be as accurate as
14 possible, that the business of closest ones first
15 is actually in paragraph 53, not 52. But, yes, in
16 essence, what you said is -- is correct with
17 respect to Figure 3a.

18 Q I appreciate the clarification. If we --
19 if we look at 53, paragraph 53, of Rusert, it says
20 that: We then select blocks in an order that took
21 the closest ones first, right?

22 A Those -- those words appear in paragraph

1 53 exactly as you read them, yes, sir.

2 Q And do you understand Figure 3b to be a
3 reproduction of the blocks in 3a, but with labels
4 indicating the order in which they are selected
5 per paragraph 53?

6 A In order to have the paragraphs and the
7 picture, I'm going to -- I'm going to grab my
8 binder and open to the picture of Figure 3 in the
9 binder and continue looking at the electronic copy
10 of the paragraphs.

11 So the distances are not unique, and so
12 there's not a unique ordering based on distance,
13 but I agree with you that according to paragraph
14 53, Figure 3b is one order of designating that --
15 of designating those blocks based on the distances
16 that are shown in Figure 3a, and -- and Rusert
17 states as much in paragraph 53.

18 Q Because the distances aren't unique, it's
19 necessary to apply a tie-breaking rule to
20 designate certain blocks with the -- the same
21 distance as one another as being visited sooner or
22 later relative to one another, right?

1 A That is certainly one way to look at it
2 and -- and is -- those words, "tie-breaking rule,"
3 are specifically in Ruser, yes.

4 Q Do you have an understanding of the
5 tie-breaking rule that Ruser is applying in
6 coming to Figure 3b?

7 A I don't think it's very important as long
8 as there is a rule.

9 Q So I -- I think we established 3a is not
10 a -- a scan pattern, right? It's -- it's just a
11 depiction of various blocks?

12 A With their distances, right.

13 Q 3b is a scan pattern, right?

14 A Yes, in the sense that 3b shows an order
15 in which these blocks shall be considered. And
16 when I -- when I ask -- when I analyze and ask
17 myself, how does this map to the claim language of
18 the '714, this is -- Figure 3b is specifying a
19 possible sequence in which blocks shown in the
20 positions of -- of Figure 3a and 3b may be
21 selected as first candidate in, for example, claim
22 1 of the '714.

1 Q Rusert notes a problem with 3b, though, in
2 paragraph 54, right?

3 A I -- I'm not sure I would characterize it
4 as a problem, but -- but it's a fact that some
5 would not be available.

6 Q So in practice, it wouldn't be possible to
7 visit every one of the items in this scan pattern,
8 for example, the item labeled 8; is that accurate?

9 A I'm going to split hairs on you. You can
10 visit it, but there's no motion vector there. So
11 it will -- it will not be able to be considered to
12 be on the list.

13 Q In your view, does Rusert describe a
14 process of selecting a candidate from a set of
15 spatial motion vector prediction candidates?

16 A Yes.

17 Q What do you take to be the set of spatial
18 motion vector prediction candidates disclosed in
19 Rusert?

20 A It is the set of motion information,
21 specifically including motion vectors, for blocks
22 that have been previously encoded when Rusert's

1 method is encoding or decoding -- when Ruser's
2 method is encoding, because I stated this in terms
3 of the encoder, the block marked with a dot in
4 Figure 3a.

5 So when you're on the one with the dot,
6 there's a set of them in the frame that have been
7 previously encoded or decoded, thereby potentially
8 having motion vectors available, and that is the
9 set. That is the big set.

10 Q And so in your view, the set in Ruser
11 consists of motion vectors, or does it consist of
12 blocks that have motion vectors?

13 A Well, there's a one-to-one correspondence
14 between those two, but Ruser -- Ruser teaches
15 that PMV candidates can be obtained from the
16 blocks shown in Figures 3a and 3b and considered
17 for inclusion on PMV_CANDS. And PMV_CANDS is the
18 list of the motion vector prediction candidates,
19 one of which will be signaled from encoder to
20 decoder.

21 Q So I think what I'm trying to get at is
22 that earlier you stated that you can visit one of

1 these blocks, but that block may not have a motion
2 vector at that location, right?

3 A That is certainly true.

4 Q If a block doesn't have a motion vector
5 associated with it, that motion vector cannot be a
6 member of the set of motion vector prediction
7 candidates disclosed by Ruser, right?

8 A I'm not sure how to answer, because your
9 question pertains to the set of motion vector
10 candidates disclosed by Ruser, and I'm not sure
11 exactly which set that is you're thinking of.

12 Q You offer an opinion that Ruser discloses
13 selecting a first motion vector prediction
14 candidate from a set of motion vector prediction
15 candidates, right?

16 A Correct.

17 Q And so with respect to the set of motion
18 vector prediction candidates to which you refer
19 for purpose of your invalidity opinions, can that
20 set include a motion vector that does not exist at
21 a block?

22 A If there is no motion vector, it cannot go

1 onto the PMV_CANDS list, and it -- for example, it
2 cannot be part of the claimed subset of PMV -- let
3 me get the language exactly right.

4 If there is no motion vector, then lack of
5 motion vector cannot be a motion vector prediction
6 candidate. The -- the block can be considered,
7 but it may provide no motion vector prediction
8 candidate.

9 Q So looking at paragraph 53, the paragraph
10 describes selecting blocks, not motion vector
11 prediction candidates, right?

12 A Correct.

13 Q But earlier I -- I think you said that the
14 selection in paragraph 53, in your view,
15 corresponds to the selection step recited in the
16 challenged claims of the '714 patent, right?

17 A Well, as a practical matter, you look at
18 the block. If there's no motion vector there, you
19 can't continue. But this is not a distinction, in
20 my opinion, between Ruser and the '714, because
21 in the '714, it's also possible that one of
22 those -- B1, say, has been intra-coded, and then

1 there's no motion vector there either.

2 So I -- I think that -- I'm not sure
3 exactly what the -- what the question is, but
4 what -- what I'm trying to say is, you have to
5 look at the block to determine if there's a motion
6 vector there. And then if there's a motion vector
7 there, well, then can you consider it for
8 inclusion on the list. If there's not one, well,
9 then you can't.

10 And that -- that's -- I think you're
11 asking me about the difference between considering
12 a block versus considering the motion vector of
13 that block. And they're not independent, because
14 you can't see the motion vector unless you look at
15 the block. And until you look at the block, you
16 don't know if there's a motion vector there or
17 not. So you kind of have to do both.

18 Q The selecting step in the '714 patent
19 refers to selecting a motion vector, right?

20 A Yes.

21 Q So for the purposes of your invalidity
22 opinions, is it accurate to say that you identify

1 as selecting a first motion vector prediction
2 candidate on the scenarios in RuserT where a block
3 is considered and also does indeed include a
4 motion vector?

5 A The block is considered. In order to be
6 designated as first candidate -- in order for the
7 motion vector of that block to be selected as a
8 first spatial motion vector prediction candidate,
9 there has to be a motion vector there.

10 Q So are there two stages to the -- the
11 process in RuserT, then, first a selection which
12 looks at the block and then possibly a selection
13 of the motion vector if there is one present?

14 A Yes, in the sense that RuserT teaches that
15 you visit the blocks, and you determine if there's
16 a motion vector available, and there may not be
17 because it may be -- for -- for several different
18 reasons. It may be intra-coded, for example.
19 That's the easiest one to understand.

20 Q I want to make sure that we're careful and
21 precise with our language here. So using --
22 starting with the word "visiting," visiting a

1 block is not the -- what -- what you identify as
2 selecting a first spatial vector motion prediction
3 candidate, right?

4 A Correct.

5 Q Once a block has been visited, then a
6 designation of a motion vector, if there is one
7 present, may occur, and that designation is what
8 you identify as the selection of a first spatial
9 motion vector prediction candidate?

10 A Yes. If there's a motion vector there,
11 then it's going to be designated as first
12 candidate.

13 Q Could we look at page 126 of your
14 declaration, please? I'll wait until you arrive
15 there.

16 A I'm at page 126, and I see the figure at
17 the bottom.

18 Q What is depicted here in the figure at the
19 bottom?

20 A It's an order of processing blocks by an
21 encoder or a decoder.

22 Q Is this a depiction of raster scanning

1 order?

2 A That is what it is called, yes.

3 Q And the way this works is that you begin
4 at the top leftmost block, and then you proceed to
5 the right until the top row is completed. Then
6 you go down to the first from the top and so on
7 and so forth; is that accurate?

8 A Yes, sir, top to bottom, left to right.

9 Q And is this -- the -- the gray-shaded
10 region here, that is a depiction of blocks that
11 have already been either encoded or decoded
12 depending on what side of the process we're on,
13 right?

14 A I agree you are correct, yes, sir.

15 Q The black-shaded block, that's the block
16 that is currently being encoded or decoded, right?

17 A Again, correct.

18 Q In your view, is the gray-shaded region
19 also an illustration of the set of spatial motion
20 vector prediction candidates?

21 A If they all have motion vectors, then,
22 yes, but they might not. So I would say that

1 those are the blocks which could provide motion
2 vector candidates for what I've referred to as the
3 big set.

4 Q So in the event that the region we have
5 depicted here was entirely inter-coded, then the
6 gray-shaded region would be a depiction of the set
7 of spatial motion vector prediction candidates?

8 A I think you said i-n-t-e-r, that they were
9 all inter-coded. And in that case, that would be
10 true, yes.

11 Q That is what I said. In the event that
12 some of the blocks were intra-coded, i-n-t-r-a,
13 some of those gray-shaded blocks would need to be
14 omitted, right?

15 A Correct, because they would have no motion
16 vectors, so then there would be no motion vector
17 to consider as first spatial motion vector
18 prediction candidate.

19 Q Put another way, the set of spatial motion
20 vector prediction candidates cannot include
21 anything that is -- does -- does not have a -- a
22 motion vector?

1 A The set of spatial motion vector
2 prediction candidates cannot contain a motion
3 vector that was obtained from a block such as --
4 for example, one of the ones depicted in Figures
5 3a or 3b of Ruser, it cannot have one -- the --
6 the list -- the set of spatial motion vector
7 prediction candidates cannot include a motion
8 vector that came from a block which has no motion
9 vector. However, there -- let's leave it at that.

10 Q The set of spatial motion vector
11 prediction candidates only includes motion vectors
12 that might actually be selected in Ruser's scan
13 process?

14 A Could you repeat?

15 Q The set of spatial motion vector
16 prediction candidates only includes members that
17 might be selected in Ruser's scan process; is
18 that right?

19 A That is not right, and the reason that
20 it's not right is because there's also an
21 initialization process in Ruser, which can
22 include adding other candidate -- other PMVs,

1 predicted motion vector candidates, that did not
2 come from blocks such as those depicted in Figures
3 3a and 3b.

4 Q Could you point me to where in Rusert you
5 are referring when you described the
6 initialization?

7 A Yes, sir, if you will just give me a
8 second to find it. One example would be in Rusert
9 at paragraph 39.

10 Q Paragraph 39 is describing how the
11 PMV_CANDS list might not start as an empty set.
12 It could start with certain -- it says predefined
13 members. Accurate so far?

14 A Yes, sir, I agree.

15 Q And starting from that predefined group,
16 PMV_CANDS can then be updated, right?

17 A Correct.

18 Q And it's the update process mentioned
19 there in paragraph 39 that corresponds to the
20 scanning pattern and selection behaviors that we
21 discussed with respect to, for example, paragraph
22 53, right?

1 A You're spot on what I was trying to get at
2 with -- with the distinction -- and it's a fine
3 distinction, but I just wanted to make it clear
4 that there was other ways that you could obtain a
5 motion vector than pulling it out of one of those
6 blocks, yes.

7 Q Well, I -- I think the distinction is
8 important. And I guess by my understanding, and
9 I'd like to see if you agree, a predefined motion
10 vector is not selected, is it? It's simply
11 included by -- obligatorily included; is -- is
12 that accurate?

13 A Let's -- yes, it makes the list. It --
14 you know, Ruserit does not nail in specific, for
15 example, necessary and sufficient conditions for
16 how one of these initialization vectors becomes
17 part of PMV_CANDS, for example. But it's clear
18 that Ruserit is teaching that you can put some on
19 there like the 00. And when they go on there,
20 they are sort of special in that they go on there.

21 Now, are we going to say that we selected
22 them and put them on there, or are we going to say

1 we put them on there? I'm not sure that that is
2 -- is anything other than semantics, but, you
3 know, they -- they are put on there to start the
4 list.

5 Q I guess it is a semantic distinction.
6 Taking for granted that, for example, the 00
7 motion vector that -- that you referred to in
8 paragraph 39 is selected and then included on the
9 list, it's -- it doesn't have a subset determined
10 for it, does it?

11 A I'm -- I'm going to give a little bit of a
12 slightly lengthy answer. I shouldn't -- I -- I
13 just indicated with my hands "small," and I -- I'm
14 not going to use my hands anymore.

15 So let's suppose that we put a 00 on
16 there, and that's the first one. There's nothing
17 to compare it to. You're comparing it to the
18 empty set. Is the empty set a set? Yes, it is.
19 Does that comparison count within the claim
20 language? I -- I don't think that's really very
21 important. Practically you put it on there.

22 But Rusert teaches that doesn't have to be

1 the only one. You can put other ones. Now I can
2 put a 12. So now if I put a motion vector 12 onto
3 that list to initialize, it's different from the
4 00. Did I compare it? Well, I did. I might not
5 have explicitly compared it because I knew it was
6 different, but conceptually I did, actually.

7 So I -- I think it's fair to say that in
8 doing this, they are designated. But it's -- it's
9 certainly not as comprehensive a designation and
10 vetting process as the others that are associated
11 with the blocks depicted in Figure 3a and 3b.

12 Q Initialization is a different process from
13 the updating process, which grabs motion vectors
14 from blocks and considers them for inclusion on
15 the list; is that accurate?

16 MR. FLEMING: Objection, form.

17 A Well, I believe -- and -- and I'll go
18 search for this if you want me to, but I'm
19 guessing you won't want me to, but -- so let me
20 just say it, and then we'll decide that.

21 I believe that Ruser actually says that
22 you might reinitialize it every time, but that

1 it's just not expeditious to do so, and so that in
2 practice, you probably wouldn't do that.

3 MR. MICHELI: Can we go off the record?

4 (Recess, 10:38 to 11:28 a.m.)

5 Q Welcome back, Dr. Havlicek.

6 A Thank you.

7 Q Before we took our break, we were talking
8 about the initialization process described in
9 Rusert for PRV_CANDS, and that's described in
10 paragraph 39 of Rusert, right?

11 A At least in paragraph 39, yes.

12 Q One of the things you had mentioned was
13 that Rusert describes possibly reinitializing the
14 list each time. Did I get that right?

15 A I -- I believe that's the case, and
16 I'll -- I'll be happy to look for it, but I think
17 that's right, yes.

18 Q I have a more targeted question, which is,
19 when you say each time, what are those times that
20 you are referring to?

21 A When we consider a different block as
22 shown in Figures 3a and 3b.

1 Q So the idea would be once you've finished
2 with one block and you move to the next, you could
3 potentially perform the initialization process
4 once more, so that you would end up with the same
5 PMV_CANDS list you started with in the prior
6 block. Is that accurate?

7 A You could rebuild the whole list, right.

8 Q So looking at paragraph 41 of RuserT,
9 there's a process described where, in the CANDS
10 list -- and I'm looking now at the bottom of the
11 left-hand column where paragraph 41 is -- the
12 process described as: A PMV_CANDS list may be
13 initialized once (for example, before the start of
14 the video encoder/decoder or before a frame is --
15 a frame is processed or after a number of
16 macroblocks have been encoded in a frame) and then
17 used for coding more than one motion vector.

18 Do you see that?

19 A I do.

20 Q This is describing that a PMV_CANDS list
21 may be used continuously for more than one block,
22 right?

1 A So I agree with your statement. And I
2 will say that I just read paragraph 0041 in its
3 entirety, and -- and I agree with you that at
4 least based on that, I was not recollecting
5 correctly whenever I said that it might be
6 reinitialized at each step, because it's -- it's
7 talking about reinitializing with respect to the
8 dot in the middle, as we had previously discussed,
9 and the dot in the middle of Figure 3a and 3b.

10 Q And paragraph 41 presents multiple
11 options, doesn't it? It says that the PMV_CANDS
12 list can be used for coding a motion vector
13 associated with the current macro -- motion
14 compensation block, which is dynamically generated
15 specifically for the current motion compensation
16 block.

17 And -- and that's an alternative to the
18 scenario we just talked about where you
19 continuously use the same list for more than one,
20 right?

21 A I think so. By dynamically -- let me just
22 read again what you just said. I've got to get my

1 eyeball on it. Dynamically generated specifically
2 for the current motion compensation block, to me
3 that means the dot in the middle of 3a.

4 So what -- what I think we're saying is
5 the same thing. I think that we're saying that
6 you could reinitialize it each time you have a new
7 middle dot, or -- or it says that, alternatively,
8 you could do it once for a bunch of dots, which is
9 not exactly what I said before.

10 And that's why I -- I'm saying that I -- I
11 think -- you know, you pointed out that -- that my
12 on-the-fly remembering there isn't exactly
13 agreeing with -- with 0041. And I'm -- I'm saying
14 that I think you got it right there, and -- and
15 that -- that's exactly what it says.

16 Q And -- and the reason I bring up the two
17 alternatives is because I want to clarify whether
18 your opinion is expressed with respect to the
19 first option, where a PMV_CANDS list is generated
20 specifically for the current motion compensation
21 block, or if your opinion is with respect to this
22 other option, where you continuously use the same

1 PMV_CANDS list.

2 A My opinion was specifically based on
3 building the PMV_CANDS for each dot. And when I
4 say dot, I'm being -- let me just clarify it for
5 the record. We're talking about the dot in the
6 center of Figure 3a, which represents the current
7 block, which would be block 900, for example, in
8 Figure 9 of '714.

9 Q And earlier we talked about how the
10 initialization of the list could take the form of
11 setting the list to be an empty list or,
12 alternatively, setting the list to have some
13 predefined state that consists of one or more
14 predefined motion vectors, right?

15 A Correct.

16 Q Is your opinion with respect to a
17 PMV_CANDS list that is initialized as an empty
18 list or a PMV_CANDS that is initialized such that
19 it has certain predefined members already?

20 A My opinion doesn't depend on whether there
21 are predefined vectors that initialize the list.

22 Q Earlier we were discussing Figure 3b from

1 the Rusert patent, which is described primarily in
2 paragraph 53 of Rusert, just to give you some
3 direction there. In paragraph 54, Rusert
4 discusses that some of the blocks which are
5 labeled in 3b would not be available either
6 because they haven't yet been coded or because
7 they have been, but they do not contain any motion
8 information, right?

9 A We had discussed that, yes.

10 Q And do you understand Rusert's Figure 3c
11 to be a modification of Figure 3b with the
12 unavailable blocks removed?

13 A Yes.

14 Q And if you look at Figure 3c, you'll note
15 that the numbering is no longer incrementing by 1,
16 right? For example, you have 1, 2, but 3 is not
17 present in 3c, correct?

18 A That is true.

19 Q And so is your understanding that Rusert
20 is describing a scanning process where the block
21 that is labeled with 3 in Figure 3b would be
22 visited, but that block would have no motion

1 vector that could be selected?

2 A That -- there -- you said that 3 -- I'm
3 paraphrasing. I understood you to say that in
4 Figure 3c, the numeral 3 disappeared relative to
5 3b, because there was no motion vector present.

6 And my answer is that that is one of the
7 reasons stated that the numeral 3 could have
8 disappeared in Figure 3c, and there are at least
9 one other, which is that it could have been a
10 duplicative motion vector to one that had already
11 been looked at.

12 So, yes, that is one reason that it could
13 have disappeared, that there was no motion vector.

14 Q The scanning process described in Rusert
15 is a process by which locations are visited,
16 motion vectors are selected, and then those motion
17 vectors are considered for inclusion on a list
18 based on whether or not they are duplicative,
19 right?

20 A I agree with the substance of the actions
21 you just stated. I don't believe that Rusert puts
22 an ordering or anything on them. So, yes, those

1 are all factors that could result in inclusion or
2 exclusion, but I just want to be clear that I
3 don't think that I don't think that there's any
4 ordering taught by Rusert in that.

5 Q Earlier we agreed that you can't select a
6 motion vector before you visit a block to
7 determine if there is one present, right?

8 A That sounds fair to me.

9 Q So at least with respect to visitation and
10 selection, there is an order, right?

11 A Could you repeat that? I'm sorry.

12 Q You must first visit a block before a
13 motion vector, if any, is selected, right?

14 A I'll agree to that, yes.

15 Q And you must first select a motion vector
16 before that motion vector could be compared to
17 anything, be it a subset or otherwise, right?

18 A It must be selected as first spatial
19 motion vector candidate, correct.

20 Q Earlier you brought up the concept of a
21 Chebyshev distance. Did I say that correctly?

22 A Russians may argue with this, but I think

1 anything -- Cheby, Cheby, whatever, is fine, yeah.

2 Q Why does Rusert decide to bring up the
3 Chebyshev distance when it had previously proposed
4 using Euclidian distance instead?

5 A Well, I think that would be a question for
6 Rusert, but there are many different notions of
7 distance. He mentions other ones. So it's just a
8 distance metric. And I think -- I think Rusert
9 throwing many different variations on the teaching
10 and pointing out that you could use one distance
11 or another.

12 I -- when I read this patent publication,
13 that question that you just asked, why did he do
14 Chebyshev as posed to some other distance or
15 Euclidian, I never even thought -- it never
16 registered with me that that -- it was just, well,
17 you could use one. You could use the other. And
18 I don't -- I didn't think there was anything more
19 to it than that.

20 Q But it seems to me that Rusert may suggest
21 one reason for using Chebyshev distance in
22 paragraph 55, which suggests that the scan

1 patterns discussed previously have a problem
2 because it's hard to spiral outwards. Do you
3 agree with that?

4 MR. FLEMING: Objection, form.

5 A Well, I don't think it's a problem. I
6 mean, it's -- it's just a different thing you have
7 to deal it. In other words, it -- it can -- you
8 could disambiguate a distance order by using a
9 different distance metric, certainly.

10 But it -- it wouldn't -- well, Rusert uses
11 the language you used. A problem with this
12 pattern is that it is quite hard to spiral
13 outward. Okay. But I don't think that it's -- I
14 don't think it changes the -- the substance of the
15 teaching very much, whether you use one distance
16 or the other.

17 You can still define -- because Rusert is
18 not -- you can still define a scan order. And
19 Rusert is not telling us anything necessary and
20 sufficient about how his teaching requires the
21 scan order to be defined.

22 Rusert is saying here's many options that

1 you can use to define it. A person of ordinary
2 skill would understand you define it.

3 One way may have certain computational
4 efficiencies compared to another or certain
5 challenges or -- you know, if you want to use a
6 challenge as synonymous with problem in paragraph
7 55.

8 But at the end of the day, there's going
9 to be an order that's determined in which you
10 visit those blocks, and that's what's the
11 important component of the teaching to me.

12 Q From paragraphs 56 down through paragraph
13 59, Rusert proposes another approach to the
14 scanning pattern which applies the Chebyshev
15 distance instead of the Euclidian distance, right?

16 A Yes.

17 Q And you'd agree with me that Rusert
18 suggests that this alternative is better than the
19 ones discussed previously, in particular in
20 paragraph 56, because it is easier to calculate
21 the x,y-position of an element of a certain rank?

22 A Yes. Rusert says that -- those words

1 exactly in paragraph 56.

2 Q And it's your understanding that Rusert is
3 saying that these previous scan patterns are
4 undesirable because they have that property of
5 being difficult to calculate?

6 A Well, I mean, Rusert I don't think uses
7 the word "undesirable." Rusert says:
8 Accordingly, an alternative embodiment is
9 provided.

10 And so I -- I suppose when I read it, I --
11 I said -- when I analyzed this, I said, well, if
12 you don't like that problem that was called out in
13 55, here's an alternative embodiment. Maybe that
14 makes you happy. And guess what, if you don't
15 like that, I'm going to give you another one. And
16 if you don't like that, I'm going to give you
17 another one.

18 And we're going to finally get Figure 3n,
19 which I think, as I -- I indicated, my reading of
20 Rusert's teaching is that Figure 3n is actually
21 the preferred scan.

22 Q 3n is kind of the apex of Rusert's

1 sequential improvement to proposed scan pattern,
2 right?

3 A That is the way that I read this, and that
4 is the way that I believe an ordinarily skilled
5 artisan would have read any of this.

6 Q Looking at Figure 3n, there are a few
7 differences between this scan pattern and some of
8 the ones we looked at previously. In particular,
9 there are no labeled items that are not on a
10 horizontal or vertical line from the current block
11 or a diagonal line from the current block, right?

12 A In Figure 3n, there are no labeled blocks
13 or entities there, meaning other than dash, that
14 are -- that fail to be on a horizontal, a
15 vertical, or a diagonal. That is true.

16 Does that distinguish -- your question is,
17 does that distinguish 3n from any of the other
18 ones? Is that what I'm understanding the question
19 to be?

20 Q Well, what I'm getting at is that -- that
21 Rusert does that deliberately, doesn't it, because
22 it suggests that a scan pattern that omits all of

1 those off diagonal, off horizontal, or vertical
2 blocks is preferable, right?

3 A So I -- I'm having a -- trouble with the
4 question, so I need your help. And let me explain
5 the trouble, and then you can hopefully get me
6 on -- where you want me to be.

7 When I look at Figure 3n or any of the
8 others, to me every labeled block is either on a
9 horizontal, a vertical, or a diagonal. So when
10 you say the ones that aren't on a horizontal,
11 vertical, or diagonal, I'm not sure which ones
12 you're talking about.

13 Q Well, maybe I'll direct your attention to
14 paragraph 65 of Rusert here.

15 A Okay.

16 Q It's discussing the previous pattern from
17 3m, which is described in the prior paragraph, and
18 it says: Even this pattern could require too many
19 tests. So an alternative is for all blocks other
20 than the corner blocks and the blocks directly
21 above and to the left of the current block to be
22 excluded.

1 Right? Does that -- does that help
2 clarify?

3 A Well, it doesn't for the language that you
4 used, but it's okay. If you want to -- if you
5 want me to go with what's in 65 and discuss that,
6 I'll be happy to.

7 I mean, what's in 65, what we just read,
8 has other than corner, and maybe you were equating
9 corner and diagonal in a way it wasn't -- I wasn't
10 seeing through or something. I don't see
11 diagonal.

12 Q That's a fair point. Diagonal could mean
13 something different from corner.

14 A That's where I think I'm having trouble,
15 because we're using that word differently from
16 each other.

17 Q Here in Figure 3n, the blocks labeled 4,
18 9, and e are what Rusert is talking about when it
19 says corner, right?

20 A Well, I'll accept that. I -- I hadn't
21 actually thought of it that way. I had looked at
22 Figure 3n and said there's an order there that's

1 fairly clear, and I didn't consider the geometry
2 of it in detail.

3 Q Well, the reason I ask is because it's
4 evident in 3n, Rusert has designated that certain
5 blocks aren't part of the scan order, right?

6 A That is certainly true, yes.

7 Q In your view, if a block is not part of
8 the scan order, can any motion vector that may or
9 may not occupy it be part of the set of spatial
10 motion vector prediction candidates?

11 A It cannot.

12 Q And I think you may -- you may have told
13 me earlier, but I'll ask again. Are your opinions
14 with respect to Rusert specifically with respect
15 to the scan order described in Figure 3n, or do
16 you consider other scan orders?

17 A The scan order in Figure 3n is sufficient
18 for my opinion that Rusert teaches the elements
19 articulated in the grounds described in my
20 declaration.

21 Q You don't offer opinions with respect to
22 scan orders other than 3n?

1 A Without sitting here and rereading and
2 reviewing every, you know, claim element argument,
3 I can't recall if there was ever a case that 3n
4 wasn't sufficient. It's possible that it was, and
5 I just don't remember that off the top of my head.

6 Q In the --

7 A Of course, I'll be happy to go through it,
8 but I think -- I'll leave that to you, but I -- I
9 don't, off the top of my head right now, sitting
10 here, recall a case where 3n was not sufficient,
11 but there -- there may have been.

12 Q I appreciate that clarification.

13 I'm going to provide you another exhibit,
14 and I'm placing it into the chat. This one is
15 labeled Drawing 1.1, and I'm going to mark that as
16 Exhibit 7.

17 (Exhibit 7 marked.)

18 A And I am currently looking at Drawing 1.1.

19 Q Do you see that Drawing 1.1, or Exhibit 7,
20 depicts a 3-by-3 grid with a square in the middle
21 grid cell?

22 A I do see that, yes.

1 Q And what I'm attempting to depict here is
2 the current block that Rusert describes with
3 surrounding blocks. Does that make sense?

4 A Yes, sir. I -- I believe I understand you
5 to say that the -- the one with the dot is the
6 same as the dots in Rusert's Figure 3 and that the
7 surrounding ones are others that would be right
8 around that one in Rusert's Figure 3.

9 Q A much better description than I provided,
10 I appreciate that.

11 What I'd like to do is consider how Rusert
12 will apply its scan pattern to the current block
13 that is depicted in Exhibit 7. Based on the scan
14 pattern that we've been examining, which of the
15 blocks in Figure -- in -- in Exhibit 7 will Rusert
16 visit first?

17 A Well, Rusert does not nail that down.
18 Rusert says there will be a scan order. Rusert
19 suggests it should be based on distance because
20 that will -- Rusert says that will lead to more
21 efficient variable length codes for the index.
22 But Rusert -- I want to state that my

1 understanding is, every single one of scan
2 patterns discussed with regards to Ruser's Figure
3 3 is simply an illustrative example.

4 So one could impose an order on the blocks
5 shown in Exhibit 7, and my understanding is that
6 that would be following the teaching of Ruser,
7 that you -- you -- you have an order and the -- I
8 mean, the specification of an order is -- is
9 simple to a person of ordinary skill.

10 It -- it, for example, could be east
11 neighbor, north neighbor, west neighbor, south
12 neighbor, northeast, northwest, southwest,
13 southeast. I believe that that would be an order
14 that one could apply that would be consistent with
15 the teachings of Ruser.

16 And now having said that, you know, we get
17 to -- I'm sorry for this complexity, but I -- I'm
18 thinking on my feet here. Well, if it's H.265 and
19 not H.264, then it's possible that all of those
20 blocks were already processed because of division
21 of a -- of a coding unit, or maybe they weren't.
22 So it might be that you can't consider the ones

1 that are below the dot, you know.

2 But of the ones that are available, you
3 could use that ordering, and I don't think that
4 the particular order is -- I don't think Rusert is
5 teaching you that you have to use any particular
6 ordering, just that there is an ordering. There
7 is an outward scan pattern. And it doesn't
8 actually, I think, even have to be outward. We
9 can check that, but it's -- there has to be an --
10 a scan order.

11 Q Any order that you were to impose on those
12 eight blocks that surround the current block, so
13 long as there is an order, would be consistent
14 with Rusert's teachings?

15 A I'm -- I'm going to check that, but off
16 the top of my head, that's my answer, and I'll now
17 try to verify that.

18 So, yeah, I'm going to just slightly
19 qualify by saying that I think it's fair to say
20 that Rusert teaches that the ordering should be
21 based on allowable distances, but I don't think
22 that Rusert ever says you have to do the closest

1 ones first.

2 I mean, Rusert gives you reasons why it
3 may be advantageous to do so, but I don't think
4 that Rusert's teaching requires that. Rusert says
5 in paragraph 11, for example: Wherein each PMV
6 candidate corresponds to a motion vector used for
7 coding of a previous block, said previous block
8 having a distance from a current block. The
9 method comprises identifying allowed distance
10 values of distances between the current block and
11 the previous block. It doesn't say you have to do
12 the closest ones first, but then he later tells
13 you it might be smart do that.

14 So, I mean, again, I -- I think that from
15 my viewpoint, the scan patterns illustrated in
16 Figure 3 are illustrative, but I -- I don't think
17 that we can say that picking one order in your
18 Exhibit 7 as opposed to another order would or
19 would not be consistent with Rusert, with the
20 teachings of Rusert, unless it wasn't based on
21 distance at all.

22 Q If we were to apply the order present in

1 Figure 3n, that would be one example of a -- a
2 valid ordering to impose on the blocks depicted in
3 Figure -- in Exhibit 7, right?

4 A Certainly it would.

5 Q And I think your point is that that's not
6 the only one; there could be other valid
7 orderings?

8 A Yes. Ruserst says there's an ordering.
9 It's based, at least in part, on distance, allowed
10 distances.

11 Q In Exhibit 7, no blocks that are depicted
12 there surrounding the current block have yet been
13 visited, right?

14 A I don't -- I'm sorry, I don't know the
15 answer to that because it's just blocks.

16 Q That's fair. Assuming that none of the
17 blocks in Exhibit 7 have yet been visited, what
18 are the contents of PMV_CANDS?

19 A It could be the empty set. It could be
20 the 00 vector. It could be the -- it could be one
21 or a plurality of other initialized vectors that
22 are put on there to initialize, as in paragraph

1 39. It could be a list of still eligible
2 predicted motion vectors left over from a previous
3 neighborhood, a previous instance of Exhibit 7
4 where the dot was in a different block.

5 As -- as you pointed out correctly, I
6 believe at paragraph 41, you said, where, you
7 know, you don't necessarily restart the PMV
8 candidates every time. So there's a lot of
9 different possibilities, but all of those are
10 among them.

11 Q PMV_CANDS will be in some initial state,
12 whether that is empty, the predefined state for
13 initialization, or the state that it arrived at
14 when it was performing a process for some other
15 block, right?

16 A It is correct to say that that is true of
17 PMV_CANDS, yes.

18 Q But we know that PMV_CANDS does not
19 contain any motion vectors taken from around the
20 current block if we understand that none of the
21 surrounding blocks have yet been visited in
22 Exhibit 7, right?

1 A I think I got it, but I'm going to have to
2 ask you to repeat it.

3 Q So given the assumption that we have not
4 yet visited any of the surrounding blocks for that
5 current block, PMV_CANDS is in its initial state
6 and does not yet include any motion vectors from a
7 block surrounding that current block, right?

8 A That could happen, yes.

9 Q If we were to apply the scan order from
10 Figure 3n, do you agree with me that the first of
11 the blocks to be visited would be the block
12 directly north of the current block?

13 A I do so agree.

14 Q I'm going to provide you with a different
15 drawing. This is Drawing 1.2, which I'll label as
16 Exhibit 8.

17 (Exhibit 8 marked.)

18 A I have got Exhibit 8 open, and I am
19 looking at it.

20 Q Exhibit 8 depicts the block that would be
21 visited in the first iteration of the scan pattern
22 in Figure 3n, right?

1 A Yes.

2 Q When Rusert visits the block in Exhibit 8
3 that is labeled with a 1, Rusert will consider
4 whether that block contains a motion vector,
5 right?

6 A Yes.

7 Q If the block contains a motion vector,
8 Rusert will compare that motion vector to the
9 contents of PMV_CANDS, if any, correct?

10 A Rusert may or it may be short-circuited
11 for some other failure. For example, Rusert may
12 determine that there's a motion vector -- I'm
13 sorry, now I lost myself. I'm going to have to
14 ask you to repeat.

15 Q If the block labeled 1 contains a motion
16 vector, Rusert will compare that motion vector to
17 the contents of PMV_CANDS, if any, right?

18 A So there's a fine, fine, fine shade of
19 meaning here that is what is making me go slow.
20 And I'm going to try to explain it to you as
21 clearly as I can.

22 In Rusert, the term, all capitals,

1 PMV_CANDS, C-A-N-D-S, is a list of predicted
2 motion vector candidates, one of which is signaled
3 by an index from encoder to decoder to be used as
4 the predicted motion vector for the current block,
5 which is the dot that we've been talking about.
6 That is the meaning of PMV_CANDS.

7 Now, there is a slightly different shade
8 of meaning to a list of candidates. So I'm
9 looking right now at paragraph 91, and I'll --
10 I'll wait for a moment.

11 Q Please continue.

12 A When I look at paragraph 91, we see that
13 below there, there's a table of candidates. And
14 it says in 91: As an example, assume we have the
15 following candidates.

16 It doesn't -- this is the point that I'm
17 making. It does not say there PMV_CANDS. It says
18 the following list of candidates. And so Rusert
19 is making that comparison to that list of the ones
20 shown in that table, which it could coincide. The
21 list of candidates are there, it could, but does
22 not have to, coincide with PMV_CANDS, but it

1 might.

2 And the thing that I'm saying is, in a --
3 in a big picture way of thinking, I essentially
4 agree with the idea that you're saying, which is
5 that you have this list, and you're comparing, and
6 you're trying to remove unnecessary and redundant
7 entries.

8 But whether that is what Rusert
9 specifically calls PMV_CANDS, I disagree.
10 Rusert -- to me when Rusert says PMV_CANDS, that
11 is the list of PMV candidates, one of which shall
12 be signaled by an index.

13 Rusert, while constructing this -- while
14 performing this process wherein your -- I believe
15 we're up to Exhibit 8, whichever one it is, the
16 green number 1, you ask me, well, does Rusert
17 compare this to PMV_CANDS.

18 And I agree with the idea that it's
19 compared to PMV candidates if there are any. I'm
20 just not agreeing that that is PMV_CANDS according
21 to the strict interpretation of Rusert's teaching.

22 Q Okay. I -- I want to make sure I

1 understand the point you're making.

2 You said that PMV_CANDS is the list of PMV
3 candidates, one of which shall be signaled by an
4 index; is that accurate?

5 A Yes, sir.

6 Q And looking at paragraph 91 that you
7 pointed to, there is a list of seven candidates.
8 That's what it says they are in 91, and each of
9 those is paired with an index, right?

10 A Correct.

11 Q And that's where I might be missing the
12 shade of distinction you're making. Is the table
13 shown in paragraph 91 not a list of PMV
14 candidates, one of which shall be signaled by an
15 index?

16 A My opinion on that is that it is not, and
17 I'm going to just keep talking and tell you the
18 reason that I'm saying that.

19 It is because it is possible, according to
20 the teachings of Ruser, for candidates to make
21 the list while we are going around the scan
22 pattern and then to be kicked off the list such

1 that when you get to the end, PMV_CANDS does not
2 contain those ones that were kicked off.

3 So it's possible for them to get on, but
4 then be excluded later because, for example, they
5 would never be used because a later entry that did
6 make the list would always be chosen first.

7 And for that reason, PMV_CANDS, in my
8 reading of how I believe a POSITA would read it,
9 is the final list, but not necessarily -- it may
10 coincide the whole way or it might not while we're
11 building it up.

12 My -- my point is -- I'm sorry, it's a
13 very fine point, and I apologize for this. But
14 PMV_CANDS, by my reading and my understanding, is
15 that final list of the candidates, and until we
16 get there, it's just a list of PMV candidates.

17 Q So if we look at -- bear with me. If we
18 look again at paragraph 41, Rusert describes that:
19 Before a block is processed, a PMV_CANDS list is
20 initialized and then updated with a number of
21 previously coded or predefined motion vectors.

22 Do you see that?

1 A I do.

2 Q Earlier you said that PMV_CANDS is the
3 final list, but it appears from paragraph 41 that
4 PMV_CANDS is also the initial list, right?

5 A I think that that's a fair reading.

6 Q And the -- the reason I wanted to make
7 sure I clarified is because it -- it seems to me
8 that Rusert is describing a PMV_CANDS that is, to
9 use a computer science term, a -- a mutable list.
10 It is successively updated from its initial state
11 until it arrives at the final state. Do you agree
12 with that?

13 A I -- I do exactly agree with that, yes.

14 Q And so turning back to Exhibit 8, what I'm
15 trying to parse out is, what mutations are
16 occurring to PMV_CANDS when we visit the block
17 labeled 1, find a motion vector, and process it?

18 A So Rusert teaches that if there's a motion
19 vector there, it can be considered to be added to
20 the list, which we're building up. We're -- it's
21 the mutable list, as you said.

22 And there are tests that are going to be

1 applied to determine whether that motion vector
2 that's present in the north green neighbor is
3 going to make the list or not. And if it passes
4 the test, it makes the list.

5 And examples of the tests are, is it
6 duplicative of an already existing one? Now, this
7 is the first one. So as an example, we could
8 consider that the -- the list was initialized with
9 a 00. Now we visit the first block, the one
10 marked green in this exhibit. It's not a 00.
11 There's a motion vector. It passes that test.

12 There are other tests that it might fail,
13 or it might pass them all, and if it passes them
14 all, then it will get added to the evolving list.

15 Q One of the tests that Rusert describes is
16 a check to see if the motion vector under
17 consideration is duplicative of a already present
18 member in PMV_CANDS.

19 Did I get that right?

20 A That is absolutely true.

21 Q What other tests does Rusert describe
22 other than the duplication check?

1 A I'll start by citing two other tests. One
2 test is that it might not be duplicative, but it
3 might be sufficiently close. And let's not go
4 right now into the details of that, but what it
5 means intuitively is, it wasn't an exact match,
6 but it was close enough that we're not going to
7 count it because it's redundant.

8 Then there's another type of test -- at
9 least one more type of test that -- that Rusert
10 describes beginning at paragraph 90 and going
11 around to about paragraph 96 or 97, where you may
12 have a candidate that you can determine would
13 never be used, and so then I think it never makes
14 the list.

15 Q Taking first the -- can I -- can I call it
16 a threshold deduplication test, the -- the second
17 test you mentioned.

18 A I will understand what you mean by that,
19 yes.

20 Q Because it's not checking for exact
21 quality, it's just checking if the difference is
22 below some threshold; is that accurate?

1 A Within a threshold distance, yes.

2 Q And so that check would be done with
3 respect to each member of PMV_CANDS at the point
4 that the test is performed, right?

5 A Yeah. I think paragraph 21 is fairly
6 clear that there's three sorts of tests here.
7 Now, I think that the substance of your question
8 is something to do with when those tests are
9 applied; is that correct?

10 Q Yes. What I'm asking is, deduplication or
11 the threshold-based deduplication are both
12 performed during the time after the spatial motion
13 vector prediction candidate at block 1 has been
14 selected, but before a decision is made as to
15 whether to include it on the list; is that
16 accurate?

17 A I agree with the first half. I agree that
18 it has to be after the selection, but I don't
19 think Rusert is telling us clearly whether it has
20 to occur before going on the list because Rusert
21 uses this language, removed from the list.

22 And it's unclear, I think, to a person of

1 ordinary skill if that means that you put it on
2 the list and then take it off or if you never
3 allow it on the list to begin with or maybe it --
4 either one of those. I'm not sure.

5 THE WITNESS: We may have lost him.

6 COURT REPORTER: Should we go off the
7 record?

8 MR. FLEMING: Let's go off the record
9 briefly.

10 (Recess, 12:34 to 12:39 p.m.)

11 Q Dr. Havlicek, before we were disconnected,
12 I asked you -- excuse me. Let me -- let me
13 collect myself if I could.

14 MR. MICHELI: Susan, could I get a
15 read-back of the last question? The realtime
16 doesn't appear to be showing it.

17 (Record read.)

18 COURT REPORTER: Would you like me to read
19 back the answer?

20 THE WITNESS: I'll just -- I'll just start
21 over.

22 COURT REPORTER: Okay.

1 A I -- I agree with half of it. I agree
2 that these tests are applied after selection of
3 the motion vector associated with the block, for
4 example, green 1 in the exhibit.

5 I -- my reading of Rusert is that it's
6 ambiguous whether the other tests, by the other
7 tests, the -- by the other tests, I mean the
8 threshold test and the never would be used test,
9 whether it is required for Rusert's teaching that
10 they be applied before adding to the list, after
11 adding to the list, and then removing or
12 either/or. I think it's either/or.

13 So what I'm saying is, Rusert uses the
14 language "removing," and I think that that
15 removing needs to be read in a way of either you'd
16 never put it on there because it failed the second
17 test, or you put it on, perform the second test,
18 and then took it off. Either way, when -- when
19 you're ready to move to the next block, your green
20 1 is either on there or it's not.

21 But exactly when the test occurs, does it
22 occur before or after this motion vector is

1 written into a memory, a memory location, I don't
2 think Ruserst tells us that, and I don't think it's
3 important to the spirit of Ruserst's disclosure.

4 Q In the opinion you offer, you map
5 PMV_CANDS to the subset that is disclosed in the
6 challenged claims of the '714 patent, correct?

7 A I think that that's a little bit
8 ambiguous, and this is a -- this is a case where
9 I'm not really sure if Dr. Creusere meant to make
10 that exact mapping.

11 But PMV_CANDS can be considered as a
12 logical structure, or it can be considered in
13 an -- in an apparatus as actual implementation and
14 thing -- you know, values being written to memory.
15 So I think, you know, we have to -- we have to
16 really get into the details of that to -- to
17 answer in a definitive way.

18 But PMV_CANDS, if you just read Ruserst, it
19 evolves. As -- as we're determining the final
20 list for one of the blocks indicated by a dot in
21 Figure 3 and the center dot in the last two
22 exhibits that you showed, the -- this list of

1 candidates, PMV_CANDS, in construction, under
2 construction, if you will, certainly it evolves.

3 And, now, your question is, is that the
4 subset? And sometimes it is equivalent to the
5 subset. Sometimes it has exactly the same entries
6 in it as the subset, and sometimes it doesn't.

7 And I'm going to say just a little bit
8 more to clarify that. The reason that I'm saying
9 that is because as we are processing, for example,
10 the scan order in Figure 3n, building the final
11 PMV_CANDS list for the dot at the center of Figure
12 3n, which corresponds to the dot in the center of
13 your last two exhibits, some PMVs, predictive
14 motion vectors, could make the list, be part of
15 PMV_CANDS, and then be kicked off the list.

16 And so at different points in the scan
17 process, when we're, for example, at a point in
18 the process where the block marked 5 is current --
19 is currently first candidate or the block marked 7
20 is currently first candidate, PMV_CANDS could have
21 changed. The subset could have changed, and --
22 and so the PMV_CANDS in a sense corresponds to the

1 subset, but it's not always a one-to-one
2 correspondence.

3 Q Could I direct you to -- and I'm looking
4 now at Exhibit 2 now, your declaration, page 140.

5 A Sure, I'm on page 140.

6 Q And I'm looking at the second-to-last
7 sentence of paragraph 123, which reads: As the
8 scan progresses outwards and the subset of PMV
9 candidates is updated, the subset is stored as a
10 list of PMV candidates called PMV_CANDS.

11 And that's what I thought I understood you
12 to be mapping, the subset to PMV_CANDS. Do you
13 agree that that's what Dr. Creusere is saying in
14 this paragraph?

15 A Well, I agree that Dr. Creusere is saying
16 that there's a list PMV_CANDS, and I do also agree
17 that it is a subset. It's not 100 percent clear
18 to me if it is the claimed subset.

19 Q Well, I guess I'll just ask you. For the
20 purpose of establishing the presence of the
21 claimed subset, what are you pointing to?

22 A The claimed subset to me is any

1 initialized vectors that were put there, plus the
2 ones -- any PMVs, predicted motion vectors, that
3 were obtained from blocks visited in going around
4 the scan order, for example, in Figure 3n up to
5 the one that we're on.

6 So if we're -- if -- if current first
7 candidate is 5, it's any motion -- PMVs, predicted
8 motion vectors, that we might have gotten from 1,
9 2, 3, 4, and any initialized ones that were put in
10 there prior to -- to the start of the scan.

11 Q So the subset to which you point for the
12 purpose of your invalidity opinions is not only
13 the members that were added as part of the update
14 process disclosed in Ruser, it is additionally
15 the initial vectors that may be present prior to
16 the start of that updating process?

17 A So I'm sorry, I have to ask you to repeat
18 the question.

19 Q The subset you're pointing to for the
20 purpose of establishing your invalidity opinions
21 does not only consist of motion vectors added as
22 part of the update process described in Ruser.

1 It also includes motion vectors that were
2 initialized on the list prior to the update
3 process beginning; is that accurate?

4 A For the -- well, let me say Rusert will
5 make that comparison. If there's an initialized
6 motion vector there, Rusert will make that
7 comparison.

8 Is that part of my invalidity position? I
9 answer no for the reason that the claim language
10 says determining a subset of spatial motion vector
11 prediction candidates based on a location of the
12 block associated with the first spatial motion
13 vector prediction candidate, which I just took
14 from the -- the '714 at 31, 34.

15 And so it's not necessary to make that
16 comparison, so Rusert teaches making this
17 comparison, but it's not part of -- of my argument
18 for why Rusert meets that claim limitation.

19 MR. FLEMING: And, Joe, we've been going
20 for a bit over an hour here, so whenever you think
21 is a good place to take a break.

22 MR. MICHELI: We can take a break now.

1 MR. FLEMING: All right. Let's do that.

2 (Recess, 12:56 to 1:12 p.m.)

3 Q So, Dr. Havlicek, before we took our
4 break, we were discussing the subset that is
5 claimed in the challenged claims of the '714
6 patent. What are you pointing to that you say
7 shows the presence of the subset in the challenged
8 claims in Rusert?

9 A So at a high level of abstraction, it's
10 the list of predicted motion vector candidates
11 that have been obtained up to a certain point in
12 the scan order where we are selecting a first
13 candidate, and then that first candidate needs to
14 be compared to the subset obviously. That's what
15 the limitation says.

16 And so those -- there will be comparisons
17 made according to Rusert to motion vectors that
18 have been obtained from the previously visited
19 blocks. An example of that -- a specific example
20 of that occurs, for example, in a table that is
21 right below the -- the paragraph callout for
22 paragraph 91 in Rusert. And so that's an example

1 of a list of PMV candidates that is the subset.

2 And that subset is obviously evolving all
3 the time as you process around the scan order.
4 And it may be that at certain times that subset
5 precisely coincides with PMV_CANDS. I think that,
6 you know, the term "PMV_CANDS," Rusert says there
7 can be multiple PMV_CANDS, you know. So that's a
8 little bit of a -- of a loosey term.

9 But what is clear is that Rusert teaches
10 there's a list of PMV candidates, whether you want
11 to call it PMV_CANDS or something else, and
12 whether that is differentiated by the logical
13 structure of the list versus an apparatus where
14 it's writing to memory and so on.

15 Again, I don't -- it doesn't really impact
16 my opinion that Rusert teaches there is a subset.
17 An example of a subset is given in the table below
18 the callout for paragraph 91. And that subset is
19 the subset that I equate to the claimed subset in,
20 for example, claim 1 of the '714.

21 Q Okay. And let's look again at Exhibit 8
22 and see if we can identify what that subset is

1 going to look like as we finish considering the
2 block that is marked 1.

3 Assuming the motion vector present in 1 is
4 not duplicative of anything already present in the
5 subset, the subset will be extended to
6 additionally include that motion vector alongside
7 the ones that were there previously; is that
8 accurate?

9 A I believe that everything you just said is
10 true. I would also like to add that I -- I
11 recollect you specifying that the green box with
12 the 1 would be the first one. So let's just
13 assume for the sake of argument that there was no
14 initialization. Then at that point, the subset is
15 empty. And the -- the -- the box that you have
16 marked green would be the first one, and so it
17 would make the list, and that's that. And then
18 the list would have that motion vector on it.

19 And if -- if that's where we're trying to
20 get to, I 100 percent agree with that.

21 Q Okay. So -- and let me make sure I'm
22 getting each one of those details correct. In

1 Exhibit 7, that's the step prior to Exhibit 8, the
2 subset is empty; is that accurate?

3 A Yes. We're assuming no initialization.

4 Q And after we process the motion vector at
5 1 in Exhibit 8, the subset contains the motion
6 vector from 1; is that accurate?

7 A I mean, under some reasonable assumptions
8 which we don't, I think, need to go through, yes,
9 it's got a motion vector, yes.

10 Q And so we have established our subset at
11 this stage for the next block that has a motion
12 vector; is that accurate?

13 A No, it is not accurate.

14 Q Why is that not accurate, Dr. Havlicek?

15 A The reason it's not accurate is because in
16 order to specify a subset, you have to -- you have
17 to have a set. You have to say which elements of
18 the set are in the subset and which elements of
19 the set are not in the subset. And according to
20 the teachings of Ruser, you cannot say which
21 elements are not in the subset until you have
22 selected the current first candidate.

1 I'll be more specific. When current first
2 candidate is the block noted as 5 in Figure 3n,
3 then the motion vector from the block marked 6 is
4 not allowed in the subset.

5 Later, if block 7 in Figure 3n is current
6 first candidate, then the block marked 6, if it
7 provides a motion vector, is providing a motion
8 vector that is allowed in the subset.

9 And in this case, whether or not a motion
10 vector associated with the block marked 6 is to be
11 part of the subset or not depends on -- before you
12 can determine that, you have to say whether the
13 current first candidate that is selected is block
14 5 -- is the candidate from block 5 or the
15 candidate from block 7.

16 That's why I'm saying that the section has
17 to occur in order to determine the subset.

18 Q How do you determine whether the current
19 first candidate that is selected from block 5 is
20 the candidate from block 5 or from block 7, as you
21 stated in your last answer?

22 A It's determined by the scan order. So

1 Rusert teaches that you are going to consider
2 these blocks in an order. And so when you
3 consider block 5, then if there's a motion vector
4 there -- a -- a PMV -- I'm sorry -- if there's a
5 motion vector there, then it can be selected as
6 current first motion vector candidate. And then
7 it needs to be compared to a subset, and that
8 subset is not allowed to include any motion vector
9 that might be coming from the block 6.

10 Q Because --

11 A That --

12 Q -- block 6 -- I apologize, Dr. Havlicek.
13 Please continue.

14 A Yeah. And so I believe your question was,
15 is the subset determined prior to the selection?
16 And my answer is that the subset cannot be
17 determined prior to the selection because we may
18 know that certain PMV motion vector candidates are
19 in the subset, but we don't which ones aren't in
20 the subset until we have selected which motion
21 vector candidate is currently first spatial motion
22 vector prediction candidate.

1 Q I appreciate that, Dr. Havlicek. And I
2 apologize, I am having an issue with my video, I
3 am still present.

4 A Thank you. Your -- your name isn't as
5 good looking as you. Don't take that the wrong
6 way.

7 Q Well, thank you very much, Doctor.

8 When block 5 in Figure 3n has been
9 selected, is it possible for a motion vector that
10 may or may not be present in block 6 to be a
11 member of the subset?

12 A When block 5 is selected as first spatial
13 motion vector prediction candidate, according to
14 the teachings of Rusert, it is not possible for
15 any motion vector from the block marked 6 to be
16 part of the subset. That is not possible at that
17 time, according to Figure 3n. That's the end of
18 my answer, sorry.

19 Q Why is it not possible for any motion
20 vector from block 6 to be part of the subset at
21 the time that block 5 is selected?

22 A Because Rusert teaches that we follow a

1 scan pattern that has an order to it, and the
2 order in the example of Figure 3n does not look at
3 the motion vector associated with the block marked
4 6 until after the subset has been evaluated with
5 regards to any motion vector that may be present
6 at the block marked 5.

7 Q And likewise, at the time that block 5 is
8 selected, it's not possible for a motion vector
9 from the block marked 6, 7, or 8 to be a member of
10 the subset, right?

11 A That is my reading of Ruser, yes, sir.

12 Q Ruser's subset can only consist of motion
13 vectors taken from blocks prior to the selected
14 block in the scan order; is that accurate?

15 A Again, yes, that is the way I read Ruser,
16 and it's the way I believe a person of ordinary
17 skill reads Ruser.

18 Q If the block marked 5 has been selected
19 and each of the blocks at 1, 2, 3, and 4 contain
20 unique motion vectors, what does the subset
21 consist of?

22 A It would be those motion vectors which

1 were obtained from 1, 2, 3, and 4, assuming that
2 they pass the other two tests, which are, as we
3 said, the threshold test and the would never be
4 used test.

5 Q And if the motion vector in the block
6 marked 5 also passes those tests, what will the
7 subset be updated to contain?

8 A I -- I just am going to be very -- I'm
9 going to endeavor to be very precise here and
10 clarify that you -- you just asked me what will
11 the subset contain. And I want to clarify that I
12 am taking that to mean determining a subset in
13 '714 patent, column 31, line 34. That is the
14 subset I believe that you're asking me about.

15 And assuming that the subset was the
16 motion vectors associated from 1, 2, 3, 4 at the
17 time block 5 was first spatial motion vector
18 prediction candidate, and assuming that 5 provided
19 another motion vector that passed all three tests
20 and made the evolving list of PMV candidates, then
21 Rusert teaches that the process would advance to
22 select a new first -- well, to consider another

1 block. The next block considered would be 6.

2 Assuming that 6 provided a valid motion
3 vector, then that would become the new first
4 spatial motion vector prediction candidate. Then
5 a subset would have to be determined.

6 That subset would include, one, the motion
7 vectors gleaned or obtained from the blocks
8 labeled in Figure 3n of Ruser, 1, 2, 3, 4, 5, and
9 then the process would continue.

10 That is the end of my answer.

11 Q Thank you, Doctor. And so I -- I want to
12 make sure I'm understanding the process. Could
13 you look at paragraph 71 of Ruser, please?

14 A I am there on paragraph 71, 0071.

15 Q Paragraph 71 of Ruser describes
16 performing the deduplication test when updating
17 the list, right?

18 A Yes, sir.

19 Q And the list that paragraph 71 describes
20 updating is the subset that you identify for the
21 purpose of your invalidity opinions, correct?

22 A And I've -- I've reread the paragraph

1 again, but I have to ask you to repeat the
2 question. I'm sorry to keep doing that.

3 Q The list that paragraph 71 describes
4 updating is the subset that you identify for the
5 purpose of your invalidity opinions, correct?

6 A So when we look at paragraph 71 in line 3,
7 it says: When updating the list. It goes on
8 there in line 4 to say: The candidates already in
9 the list. Those two occurrences of the list are
10 what I'm pointing to as the subset.

11 Q So when Rusert visits a given block, there
12 is an existing list, which, as paragraph 71
13 explains, contains candidates which will be
14 compared with the new vector from the block being
15 visited, right?

16 A That's all true, yes, sir.

17 Q And in the event that the new vector
18 passes the comparison, the list will then be
19 updated to include the new vector, right?

20 A If it passes the test, yes, it will be
21 added.

22 Q And once that update has concluded, Rusert

1 will then move to the next block in the scan order
2 and select that block, right?

3 A It will. And we have previously bickered
4 between ourselves about the selection being a
5 motion vector or a block, and -- and you just said
6 select the block. So I'm going to take that to
7 mean that it's going to consider that block when
8 you use the word "select" right there, and within
9 that tiny detail, I agree.

10 Q That's a good point. Once the update to
11 the list has concluded, we know the subset to
12 which the next selected motion vector will be
13 compared, but we do not yet know if the next
14 visited block contains a motion vector, correct?

15 A This is very, very precise language, so I
16 again have to ask you to repeat.

17 Q Once the update to the list has concluded,
18 we know the subset to which the next selected
19 motion vector will be compared, but we do not yet
20 know if the next visited block contains a motion
21 vector?

22 A It is true that we know the next block

1 that will be visited. It is true that we do not
2 know if that block has a motion vector.

3 Q And if the next block to be visited does
4 not have a motion vector, Ruser will proceed to
5 the block after that in the scan order, right?

6 A Well, I think what's more important is
7 that the subset to which the next block, which, in
8 our example, is block 6 -- the subset to which
9 block 6 will be compared is determined based on
10 the spatial location of block 6 relative to the
11 dot in the center, which is the order of the scan.
12 And so the subset is not determined until 6 is
13 selected.

14 That is my point, and that, I think, is
15 our point of difference of opinion.

16 Q If block 6 is visited and does not contain
17 a motion vector, block 7 will be visited next,
18 correct?

19 A Correct.

20 Q If block 6 is visited and does not contain
21 a motion vector, no comparison will be performed
22 because there is no motion vector to compare to

1 any subset, right?

2 A That is also true.

3 Q If block 6 is visited and does not contain
4 a motion vector, and then Rusert proceeds to block
5 7, and it does contain a motion vector, that
6 motion vector will be contained -- will be
7 compared to the same subset that block 6's motion
8 vector would have been compared to if it existed,
9 correct?

10 A In the circumstance that you have just
11 described, the motion vectors that will be present
12 in memory and compared are, in fact, the same --

13 Q And --

14 A -- because the -- because the subset did
15 not change. However, my point is that it is a
16 different subset. It just happens to have the
17 same elements in it. But what is important is
18 that to specify a subset, you have to say what's
19 in it and what's not in it.

20 And so the subset -- Rusert teaches that
21 the subset can be different when you're on 5 and 6
22 and if 6 doesn't have a vector and you proceed to

1 7, still the process of forming the subset is
2 different for each one, because the allowable
3 motion vectors, if present, that can be in the
4 subset changes each time you change which block is
5 being considered in the scan order.

6 And we can construct an example where
7 there are no motion vectors, where this whole part
8 of the image was intra-coded, all the neighbors
9 were intra-coded, for example, then there are no
10 possession vectors.

11 And that same thing happens in the '714
12 patent as well, that the A0, A1, B0, B1, B2 could
13 also all fail to provide any motion vectors. And
14 if that occurs, then the subset that exists in
15 memory for the apparatus might be an empty subset.

16 However, Rusert teaches that that doesn't
17 happen all the time. Rusert teaches that when
18 there's motion vectors there, the subset depends
19 on the location of the block that is currently
20 under consideration relative to the dot in the
21 middle of Figure 3n.

22 And I'll -- I'll stop there, and I'm sure

1 you want to follow-up.

2 Q One thing I'd like clarify is that earlier
3 you said that the motion -- excuse me. Earlier
4 you said that the subset can remain unchanged and
5 yet be a different subset between blocks 6 and 7
6 when block 6 does not contain a motion vector; is
7 that -- is that accurate?

8 A What I mean is that there's the notion of
9 the construction of the subset as a logical
10 structure. And there is also, distinct from that,
11 the notion of the subset of actual motion vector
12 values that would be stored in a memory.

13 So there's a method here that says select
14 a subset. And that subset could be empty. It
15 could have one in it. It could have seven in it.
16 The construction of the subset follows rules that
17 depend on which point you're at in the scan
18 pattern.

19 So even though it is possible that you can
20 have a degenerate subset, that never changes the
21 whole time through the scan pattern. It's
22 possible that that can occur. It doesn't mean

1 that those subsets are identically the same thing,
2 because it's just as likely that it -- that --
3 that they're not going to be degenerating.

4 And so the algorithm, the method is that
5 taught by Ruserst says that that subset is
6 different at each step in the scan pattern, but it
7 can occur in any given image frame when you're on
8 a particular block trying to encode it or decode
9 it, that the subset that you end up with for this
10 block doesn't -- doesn't have motion vectors or
11 only has some reduced number available.

12 And then it may be that the subset, in
13 fact, the values that are stored in memory, don't
14 always change at each step through the scan
15 pattern. That could occur, but Ruserst teaches
16 that doesn't have to occur, and, in fact, it's not
17 the expected thing that occurs.

18 Q I want to return to Exhibit 8 again and
19 first make sure that we're on the same page
20 regarding the state of the scan in Exhibit 8.

21 A Yeah. I'm working on getting that up, and
22 please help me remember that that is the Drawing

1 1.2, right?

2 Q That's right.

3 A I'm looking at it now, sir.

4 Q Earlier when we were talking about the
5 example in Exhibit 7 and 8, we established that
6 the subset started out empty, right?

7 A It doesn't have to, but we talked through
8 that example, and that's fine for us to start
9 there right now, sure.

10 Q And so when the block labeled 1 is visited
11 and found to contain a motion vector, no
12 comparison will be performed, right?

13 A Because in this case, there's nothing to
14 compare to, so I agree that you're correct.

15 Q And so it's guaranteed that the motion
16 vector at block 1 will be add to the subset,
17 right?

18 A You mean the claimed subset?

19 Q I mean the claimed subset, yes.

20 A I disagree because when the block -- green
21 block 1 is current -- I have to keep looking back
22 at the language, I'm sorry.

1 When the green block is current first
2 spatial motion vector prediction candidate, the
3 subset is empty. When the motion vector that we
4 have agreed is present there gets added to the
5 list of -- when the determination is made to
6 include the first spatial motion vector prediction
7 candidate in the motion vector prediction list,
8 based on the comparing that was not done, then at
9 that point, there isn't a subset, according to the
10 claim language.

11 We have to designate -- or, excuse me, we
12 have to select another first spatial motion vector
13 prediction candidate and then determine the subset
14 of spatial motion vector prediction candidates
15 based on a location of the block associated with
16 the first spatial motion vector prediction
17 candidate.

18 So if I understand your question, once we
19 conclude processing of the block marked green 1 in
20 Exhibit 8, then the language of the '714 patent
21 needs to select another first spatial motion
22 vector prediction candidate.

1 Q Does the language of the '714 patent
2 describe selecting more than one spatial motion
3 vector prediction candidate?

4 A Well, I would say that it implies it, and
5 the reason I say that is because in column 31,
6 line 42, the claim language says: Without making
7 a comparison of each pair from the set of spatial
8 motion vector prediction candidates.

9 And it goes on in line 44 to say:
10 Determining to include or exclude first spatial
11 motion vector prediction candidate in the motion
12 vector prediction list based on the comparing.

13 So there's a list, there are comparisons,
14 and there's a subset and a set. And if you only
15 ever -- if you only ever select one first spatial
16 motion vector prediction candidate, then it
17 appears that there could never be a plurality of
18 motion vector candidates -- prediction candidates,
19 excuse me, from the motion vector prediction list
20 to be transmitted to the decoder.

21 So in order to have multiple spatial
22 motion vector prediction candidates on the motion

1 vector prediction list referred to in line 49 of
2 column 31, it would necessary to select at least
3 more -- at least more than one first spatial
4 motion vector prediction vector candidate.

5 Q I appreciate that clarification. I -- I
6 do want to go back to your earlier answer
7 regarding Exhibit 8, though. It --

8 A Yes, sir.

9 Q It sounds like what you're saying is that
10 when the motion vector that we've agreed is
11 present in the block labeled 1 is added to the
12 list, it is not added to the subset; is that
13 right?

14 A Yes. My reading and my understanding,
15 which I believe is the way that a person of
16 ordinary skill would read it, is that the claim
17 language -- again, I'm going to keep providing
18 references even though it's painful for all of us
19 to listen to. In column 31 of the '714 patent at
20 line 34, it says: Determining a subset of spatial
21 motion vector prediction candidates.

22 This is the subset, I believe, that you

1 are referring to in your question. And that
2 subset is based on a location of the block
3 associated with the first spatial motion vector
4 prediction candidate. And so in order to
5 determine that subset, there has to be selected a
6 first spatial motion vector prediction candidate.

7 Q And here I'm asking about Rusert. In
8 Rusert --

9 A Yes, sir.

10 Q -- what list is the motion vector from
11 block 1 in Exhibit 8 added to?

12 A And I have to ask you one more time to --
13 to repeat the question.

14 Q What list is the motion vector from block
15 1 in Exhibit 8 added to in Rusert?

16 A So assuming that block 1 is selected as a
17 motion vector, motion vector passes the test, then
18 it shall be added. And the list that it's added
19 to is -- first I'm going to tell you intuitively
20 it is the list that Rusert's method is building up
21 as it goes around the scan pattern.

22 Now, I need to map that to something

1 specific in the teaching. And so where examples
2 of that occur is in the table shown immediately
3 below the callout of paragraph 0091, for example.

4 Q And the list shown in the table
5 immediately below paragraph 91 in Rusert, is that
6 different from PMV_CANDS as disclosed in Rusert?

7 A So I -- I want to first say that if we
8 look at paragraph 0012, it refers to a PMV
9 candidate list that is created by selecting a
10 subset of the motion vectors previously used for
11 previous blocks.

12 This is the list that I was referring to,
13 also as an exemplar the list shown below the call
14 out of 0091 paragraph in my answer to your
15 previous question.

16 So I just wanted to -- to complete that,
17 that, you know, there's multiple references to
18 this list which we may or may not call a PMV_CAND.
19 I'm not sure if Dr. Creusere meant to make that
20 equivalency, but -- so this list that's also
21 referred to 0012 is the list I'm referring to in
22 answer to your previous question.

1 Now, your currently pending question, I'm
2 sorry, I forgot it already. I'm -- if you'd --

3 Q Well, let -- let me withdraw that
4 question. I -- I want to continue clarifying
5 this.

6 The PMV candidate list recited in 12 of
7 Rusert, you're saying that that is the same
8 structure as the list shown in the table of
9 paragraph 91 in Rusert, right?

10 A Well, that is a PMV candidate list, and
11 the PMV candidate list that's being created in
12 paragraph 0012 is being constructed as Rusert's
13 method goes around the scan order. And at a
14 specific time, that list may take the appearance
15 of the example list shown below paragraph header
16 for 0091.

17 Q I understand. So the --

18 A I -- I want to go on for just a second, if
19 I could.

20 It's not 100 percent clear in Rusert's
21 teaching whether all tests are performed before or
22 after a candidate associated with the given block

1 is added. It may be that it's determined that it
2 would never be used, so it doesn't get added, or
3 it may be that it gets added, then that test
4 performed. But either way, at the end of the
5 processing of a given block, it either was or
6 wasn't added.

7 And I apologize for interrupting you, sir.

8 Q No. I apologize for interrupting you.

9 I want to ask about paragraph 12, which
10 describes a PMV candidate list. It sounds like
11 what you're saying is that the PMV candidate list
12 in 12 can have various contents, an example of
13 which is shown in the table under paragraph 91.
14 Is that accurate?

15 A It is accurate when we understand that the
16 PMV candidate list is created. So there's a
17 process through which it's created. And at a
18 certain time during -- at a certain time in that
19 creation process, it may look exactly like the
20 list below the header for paragraph 91. That's
21 what I am saying, yes.

22 Q And the PMV candidate list discussed in

1 paragraph 12 of Ruser, in your opinion, is not
2 the same structure as PMV_CANDS which is discussed
3 throughout Ruser; is that right?

4 A Well, the problem with that is that Ruser
5 can have multiple PMV_CANDS. And so it's not a
6 100 percent clear which one we're talking about.

7 What is clear -- what is clear from
8 Ruser's teaching is that there's a scan pattern.
9 The blocks are considered in a predetermined
10 order. If there's a motion vector available at a
11 block when it becomes under consideration, there
12 is a list, and that list is the subset. And that
13 motion vector, if it's available, will be compared
14 to the ones that are on the list, and the list is
15 evolving until we complete the scan order.

16 Q What --

17 A And if you want to -- now we're -- we're
18 asking, well, what about the identifier PMV_CANDS?
19 That refers to a list. What I can say for sure,
20 what is clear from Ruser's teaching, is that
21 there is a list called PMV_CANDS that will, at the
22 conclusion of the scan order, for example,

1 depicted in Figure 3n, have an index chosen to
2 select one of the PMVs on that list, and that will
3 be communicated to the decoder by the encoder.
4 That is clear.

5 Now, Rusert teaches there may be a
6 PMV_CANDS list for different -- there may be
7 multiple PMV_CANDS lists. So, I mean, I can cite
8 examples with the by prediction in paragraph 0042,
9 P versus -- by prediction versus unit prediction
10 and so on.

11 But what I -- what I'm trying to say is, I
12 don't think that Rusert is 100 percent clear on
13 exactly whether and when PMV_CAND is finalized,
14 when it's under construction, when it's officially
15 given that name.

16 But what is clear is that there is a list
17 of predicted motion vector candidates. We proceed
18 through a scan pattern. Each block in the scan
19 pattern that is considered may provide a motion
20 vector. If that motion vector is provided, it is
21 compared to the ones that are currently in the
22 list that is being built up.

1 And at the end of the scan pattern, there
2 is a list that is called PMV_CAND, and one of
3 the -- one of the entries on that list is signaled
4 to the decoder by the encoder. All of that is
5 clear.

6 Q If a motion vector is provided, that
7 motion vector is compared to other motion vectors
8 currently in the list being constructed by Ruser,
9 correct?

10 A Yes, assuming that there are some,
11 correct.

12 Q And the list being constructed by Ruser
13 is the PMV candidate list discussed in paragraph
14 12, correct?

15 A It is.

16 Q And you identify the list against which a
17 motion vector is compared as the subset recited in
18 the challenged claims of the '714 patent, right?

19 A Yes, sir, correct.

20 Q So is it fair to say that at the time that
21 comparison takes place, the PMV candidate list
22 recited in paragraph 12 is the subset against

1 which that candidate is compared?

2 A I think it's not quite what I said. What
3 I meant to say and -- I mean, what I tried to say,
4 and I hope I succeeded, is that a PMV candidate
5 list is being created. And Rusert teaches in
6 paragraph 12 that you select a subset of the
7 motion vectors previously used for previous
8 blocks, and those are the ones that will be
9 compared.

10 Q So the PMV candidate list in paragraph 12
11 is not the same as the subset of the motion
12 vectors previously used for previous blocks; is
13 that your testimony?

14 A Repeat the question, please.

15 Q The PMV candidate list in paragraph 12 is
16 not the same as the subset of the motion vectors
17 previously used for previous blocks. Is that what
18 you're saying?

19 A Not exactly. So let's -- let's look again
20 very carefully at the language in paragraph 12.
21 It says: A PMV candidate list is created.

22 And you're asking me, as I understand it,

1 when that list is halfway built, is it the PM --
2 is it -- is the a PMV candidate list -- in line 1
3 of paragraph 12, is the "a PMV candidate list" the
4 same as a PMV candidate list that's halfway built?

5 It's like saying if Trump's ballroom, when
6 it's halfway built, is it a ballroom? Well, some
7 people might say it is. Some people might say it
8 isn't.

9 Rusert doesn't tell us if, when it's
10 halfway built, it's called the "a PMV candidate
11 list." What Rusert tells us is that a PMV
12 candidate list is created, and it's created
13 through a process that involves selecting a
14 subset. And it is an iterative process.

15 And unless I'm missing at what -- what I
16 think you're asking is, is it called the "a PMV
17 candidate list" when it's halfway built? And I --
18 I don't know how to answer that, because Rusert
19 doesn't tell me what it's called when it's halfway
20 built.

21 Rusert tells me a PMV candidate list is
22 created, yes. Rusert tells me it's created by

1 selecting a subset of the possession vectors
2 previously used, yes. And if I read on through
3 Ruser's teachings, Ruser teaches me that there
4 is a -- there is an -- you know, an iterative
5 process here of going through a scan order by
6 which the "a PMV candidate list" in paragraph 12
7 gets created. What it's called when it's halfway
8 built, I'm not honestly sure. But it's -- that's
9 the list we're talking about, yes.

10 I'm sorry if that -- I'm asking you if
11 that's sufficient or if you want to give me
12 another follow-on.

13 Q The subset described -- excuse me.

14 Other than in paragraph 12, does Ruser
15 disclose a subset which is used for constructing a
16 PMV candidate list?

17 A For example, Ruser discloses such a
18 subset in the table located below the callout of
19 paragraph 0091, which we have -- you know, we
20 visited it before. And it is an example of a
21 subset that would exist at some point in time
22 during the construction, yes.

1 Q In Rusert, if a candidate is available,
2 that candidate, regardless of what its label is,
3 will be compared to everything on the PMV
4 candidate list at the time that it is processed;
5 is that accurate?

6 A It will be compared in some sense. Rusert
7 doesn't tell us exactly which tests might be
8 applied first, second, third, and whether --
9 whether the candidate in question might be put
10 onto the list after, say, one test is passed and
11 then further tested or whether all tests are
12 applied before putting on the list. Those details
13 are not given to us by Rusert.

14 But essentially, the idea that I
15 understand you to be saying, I agree with, that
16 when there's a new candidate, it needs to be
17 determined if it's equal to any of the ones that
18 are currently on the list, if it's within a
19 threshold of any of the ones that are currently on
20 the list, and if it falls into a would never be
21 used condition compared to the ones that are on
22 the list.

1 Now, whether all of those tests are
2 exhaustively performed, if one of them is failed
3 is not -- is not specified, I think, by Rusert,
4 but some kind of comparison occurs.

5 And that's the end of my answer.

6 Q And that some kind of comparison that
7 occurs is a comparison to everything on the PMV
8 candidate list at the time that that processing
9 for the new motion vector occurs, right?

10 A Everything that's in the subset at that
11 time, yes, an example of which is in that table.

12 And that concludes that my answer. I'll
13 just keep saying that concludes my answer, so we
14 know.

15 Q You know, it is actually helpful. I
16 appreciate that.

17 I want to ask you about a portion of
18 Rusert at paragraph 45 and extending through 49.
19 Do you -- do you see those paragraphs?

20 A I am jumping there right now. I -- I see
21 paragraph 45. It's a short one.

22 Q And do you see that paragraph 45, 46, 47,

1 48, and 49 each describe a condition on which
2 Rusert's scan may be terminated as discussed in
3 the last sentence of paragraph 44?

4 A Yes, sir, I've -- I've read it. I
5 think -- I've read it. I understand what it says.
6 I understand its relationship to the last sentence
7 of paragraph 44.

8 Q And in paragraph 44, what's being
9 described as PMV_CANDS list being updated with new
10 motion vectors until one of these termination
11 conditions in 45 through 49 occurs, right?

12 A Yes. It's teaching that those are
13 conditions that could be used to terminate the
14 building of the list. It doesn't say that those
15 have to be used. It says that they may be used.

16 And that's the end of my answer to that
17 current pending question.

18 Q And until one of these conditions or a
19 different termination condition occurs, PMV_CANDS
20 continues to be successively updated with each
21 next motion vector as Rusert proceeds about its
22 outward going scan, right?

1 A Well, so what it says in the last sentence
2 of paragraph 44 is that: The scan may be
3 terminated when at least one of these conditions
4 is met.

5 It doesn't say that it has to be
6 terminated on one of those conditions, and it
7 doesn't say that other conditions might not be
8 used. But it says that it may be terminated if
9 one of those is met.

10 Now, as a practical matter, a person of
11 ordinary skill would understand that if you're out
12 of blocks, that's the end of the story. You can't
13 continue the scan.

14 So I think that from a practical point of
15 view, if the condition in 45 occurs, the scan
16 cannot be continued, so it terminates.

17 As to paragraph 46, if you've reached the
18 end of the video, and there are no more blocks,
19 then the scan cannot be continued, so it
20 terminates. Those are not negotiable.

21 47 states -- paragraph 47 states that:
22 Once a certain distance has been reached.

1 Well, that's a discretionary condition
2 that a person of ordinary skill could apply, and
3 it's one that Ruserf talks about a lot. So I
4 think it is reasonable to say that Ruserf is
5 teaching that is a termination condition that is a
6 -- is a important part of Ruserf's teaching. It's
7 not mandatory, but it's a stopping condition that
8 Ruserf teaches you can use.

9 And 49, paragraph 49 says: All blocks of
10 a predetermined scan pattern have been scanned.

11 That's sort of the main Ruserf teaching,
12 and so that is the one that I had in mind when I
13 was formulating my opinions. It's not mandatory,
14 but it's certainly the one that goes with Ruserf's
15 recommended scan pattern in Figure 3n.

16 And so I'll stop there.

17 MR. MICHELI: I think we've been going a
18 little over an hour now. Why don't we take a
19 break.

20 THE WITNESS: Sounds great to me.

21 MR. MICHELI: Go off the record.

22 (Recess, 2:25 to 2:43 p.m.)

1 Q Dr. Havlicek, we've gone around this
2 subject a lot over the course of this deposition,
3 but I just want to ask you one more time.

4 What is it that you are going to tell the
5 Board corresponds to the subset that is disclosed
6 in the '714 patent's challenged claims from
7 Rusert?

8 MR. FLEMING: Objection, asked and
9 answered.

10 A It is the list of predicted motion vector
11 candidates to which a potential new addition
12 predicted motion vector candidate associated with
13 a block in Rusert's scan pattern is compared in
14 order to determine if that new predicted motion
15 vector candidate associated with the current block
16 in the scan pattern is going to be allowed onto
17 PMV_CANDS or not.

18 Q When preparing for today's deposition, did
19 you review Dr. Creusere's deposition testimony
20 from the prior IPR proceedings?

21 A That, sir, is a very interesting question,
22 and the answer is that I did not review it, per

1 se. However, as I've previously mentioned, I read
2 the entirety of the POPR, which I believe had --
3 had selective quotes. So those portions which
4 were in there, I have read, yes, sir.

5 Q And are you aware that Dr. Creusere
6 submitted a declaration challenging the validity
7 of the '714 patent in another IPR proceeding than
8 the 604 and 605 proceedings which you include in
9 your declaration as appendices?

10 A No one has made me aware of that. I'm --
11 yeah. I'm 100 percent sure that you're telling me
12 that for the first time.

13 Q And do you incorporate any opinions from
14 Dr. Creusere into your declaration other than the
15 opinions expressed in those two appendices to your
16 declaration?

17 A I do not.

18 Q You represent ASUS in this matter, right?

19 MR. FLEMING: Objection, form.

20 A I -- well, I've never spoken to ASUS, but
21 I am told by counsel that I am -- that, you know,
22 ASUS is petitioner, and I'm working on their

1 behalf, yes, sir.

2 Q Are you working on behalf of Acer?

3 MR. FLEMING: Objection, form.

4 A Not to my knowledge.

5 MR. MICHELI: I pass the witness.

6 MR. FLEMING: Let's just take two minutes
7 and then come back on the record.

8 MR. MICHELI: Sounds good.

9 (Recess, 2:47 to 2:49 p.m.)

10 MR. FLEMING: Kyle Fleming on behalf of
11 ASUS. Dr. Havlicek, thank you for your time. I
12 have no questions for you, so I'll also pass the
13 witness.

14 MR. MICHELI: No more questions.

15 (Deposition adjourned at 2:49 p.m.)

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CERTIFICATE OF SHORTHAND REPORTER

I, Susan S. Klinger, Certified Reporter
before whom the foregoing deposition was taken, do
hereby certify:

That JOSEPH HAVLICEK, PH.D., the witness
whose deposition is hereinbefore set forth, was
duly sworn by me before the commencement of such
deposition, and that such deposition was taken
before me and is a true record of the testimony
given by such witness, that said testimony was
taken by me stenographically and thereafter
reduced to typewriting under my direction.

I further certify that the adverse party,
ASUSTek was represented by counsel at the
deposition.

I further certify that the deposition of
JOSEPH HAVLICEK, PH.D. occurred remotely on
February 16, 2026, commencing at 8:03 to 2:49

I further certify that reading and signing
was not discussed.

I further certify that I am not related to

1 any of the parties to this action by blood or
2 marriage, I am not employed by or an attorney to
3 any of the parties to this action, and that I am
4 in no way interested, financially or otherwise, in
5 the outcome of this matter.

6 IN WITNESS WHEREOF, I have herunto set my
7 hand on the 19th of February, 2026.

8
9 
10 _____

11 Susan S. Klinger, RMR-CRR, CSR

12 Texas CSR 6531, Exp: 10/31/27

13 California CSR 14487, Exp: 11/30/26
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A			
a0	61:7	actual	advance
43:16, 44:3,	abstraction	11:21, 12:2,	132:21
44:8, 44:10,	124:9	28:9, 28:15,	advanced
44:12, 44:21,	accept	64:13, 119:13,	25:13
44:22, 45:9,	98:20	139:11	advantageous
45:11, 45:17,	accepting	actually	104:3
52:16, 138:12	40:8, 40:9	11:18, 12:20,	adverse
a1	according	27:7, 55:19,	163:14
44:3, 52:17,	45:12, 68:13,	62:7, 67:15,	after
138:12	110:20, 111:19,	79:12, 83:6,	26:22, 53:3,
ability	124:17, 127:19,	83:21, 95:20,	85:15, 116:12,
6:17	130:13, 130:17,	98:21, 103:8,	116:18, 118:2,
able	142:9	156:15	118:10, 118:22,
11:7, 11:20,	accordingly	add	127:4, 131:4,
19:6, 70:11	95:8	12:19, 126:10,	136:5, 147:22,
about	accurate	141:16	155:10
5:13, 13:7,	40:15, 48:13,	added	again
20:11, 21:11,	55:2, 55:7,	113:19, 114:14,	12:10, 22:15,
23:17, 26:9,	66:10, 66:15,	122:13, 122:21,	32:9, 38:12,
27:22, 28:5,	67:13, 70:8,	134:21, 142:4,	53:12, 53:15,
28:14, 32:19,	74:22, 77:7,	144:11, 144:12,	59:7, 77:17,
35:16, 41:16,	80:13, 81:12,	145:11, 145:15,	86:22, 99:13,
43:1, 45:5,	83:15, 85:6,	145:18, 148:1,	104:14, 112:18,
47:2, 48:4,	111:4, 115:22,	148:2, 148:3,	125:15, 125:21,
50:5, 51:20,	116:16, 123:3,	148:6	131:15, 134:1,
52:13, 56:6,	126:8, 127:2,	adding	135:16, 140:18,
62:8, 63:7,	127:6, 127:12,	33:15, 79:22,	144:17, 152:19
64:8, 74:11,	127:13, 127:14,	118:10, 118:11	against
84:8, 86:7,	127:15, 131:14,	addition	151:16, 151:22
86:18, 88:5,	139:7, 148:14,	160:11	ago
88:9, 93:20,	148:15, 155:5	additional	8:17, 11:15
97:12, 98:18,	accurately	20:15, 21:21,	agree
109:5, 115:11,	45:3	58:17	6:16, 25:10,
132:14, 135:4,	acer	additionally	58:10, 67:11,
141:4, 145:7,	162:2	122:14, 126:6	68:13, 77:14,
148:9, 149:6,	achieved	adjourned	80:14, 81:9,
149:18, 154:9,	34:11, 35:5	162:15	86:1, 86:3,
156:17, 157:21,	acknowledged	adjustment	90:20, 91:14,
159:3	21:19	10:17, 11:2	93:3, 94:17,
above	acknowledges	admit	107:10, 107:13,
97:21	35:15	10:13	110:4, 110:18,
absolute	acrobat	adobe	113:11, 113:13,
59:20	18:8, 33:20	18:8, 33:20	116:17, 118:1,
absolutely	across	adopt	121:13, 121:15,
53:17, 114:20	9:15, 35:3	26:2, 26:6,	121:16, 126:20,
abstract	action	27:13, 49:16	135:9, 141:14,
60:17, 61:4,	164:1, 164:3	adopted	155:15
	actions	25:17	agreed
	90:20		27:14, 91:5,

142:4, 144:10 agreeing 87:13, 110:20 ahead 17:15, 46:20 al 30:14 algorithm 140:4 all 23:17, 29:19, 49:17, 52:21, 55:14, 64:3, 77:21, 78:9, 91:1, 96:22, 97:19, 102:19, 104:21, 106:9, 108:22, 114:13, 114:14, 124:1, 125:2, 132:19, 134:16, 138:8, 138:13, 138:17, 144:18, 147:21, 151:4, 155:11, 156:1, 159:9 alleged 34:17, 35:18 allow 55:13, 117:3 allowable 103:21, 138:2 allowed 41:17, 42:5, 51:10, 52:22, 104:9, 105:9, 128:4, 128:8, 129:8, 160:16 alluded 42:19 almost 25:15, 39:17, 59:14 alongside 126:6 already 27:14, 44:15, 63:20, 77:11, 88:19, 90:10,	102:20, 114:6, 114:17, 126:4, 134:8, 147:2 also 13:21, 14:10, 14:18, 15:6, 16:7, 25:9, 30:20, 42:18, 47:9, 48:12, 48:14, 48:16, 57:18, 61:8, 73:21, 75:3, 77:19, 79:20, 113:4, 121:16, 123:1, 126:10, 132:6, 137:2, 138:13, 139:10, 146:13, 146:20, 162:12 alter 12:1 alternative 86:17, 94:18, 95:8, 95:13, 97:19 alternatively 87:7, 88:12 alternatives 87:17 although 52:21 always 112:6, 121:1, 140:14 amazon 25:12, 26:21 ambiguous 118:6, 119:8 among 106:10 analysis 10:8, 27:1 analyst 13:17 analyze 69:16 analyzed 54:8, 95:11	another 18:20, 23:19, 24:1, 24:16, 26:21, 33:15, 37:17, 38:10, 39:11, 40:3, 41:20, 54:17, 68:21, 68:22, 78:19, 92:11, 94:4, 94:13, 95:15, 95:17, 100:13, 104:18, 115:8, 132:19, 132:22, 142:12, 142:21, 154:12, 161:7 answer 6:14, 12:20, 22:13, 36:19, 45:2, 45:6, 61:20, 72:8, 82:12, 90:6, 103:16, 105:15, 117:19, 119:17, 123:9, 128:21, 129:16, 130:18, 133:10, 144:6, 146:14, 146:22, 153:18, 156:5, 156:12, 156:13, 157:16, 160:22 answered 160:9 any 8:14, 9:4, 12:16, 13:9, 13:22, 26:4, 26:8, 32:1, 33:12, 40:2, 46:8, 52:16, 53:1, 54:7, 89:7, 91:3, 91:13, 96:5, 96:17, 97:7, 99:8, 103:5, 103:11, 106:19, 107:4, 107:6, 108:9, 108:17,	110:19, 121:22, 122:2, 122:7, 122:9, 129:8, 130:15, 130:19, 131:5, 137:1, 138:13, 140:7, 155:17, 155:19, 161:13, 164:1, 164:3 anymore 82:14 anyone 28:19 anything 20:11, 78:21, 82:2, 90:22, 91:17, 92:1, 92:18, 93:19, 126:4 apex 95:22 apologize 53:13, 57:1, 65:18, 112:13, 129:12, 130:2, 148:7, 148:8 apparatus 35:19, 42:1, 47:6, 47:10, 47:12, 49:12, 59:8, 59:13, 119:13, 125:13, 138:15 apparent 65:22 appeal 1:3 appear 25:16, 66:15, 67:22, 117:16 appearance 147:14 appears 18:14, 19:11, 21:1, 22:8, 33:21, 43:2, 47:5, 61:10, 66:5, 113:3,
---	---	---	---

Transcript of Joseph Havlicek, Ph.D.
Conducted on February 16, 2026

167

143:17 appendices 25:19, 161:9, 161:15 appendix 24:14, 24:19 application 4:12, 4:14, 4:16, 14:14, 20:7, 22:19, 36:5, 36:6 applications 35:11 applied 114:1, 116:9, 118:2, 118:10, 155:8, 155:12 applies 94:14 apply 40:4, 68:19, 101:12, 102:14, 104:22, 107:9, 159:2 applying 49:7, 69:5 appreciate 7:15, 62:6, 67:18, 100:12, 101:10, 130:1, 144:5, 156:16 approach 94:13 approximately 5:15, 28:2 april 29:10 area 14:14 aren't 68:18, 97:10, 99:5, 129:19 argue 91:22 argument 100:2, 123:17, 126:13 around 30:11, 64:3,	101:8, 106:19, 111:21, 115:11, 122:3, 125:3, 145:21, 147:13, 160:1 arrive 59:14, 76:14 arrived 12:1, 106:13 arrives 113:11 articulated 66:17, 99:19 artisan 49:7, 96:5 asked 6:13, 13:11, 26:11, 26:18, 27:2, 57:1, 92:13, 117:12, 132:10, 160:8 asking 49:10, 53:12, 74:11, 116:10, 132:14, 145:7, 149:18, 152:22, 153:16, 154:10 aspect 26:4 aspects 10:14, 10:15 assesses 40:12, 40:19 associated 41:7, 42:2, 44:21, 45:10, 46:5, 46:8, 51:15, 72:5, 83:10, 86:13, 118:3, 123:12, 128:10, 131:3, 132:16, 142:15, 145:3, 147:22, 160:12, 160:15 associates 13:19 assume 22:19, 49:17,	109:14, 126:13 assuming 20:13, 22:17, 23:11, 105:16, 126:3, 127:3, 132:1, 132:15, 132:18, 133:2, 145:16, 151:10 assumption 107:3 assumptions 127:7 asus 1:6, 17:14, 17:16, 18:3, 18:8, 18:21, 19:3, 19:6, 20:16, 20:19, 22:1, 22:3, 22:5, 24:10, 32:14, 33:16, 161:18, 161:20, 161:22, 162:11 asustek 1:5, 163:15 attached 25:19 attempt 36:15 attempting 101:1 attention 97:13 attorney 29:7, 29:8, 29:9, 29:10, 164:2 attorneys 3:3, 3:10, 33:12 attributes 10:2 austin 7:3, 13:6 author 9:7, 19:21, 21:7 authors 19:17	available 70:5, 71:8, 75:16, 89:5, 103:2, 140:11, 149:10, 149:13, 155:1 avenue 8:13 avenues 16:1 aware 16:2, 21:4, 21:8, 26:8, 26:19, 161:5, 161:10 away 66:6 B b0 44:3, 46:1, 46:2, 46:4, 46:7, 46:8, 46:11, 46:12, 46:13, 52:17, 138:12 b1 44:3, 52:17, 73:22, 138:12 b2 43:16, 44:3, 52:17, 138:12 bachelor 6:19 back 11:19, 23:3, 27:16, 40:17, 53:14, 56:5, 64:14, 84:5, 113:14, 117:19, 141:21, 144:6, 162:7 background 27:10 ballpark 28:3, 28:5 ballroom 153:5, 153:6
---	---	--	---

Transcript of Joseph Havlicek, Ph.D.
Conducted on February 16, 2026

168

base 11:13 based 21:11, 51:14, 53:7, 54:3, 54:20, 55:4, 55:16, 55:19, 55:21, 56:3, 66:8, 67:8, 68:12, 68:15, 86:4, 88:2, 90:18, 101:13, 101:19, 103:21, 104:20, 105:9, 123:11, 136:9, 142:8, 142:15, 143:12, 145:2 basis 15:2, 20:3, 22:16, 22:22, 67:6 bear 112:17 became 16:2, 27:12 because 10:17, 17:4, 20:4, 48:16, 50:21, 56:18, 57:15, 61:21, 62:16, 67:12, 68:18, 71:2, 72:8, 73:20, 74:13, 75:17, 78:15, 79:20, 83:5, 86:6, 87:17, 89:6, 90:5, 93:2, 93:17, 94:20, 95:4, 96:21, 98:15, 99:3, 101:19, 102:20, 105:15, 111:19, 112:4, 112:5, 113:7, 115:7, 115:20, 116:20, 118:16, 120:9, 127:15, 129:10,	129:17, 130:22, 136:22, 137:14, 138:2, 140:2, 141:13, 141:20, 143:5, 153:18 become 41:17, 133:3 becomes 35:12, 81:16, 149:11 becoming 14:1 been 5:3, 5:10, 5:13, 8:20, 11:15, 26:19, 32:8, 41:5, 44:13, 46:2, 46:16, 49:18, 49:19, 53:10, 54:21, 55:5, 55:11, 56:15, 58:8, 58:19, 59:20, 63:20, 70:22, 71:6, 73:22, 76:5, 77:11, 85:16, 89:6, 89:7, 90:9, 90:11, 100:11, 101:14, 105:12, 105:17, 106:21, 109:5, 116:13, 123:19, 124:11, 124:18, 130:8, 131:4, 131:18, 137:8, 158:22, 159:10, 159:17 before 1:3, 2:9, 5:11, 5:14, 6:14, 12:1, 23:5, 27:9, 47:1, 58:18, 84:7, 85:13, 85:14, 87:9, 91:6, 91:12, 91:16, 112:19, 116:14,	116:20, 117:11, 118:10, 118:22, 124:3, 128:11, 147:21, 154:20, 155:12, 163:4, 163:8, 163:10 began 27:21 begin 77:3, 117:3 beginning 21:22, 115:10, 123:3 begins 47:17, 50:17, 51:4, 57:3 behalf 32:14, 162:1, 162:2, 162:10 behaviors 80:20 behind 11:21 being 7:14, 24:14, 36:1, 39:15, 41:15, 43:10, 43:12, 48:9, 55:1, 55:7, 55:9, 60:19, 61:18, 63:12, 64:3, 65:3, 66:2, 68:21, 77:16, 88:4, 95:5, 119:14, 134:14, 135:4, 138:5, 147:11, 147:12, 150:22, 151:8, 151:12, 152:5, 157:8, 157:9 believe 11:20, 14:18, 24:7, 29:16, 31:19, 36:16, 38:12, 39:20, 40:16, 43:3, 65:15, 83:17,	83:21, 84:15, 90:21, 96:4, 101:4, 102:13, 106:6, 110:14, 112:8, 126:9, 129:14, 131:16, 132:14, 144:15, 144:22, 161:2 below 103:1, 109:13, 115:22, 124:21, 125:17, 146:3, 146:5, 146:13, 147:15, 148:20, 154:18 besides 17:2, 54:12 best 6:16, 64:3 better 94:18, 101:9 between 14:1, 24:19, 60:21, 71:14, 73:20, 74:11, 96:7, 104:10, 135:4, 139:5 bickered 135:3 big 38:17, 48:7, 48:9, 49:20, 50:18, 51:5, 51:19, 56:11, 71:9, 78:3, 110:3 binder 23:10, 24:4, 24:5, 24:7, 68:8, 68:9 binders 23:6, 23:8 bit 11:2, 11:3, 35:11, 45:2, 59:1, 82:11, 119:7, 120:7, 123:20, 125:8
---	---	---	---

bits 35:13 black 23:20 black-and-white 23:15, 23:20, 24:2 black-shaded 77:15 blocks 34:20, 34:21, 38:9, 41:5, 41:6, 41:14, 44:2, 44:5, 44:6, 48:21, 63:20, 67:8, 67:9, 67:20, 68:3, 68:15, 68:20, 69:11, 69:15, 69:19, 70:21, 71:12, 71:16, 72:1, 73:10, 75:15, 76:20, 77:10, 78:1, 78:12, 78:13, 80:2, 81:6, 83:11, 83:14, 89:4, 89:12, 94:10, 96:12, 97:2, 97:19, 97:20, 98:17, 99:5, 101:3, 101:15, 102:4, 102:20, 103:12, 105:2, 105:11, 105:15, 105:17, 106:21, 107:4, 107:11, 119:20, 122:3, 124:19, 129:2, 131:13, 131:19, 133:7, 139:5, 146:11, 149:9, 152:8, 152:12, 152:17, 158:12, 158:18, 159:9 blood 164:1	board 1:3, 160:5 body 16:17, 31:15 book 16:3, 16:4 both 31:3, 32:17, 59:22, 63:5, 74:17, 116:11 bottom 76:17, 76:19, 77:8, 85:10 box 126:11, 126:15 boxes 11:22 break 6:9, 6:14, 6:15, 46:18, 47:1, 48:5, 84:7, 123:21, 123:22, 124:4, 159:19 breaks 6:7 briefly 14:7, 117:9 bring 87:16, 92:2 broad 16:14 brought 31:14, 91:20 building 88:3, 112:11, 113:20, 120:10, 145:20, 157:14 built 150:22, 153:1, 153:4, 153:6, 153:10, 153:17, 153:20, 154:8 bunch 66:22, 87:8 business 12:22, 67:14 C c-a-n-d-s 109:1	calculate 94:20, 95:5 calculation 66:4, 66:16 california 164:13 call 34:9, 48:8, 49:21, 66:19, 115:15, 125:11, 146:13, 146:18 called 10:10, 12:21, 13:5, 13:19, 34:16, 35:8, 38:22, 39:18, 63:11, 67:3, 77:2, 95:12, 121:10, 149:21, 151:2, 153:10, 153:16, 153:19, 154:7 calling 49:20, 62:22 callout 124:21, 125:18, 146:3, 154:18 calls 110:9 came 56:4, 79:8 cameras 9:16 campus 8:6 can't 58:5, 73:19, 74:9, 74:14, 91:5, 100:3, 102:22, 158:12 candidates 40:12, 40:19, 41:4, 41:5, 42:15, 45:14, 48:3, 48:20, 51:14, 51:19, 51:22, 60:18, 61:7, 63:4,	63:10, 63:15, 63:18, 70:15, 70:18, 71:15, 71:18, 72:7, 72:10, 72:15, 72:18, 73:11, 77:20, 78:2, 78:7, 78:20, 79:2, 79:7, 79:11, 79:16, 80:1, 99:10, 106:8, 109:2, 109:8, 109:13, 109:15, 109:18, 109:21, 110:11, 110:19, 111:3, 111:7, 111:14, 111:20, 112:15, 112:16, 120:1, 121:9, 121:10, 123:11, 124:10, 125:1, 125:10, 129:18, 132:20, 134:8, 134:13, 142:14, 143:8, 143:18, 143:22, 144:21, 150:17, 160:11 cands 60:22, 62:20, 85:9 cannot 46:14, 72:5, 72:22, 73:2, 73:5, 78:20, 79:2, 79:5, 79:7, 99:11, 127:20, 129:16, 158:16, 158:19 capacity 13:10 capitals 108:22 capture 10:22 careful 44:4, 75:20 carefully 152:20
--	--	--	--

cartoon 35:2 case 1:12, 9:18, 23:4, 27:17, 37:15, 54:10, 78:9, 84:15, 100:3, 100:10, 119:8, 128:9, 141:13 categories 34:15 cell 100:21 center 9:12, 15:8, 88:6, 119:21, 120:11, 120:12, 136:11 certain 10:15, 27:8, 31:5, 68:20, 80:12, 88:19, 94:3, 94:4, 94:21, 99:4, 124:11, 125:4, 129:18, 148:18, 158:22 certainly 36:5, 44:6, 69:1, 72:3, 83:9, 93:9, 99:6, 105:4, 120:2, 159:14 certificate 163:1 certified 2:10, 163:3 certify 163:5, 163:14, 163:17, 163:20, 163:22 challenge 47:14, 94:6 challenged 34:4, 73:16, 119:6, 124:5, 124:7, 151:18,	160:6 challenges 94:5 challenging 161:6 change 40:2, 137:15, 138:4, 140:14 changed 120:21 changes 93:14, 138:4, 139:20 changing 35:4 character 65:22 characterize 70:3 chat 17:7, 17:10, 18:2, 25:2, 33:16, 100:14 cheby 92:1 chebyshev 65:16, 91:21, 92:3, 92:14, 92:21, 94:14 check 103:9, 103:15, 114:16, 114:22, 116:2 checking 115:20, 115:21 china 15:8 choice 64:3 chosen 42:17, 112:6, 150:1 chromatic 49:11 chrominance 37:10 circumstance 137:10	circumstances 53:1 cite 150:7 citing 115:1 claim 36:7, 45:12, 45:19, 47:5, 47:6, 47:9, 47:10, 47:12, 47:13, 47:17, 49:2, 49:5, 49:12, 50:5, 50:7, 51:12, 51:13, 53:4, 53:9, 54:6, 54:13, 54:14, 54:16, 54:19, 54:20, 55:1, 55:4, 55:6, 55:14, 55:15, 55:21, 56:5, 58:4, 58:16, 59:7, 59:8, 59:13, 62:1, 69:17, 69:21, 82:19, 100:2, 123:9, 123:18, 125:20, 142:10, 143:6, 144:16 claimed 34:17, 55:9, 59:15, 73:2, 121:18, 121:21, 121:22, 124:5, 125:19, 141:18, 141:19 claims 26:14, 34:5, 36:8, 36:16, 41:22, 43:20, 46:10, 47:3, 47:13, 54:8, 54:11, 58:1, 73:16, 119:6, 124:5, 124:8, 151:18, 160:6	clarification 7:15, 67:18, 100:12, 144:5 clarified 113:7 clarify 6:3, 28:7, 44:11, 61:21, 87:17, 88:4, 98:2, 120:8, 132:10, 132:11, 139:2 clarifying 147:4 classes 8:14 clean 23:12, 23:14, 23:19, 24:1, 24:9 clear 27:12, 65:18, 81:3, 81:17, 91:2, 99:1, 116:6, 121:17, 125:9, 147:20, 149:6, 149:7, 149:20, 150:4, 150:12, 150:16, 151:5 clearly 10:19, 57:2, 108:21, 116:19 close 115:3, 115:6 closest 67:14, 67:21, 103:22, 104:12 coauthor 9:7 codec 11:17, 12:2, 12:12 codecs 11:8, 13:1, 34:10 coded 39:16, 41:6,
--	--	---	--

Transcript of Joseph Havlicek, Ph.D.
Conducted on February 16, 2026

171

44:12, 65:6, 65:7, 65:12, 89:6, 112:21 codes 101:21 coding 8:15, 8:17, 8:19, 9:1, 9:5, 9:7, 9:9, 10:11, 12:17, 14:8, 14:16, 15:15, 16:10, 16:13, 16:15, 16:19, 20:2, 20:8, 21:13, 21:19, 22:14, 35:10, 35:12, 37:2, 39:1, 39:2, 39:6, 39:7, 54:21, 55:5, 85:17, 86:12, 102:21, 104:7 coincide 109:20, 109:22, 112:10 coincides 125:5 collect 117:13 collectively 31:11 color 24:8 column 42:8, 47:5, 47:10, 59:9, 59:10, 60:9, 85:11, 132:13, 143:5, 144:2, 144:19 come 27:4, 53:1, 80:2, 162:7 comes 56:1 comfortable 6:9, 12:6 coming 55:20, 69:6,	129:9 commencement 163:8 commencing 163:19 committee 13:8, 13:9 committees 12:17 communicated 150:3 communications 8:18 company 12:21, 13:18 compare 52:1, 82:17, 83:4, 108:8, 108:16, 110:17, 136:22, 141:14 compared 10:20, 42:3, 83:5, 91:16, 94:4, 110:19, 124:14, 129:7, 134:14, 135:13, 135:19, 136:9, 137:7, 137:8, 137:12, 149:13, 150:21, 151:7, 151:17, 152:1, 152:9, 155:3, 155:6, 155:21, 160:13 comparing 82:17, 110:5, 142:8, 143:12 comparison 53:3, 53:7, 54:4, 54:12, 55:16, 57:5, 82:19, 109:19, 123:5, 123:7, 123:16, 123:17, 134:18, 136:21, 141:12, 143:7, 151:21, 156:4, 156:6, 156:7	comparisons 35:20, 42:11, 56:21, 124:16, 143:13 compensation 37:12, 86:14, 86:15, 87:2, 87:20 complete 24:21, 146:16, 149:15 completed 77:5 completely 41:2, 48:13 complexity 102:17 component 38:6, 94:11 components 37:8, 37:10 comprehensive 83:9 compression 34:10 comprises 104:9 computational 94:3 computed 66:8, 66:13 computer 1:5, 1:6, 6:22, 18:8, 113:9 computing 37:12 concept 37:21, 38:22, 91:20 conceptually 83:6 concerned 34:18 conclude 62:4, 142:19 concluded 134:22, 135:11, 135:17	concludes 156:12, 156:13 conclusion 57:12, 149:22 condition 54:17, 155:21, 157:1, 157:19, 158:15, 159:1, 159:5, 159:7 conditions 52:19, 57:16, 81:15, 157:11, 157:13, 157:18, 158:3, 158:6, 158:7 conference 10:5 confirm 17:8, 18:11 confusing 42:20 consider 14:15, 15:14, 16:9, 21:12, 22:14, 26:11, 43:16, 50:3, 50:4, 63:20, 74:7, 78:17, 84:21, 99:1, 99:16, 101:11, 102:22, 108:3, 114:8, 129:1, 129:3, 132:22, 135:7 consideration 50:16, 51:3, 51:8, 52:12, 56:16, 57:3, 57:12, 114:17, 138:20, 149:11 considered 30:3, 30:7, 41:4, 41:8, 41:15, 44:16, 50:2, 52:21, 58:8, 69:15, 70:11, 71:16, 73:6, 75:3,
--	---	---	---

Transcript of Joseph Havlicek, Ph.D.
Conducted on February 16, 2026

172

75:5, 90:17, 113:19, 119:11, 119:12, 133:1, 138:5, 149:9, 150:19 considering 50:11, 51:9, 55:21, 74:11, 74:12, 126:1 considers 83:14 consist 44:20, 71:11, 122:21, 131:12, 131:21 consistent 102:14, 103:13, 104:19 consisting 48:20 consists 44:1, 56:10, 71:11, 88:13 constraints 11:6 construct 62:21, 138:6 constructed 39:13, 59:20, 63:4, 63:15, 147:12, 151:8, 151:12 constructing 63:7, 110:13, 154:15 construction 120:1, 120:2, 139:9, 139:16, 150:14, 154:22 consult 28:19, 29:5 consumer 10:20, 11:7, 38:19 contacted 27:17, 27:21 contain 44:9, 79:2,	89:7, 106:19, 112:2, 131:19, 132:7, 132:11, 136:16, 136:20, 137:3, 137:5, 139:6, 141:11 contained 137:6 contains 108:4, 108:7, 108:15, 127:5, 134:13, 135:14, 135:20 contents 23:7, 24:21, 29:13, 105:18, 108:9, 108:17, 148:12 context 16:15, 17:3, 34:9, 36:20, 37:1, 49:5 continue 36:14, 68:9, 73:19, 109:11, 129:13, 133:9, 147:4, 158:13 continued 158:16, 158:19 continues 157:20 continuing 45:21 continuously 85:21, 86:19, 87:22 contractor 13:18 contrasted 48:9 contribution 20:5, 34:17, 35:18 contributions 16:16, 21:9, 21:17 convenient 25:3	copy 18:11, 19:8, 20:21, 22:6, 25:1, 25:2, 68:9 corner 97:20, 98:8, 98:9, 98:13, 98:19 correct 8:10, 18:18, 18:19, 19:14, 19:15, 19:18, 30:4, 31:22, 33:4, 40:7, 43:14, 44:11, 46:2, 46:6, 47:7, 47:14, 47:15, 48:13, 54:6, 57:10, 58:21, 62:14, 64:20, 67:1, 67:16, 72:16, 73:12, 76:4, 77:14, 77:17, 78:15, 80:17, 88:15, 89:17, 91:19, 106:16, 108:9, 111:10, 116:9, 119:6, 126:22, 133:21, 134:5, 135:14, 136:18, 136:19, 137:9, 141:14, 151:9, 151:11, 151:14, 151:19 correctly 15:5, 86:5, 91:21, 106:5 correspondence 44:7, 71:13, 121:2 corresponds 65:1, 73:15, 80:19, 104:6, 120:12, 120:22, 160:5 could 5:8, 17:15,	18:10, 20:9, 23:7, 26:14, 27:12, 28:7, 35:22, 39:3, 40:1, 40:12, 40:16, 40:19, 41:4, 43:1, 44:16, 52:15, 52:18, 53:2, 53:14, 54:12, 54:17, 55:3, 57:1, 57:14, 57:16, 58:17, 60:11, 60:12, 64:2, 64:6, 64:14, 65:9, 66:11, 76:13, 78:1, 79:14, 80:4, 80:12, 81:4, 85:2, 85:7, 87:6, 87:8, 88:10, 90:1, 90:7, 90:9, 90:12, 91:1, 91:11, 91:16, 92:10, 92:17, 93:8, 97:18, 98:12, 102:4, 102:10, 102:14, 103:3, 105:6, 105:19, 105:20, 106:1, 107:8, 109:20, 109:21, 114:7, 117:13, 117:14, 120:14, 120:20, 120:21, 121:3, 133:12, 138:12, 139:14, 139:15, 140:15, 143:17, 147:19, 157:13, 159:2 counsel 26:16, 28:21, 29:4, 32:16, 33:5, 161:21, 163:15 count 82:19, 115:7
--	---	--	---

couple 9:6, 11:15, 61:5 course 8:16, 8:17, 8:20, 9:2, 19:4, 22:15, 33:2, 66:18, 100:7, 160:2 court 3:13, 117:6, 117:18, 117:22 created 146:9, 147:11, 148:16, 148:17, 152:5, 152:21, 153:12, 153:22, 154:7 creation 148:19 crescent 3:13 creusere 14:19, 15:14, 27:2, 27:10, 29:1, 29:15, 30:3, 30:13, 31:18, 119:9, 121:13, 121:15, 146:19, 161:5, 161:14 creusere's 15:4, 24:14, 24:20, 25:11, 25:17, 25:21, 26:4, 27:13, 29:11, 62:15, 160:19 crossed 15:10 csr 1:21, 164:11, 164:12, 164:13 ctu 39:6 current 13:12, 36:1, 41:10, 43:10,	86:13, 86:15, 87:2, 87:20, 88:6, 96:10, 96:11, 97:21, 101:2, 101:12, 103:12, 104:8, 104:10, 105:12, 106:20, 107:5, 107:7, 107:12, 109:4, 120:18, 122:6, 127:22, 128:1, 128:5, 128:13, 128:18, 129:6, 141:21, 142:1, 157:17, 160:15 currently 8:4, 8:5, 8:11, 8:12, 9:10, 19:3, 20:20, 24:10, 33:19, 52:11, 61:18, 63:12, 65:3, 66:2, 77:16, 100:18, 120:19, 120:20, 129:21, 138:19, 147:1, 150:21, 151:8, 155:18, 155:19 curriculum 14:5 cv 24:13 D dallas 3:14 dash 96:13 day 94:8 days 33:9 deal 93:7 december 7:5, 13:20, 14:3	decide 42:4, 83:20, 92:2 decision 41:16, 41:19, 116:14 deck 32:12 declaration 4:11, 18:3, 18:12, 18:16, 19:14, 23:4, 24:8, 24:15, 24:20, 25:7, 25:19, 26:10, 27:22, 28:6, 28:8, 28:11, 28:13, 28:16, 28:19, 28:21, 29:6, 29:21, 30:4, 32:3, 32:13, 47:14, 76:14, 99:20, 121:4, 161:6, 161:9, 161:14, 161:16 declarations 25:12, 25:18, 27:1, 29:12, 29:15 declaring 64:9 decode 63:2, 140:8 decoded 36:2, 43:11, 61:19, 63:13, 65:3, 65:7, 65:10, 66:3, 71:7, 77:11, 77:16 decoder 11:12, 37:3, 42:16, 42:18, 47:12, 59:8, 59:19, 59:21, 61:16, 63:6, 63:9, 63:16,	71:20, 76:21, 85:14, 109:3, 143:20, 150:3, 151:4 decoders 10:1 decoding 41:11, 47:10, 59:4, 71:1 deduplication 115:16, 116:10, 116:11, 133:16 defended 14:3 defense 14:12, 14:13 define 66:21, 93:17, 93:18, 94:1, 94:2 defined 21:15, 93:21 definitive 119:17 degenerate 139:20 degenerating 140:3 degree 7:14, 7:18, 12:10 degrees 6:18 deliberately 96:21 department 13:5 depend 88:20, 139:17 dependent 54:14, 54:16 depending 43:11, 77:12 depends 52:18, 128:11, 138:18 depict 66:3, 101:1
---	--	--	---

Transcript of Joseph Havlicek, Ph.D.
Conducted on February 16, 2026

174

depicted 64:3, 76:18, 78:5, 79:4, 80:2, 83:11, 101:13, 105:2, 105:11, 150:1 depiction 69:11, 76:22, 77:10, 78:6 depictions 64:7 depicts 100:20, 107:20 deployed 11:18, 11:22 deposed 5:10, 5:13 deposition 1:16, 2:8, 4:10, 5:17, 6:7, 8:8, 17:19, 18:1, 29:2, 32:6, 32:20, 33:3, 33:13, 67:13, 160:2, 160:18, 160:19, 162:15, 163:4, 163:7, 163:9, 163:16, 163:17 depositions 5:15 describe 41:1, 63:17, 70:13, 114:21, 143:2, 157:1 described 11:10, 38:16, 64:14, 80:5, 84:8, 84:9, 85:9, 85:12, 89:1, 90:14, 97:17, 99:15, 99:19, 122:22, 137:11, 154:13, 157:9 describes 40:11, 40:18, 54:20, 55:4,	58:16, 59:2, 64:11, 67:7, 73:10, 84:13, 101:2, 112:18, 114:15, 115:10, 133:15, 133:19, 134:3, 148:10 describing 66:8, 66:13, 80:10, 85:20, 89:20, 113:8 description 4:9, 62:6, 101:9 designate 49:9, 49:13, 50:10, 68:20, 142:11 designated 75:6, 76:11, 83:8, 99:4 designating 56:10, 68:14, 68:15 designation 51:18, 76:6, 76:7, 83:9 designed 9:13 detail 37:5, 99:2, 135:9 detailed 14:5 details 5:21, 9:18, 11:20, 67:12, 115:4, 119:16, 126:22, 155:12 determination 53:21, 57:6, 57:10, 58:18, 142:5 determine 51:13, 53:20, 58:14, 74:5, 75:15, 91:7, 108:12, 114:1,	115:12, 128:12, 128:17, 128:18, 142:13, 145:5, 160:14 determined 44:15, 57:4, 82:9, 94:9, 128:22, 129:15, 129:17, 133:5, 136:9, 136:12, 148:1, 155:17 determines 40:13, 40:20 determining 29:12, 51:17, 53:4, 56:8, 56:14, 56:19, 56:20, 119:19, 123:10, 132:12, 143:10, 144:20 developing 16:16 diagonal 96:11, 96:15, 97:1, 97:9, 97:11, 98:9, 98:11, 98:12 differ 38:16 difference 38:17, 39:19, 39:21, 74:11, 115:21, 136:15 differences 34:14, 96:7 different 11:6, 14:12, 14:13, 37:8, 45:22, 55:14, 59:1, 61:5, 63:22, 66:21, 75:17, 83:3, 83:6, 83:12, 84:21, 92:6, 92:9, 93:6, 93:9, 98:13, 106:4, 106:9, 107:14, 109:7,	120:16, 137:16, 137:21, 138:2, 139:5, 140:6, 146:6, 150:6, 157:19 differentiated 125:12 differently 98:15 difficult 95:5 direct 97:13, 121:3 directed 60:16 direction 89:3, 163:13 directly 13:18, 39:20, 97:20, 107:12 director 9:10 disagree 56:18, 110:9, 141:20 disambiguate 93:8 disappeared 90:4, 90:8, 90:13 disclose 154:15 disclosed 41:2, 70:18, 72:7, 72:10, 119:5, 122:14, 146:6, 160:5 discloses 72:12, 154:17 disclosure 119:3 disconnected 117:11 discretion 46:19 discretionary 159:1 discuss 16:16, 98:5
--	---	---	---

discussed 48:10, 48:19, 49:15, 56:7, 61:4, 80:21, 86:8, 89:9, 93:1, 94:19, 102:2, 148:22, 149:2, 151:13, 157:2, 163:21 discusses 89:4 discussing 32:8, 88:22, 97:16, 124:4 discussion 13:3 displacement 66:14 displacements 66:9 dissertation 7:13, 7:16, 7:20, 7:21 distance 65:15, 65:16, 65:17, 66:3, 66:4, 66:8, 66:13, 66:19, 66:22, 67:3, 67:5, 67:8, 68:12, 68:21, 91:21, 92:3, 92:4, 92:7, 92:8, 92:10, 92:14, 92:21, 93:8, 93:9, 93:15, 94:15, 101:19, 104:8, 104:9, 104:21, 105:9, 116:1, 158:22 distances 66:20, 68:11, 68:15, 68:18, 69:12, 103:21, 104:10, 105:10 distinct 48:15, 139:10	distinction 39:22, 73:19, 81:2, 81:3, 81:7, 82:5, 111:12 distinguish 96:16, 96:17 distributed 9:15 divided 39:3, 39:4, 54:21, 55:5, 55:11 divider 24:1 division 102:20 doctor 130:7, 133:11 doctoral 7:9 doctorate 6:21, 7:1, 7:4, 7:8, 7:12, 7:17 document 17:7, 17:16, 18:11, 18:14, 18:20, 19:13, 19:17, 20:15, 20:16, 21:21, 21:22, 30:16, 30:18, 32:10, 32:11, 33:15, 33:19, 45:3 documented 25:21 documents 29:14, 31:1, 31:4 doing 15:9, 17:12, 35:10, 83:8, 134:2 done 12:19, 34:15, 116:2, 142:8 dot 64:19, 64:21,	65:1, 65:5, 65:17, 65:21, 65:22, 66:1, 66:5, 66:10, 66:14, 71:3, 71:5, 86:8, 86:9, 87:3, 87:7, 88:3, 88:4, 88:5, 101:5, 103:1, 106:4, 109:5, 119:20, 119:21, 120:11, 120:12, 136:11, 138:20 dots 87:8, 101:6 down 11:3, 56:7, 77:6, 94:12, 101:17 dr 5:10, 6:18, 14:19, 15:4, 15:14, 15:17, 15:20, 15:22, 16:9, 17:16, 18:10, 21:3, 24:14, 24:20, 24:22, 25:11, 25:17, 25:21, 26:4, 27:2, 27:13, 29:1, 29:11, 29:15, 30:3, 30:13, 31:18, 36:12, 46:16, 47:1, 62:15, 84:5, 117:11, 119:9, 121:13, 121:15, 124:3, 127:14, 129:12, 130:1, 146:19, 160:1, 160:19, 161:5, 161:14, 162:11 drawing 4:19, 4:20, 40:1, 100:15, 100:18, 100:19,	107:15, 140:22 duly 5:3, 163:8 duplication 114:22 duplicative 90:10, 90:18, 114:6, 114:17, 115:2, 126:4 during 7:6, 7:9, 13:2, 26:17, 33:5, 33:7, 116:12, 148:18, 154:22 dynamic 10:17, 11:2 dynamically 86:14, 86:21, 87:1 E each 29:14, 34:4, 43:15, 56:7, 65:17, 65:21, 84:14, 84:19, 86:6, 87:6, 88:3, 98:16, 104:5, 111:8, 116:3, 126:22, 131:19, 138:2, 138:4, 140:6, 140:14, 143:7, 150:18, 157:1, 157:20 earlier 30:10, 42:19, 47:4, 56:9, 71:22, 73:13, 88:9, 88:22, 91:5, 91:20, 99:13, 113:2, 139:2, 139:3, 141:4, 144:6 early 17:12, 27:19 easier 42:22, 94:20
---	---	--	---

easiest 75:19 east 102:10 economy 35:5 effectively 37:18 efficiencies 94:4 efficient 101:21 eight 33:9, 103:12 either 25:1, 43:10, 54:4, 56:16, 74:1, 77:11, 89:5, 97:8, 117:4, 118:12, 118:15, 118:18, 118:20, 148:4, 148:5 electrical 6:19, 6:20, 6:22 electronic 68:9 element 94:21, 100:2 elements 31:5, 99:18, 127:17, 127:18, 127:21, 137:17 eligible 106:1 else 125:11 embodiment 95:8, 95:13 emerged 38:22 employed 8:4, 8:5, 13:18, 164:2 empty 80:11, 82:18, 88:11, 88:17,	105:19, 106:12, 126:15, 127:2, 138:15, 139:14, 141:6, 142:3 encode 34:12, 34:14, 35:14, 60:2, 63:2, 65:7, 140:8 encoded 36:2, 43:11, 61:18, 63:13, 63:20, 65:3, 65:10, 66:2, 70:22, 71:7, 77:11, 77:16, 85:16 encoder 11:11, 12:7, 37:3, 42:16, 42:17, 59:18, 59:21, 60:1, 61:16, 63:6, 63:9, 63:16, 71:3, 71:19, 76:21, 85:14, 109:3, 150:3, 151:4 encoders 10:1 encoding 41:11, 47:6, 47:7, 71:1, 71:2 end 24:12, 24:17, 56:15, 56:21, 85:4, 94:8, 112:1, 130:17, 133:10, 140:9, 148:4, 151:1, 156:5, 157:16, 158:12, 158:18 endeavor 6:5, 132:9 engineering 6:20, 6:21, 6:22 engineers 9:22, 12:14	enough 23:3, 115:6 entertainment 10:20 entire 9:15, 28:8, 28:10, 28:12 entirely 78:5 entirety 86:3, 161:2 entities 96:13 entries 110:7, 120:5, 151:3 entry 112:5 equal 155:17 equate 125:19 equating 98:8 equivalency 146:20 equivalent 62:1, 120:4 error 62:12 especially 35:11 esquire 3:4, 3:11 essence 67:16 essentially 110:3, 155:14 established 48:18, 69:9, 127:10, 141:5 establishing 121:20, 122:20 estimation 37:12, 38:7 et 30:14 euclidian 66:19, 67:3,	92:4, 92:15, 94:15 evaluated 57:16, 131:4 evaluating 51:9 even 14:9, 92:15, 97:18, 103:8, 139:19, 144:18 event 46:11, 78:4, 78:11, 134:17 events 27:6 ever 6:2, 15:10, 29:1, 100:3, 103:22, 143:15 every 9:3, 35:6, 70:7, 83:22, 97:8, 100:2, 102:1, 106:8 everything 10:22, 126:9, 155:3, 156:7, 156:10 everything's 17:9 evidence 20:9, 22:20 evident 99:4 evolution 38:18 evolves 119:19, 120:2 evolving 114:14, 125:2, 132:20, 149:15 exact 115:5, 115:20, 119:10 exactly 20:4, 21:16, 25:15, 27:6, 28:1, 28:5,
---	---	--	--

Transcript of Joseph Havlicek, Ph.D.
Conducted on February 16, 2026

177

42:22, 54:18, 55:8, 62:3, 68:1, 72:11, 73:3, 74:3, 87:9, 87:12, 87:15, 95:1, 113:13, 118:21, 120:5, 148:19, 150:13, 152:19, 155:7 examination 4:5, 5:4 examining 101:14 example 9:21, 13:4, 27:10, 29:20, 35:1, 36:20, 37:9, 38:5, 43:19, 44:8, 44:12, 46:1, 52:19, 54:13, 54:16, 60:3, 60:22, 66:5, 67:5, 69:21, 70:8, 73:1, 75:18, 79:4, 80:8, 80:21, 81:15, 81:17, 82:6, 85:13, 88:7, 89:16, 102:3, 102:10, 104:5, 105:1, 108:11, 109:14, 112:4, 114:7, 118:4, 120:9, 120:17, 122:4, 124:19, 124:20, 124:22, 125:17, 125:20, 131:2, 136:8, 138:6, 138:9, 141:5, 141:8, 146:3, 147:15, 148:12, 149:22, 154:17, 154:20, 156:11 examples 114:5, 146:1,	150:8 exclude 53:4, 53:20, 57:6, 143:10 excluded 56:1, 97:22, 112:4 exclusion 54:12, 54:18, 54:20, 55:4, 55:15, 58:2, 63:21, 91:2 exclusions 57:17 excuse 22:10, 47:6, 117:12, 139:3, 142:11, 143:19, 154:13 exemplar 43:21, 146:13 exhaustively 156:2 exhibit 4:10, 4:11, 4:12, 4:14, 4:16, 4:18, 4:19, 4:20, 17:20, 17:21, 18:2, 18:4, 18:5, 18:6, 19:1, 19:2, 19:5, 19:8, 19:16, 20:17, 20:18, 20:19, 20:21, 22:1, 22:2, 22:6, 23:4, 25:4, 30:2, 33:17, 33:18, 60:10, 100:13, 100:16, 100:17, 100:19, 101:13, 101:15, 102:5, 104:18, 105:3, 105:11, 105:17, 106:3, 106:22, 107:16, 107:17, 107:18,	107:20, 108:2, 110:15, 113:14, 114:10, 118:4, 121:4, 125:21, 127:1, 127:5, 140:18, 140:20, 141:5, 142:20, 144:7, 145:11, 145:15 exhibits 119:22, 120:13 exist 46:14, 72:20, 154:21 existed 137:8 existing 114:6, 134:12 exists 138:14 exp 164:12, 164:13 expect 61:21 expected 140:17 expeditious 36:15, 84:1 expeditiously 45:7 expended 35:14 experience 12:16, 16:19, 16:22, 17:1 expert 14:15, 15:15, 16:10, 16:13, 17:4, 20:2, 20:10, 21:12, 21:16, 21:19, 22:14, 22:21 explain 97:4, 108:20 explains 134:13 explicitly 83:5	exploit 10:15 expressed 25:18, 87:18, 161:15 extended 126:5 extending 156:18 extensive 12:11 extremely 21:20 eyeball 87:1 eyes 29:16 F fact 20:12, 21:15, 22:17, 70:4, 137:12, 140:13, 140:16 factors 54:11, 91:1 fail 96:14, 114:12, 138:13 failed 118:16, 156:2 failure 108:11 fair 12:5, 17:6, 21:18, 21:20, 23:3, 30:9, 39:12, 39:17, 52:20, 83:7, 91:8, 98:12, 103:19, 105:16, 113:5, 151:20 fairly 5:16, 27:19, 64:2, 99:1, 116:5 falls 155:20
---	--	--	--

Transcript of Joseph Havlicek, Ph.D.
Conducted on February 16, 2026

178

familiar 5:16, 5:19, 14:18, 15:17, 15:20, 15:22, 16:20, 19:20, 21:2, 22:9 far 11:17, 26:12, 80:13 february 1:18, 2:3, 163:19, 164:7 feel 5:19, 25:1 feeling 6:9 feet 102:18 few 5:22, 96:6 field 7:10, 11:22 figure 43:1, 43:4, 43:5, 45:21, 46:11, 47:2, 52:13, 53:14, 60:5, 63:3, 64:3, 64:18, 64:22, 65:1, 65:2, 65:5, 65:14, 65:20, 65:22, 67:6, 67:17, 68:2, 68:8, 68:14, 68:16, 69:6, 69:18, 69:20, 71:4, 76:16, 76:18, 83:11, 86:9, 88:6, 88:8, 88:22, 89:10, 89:11, 89:14, 89:21, 90:4, 90:8, 95:18, 95:20, 96:6, 96:12, 97:7, 98:17, 98:22, 99:15,	99:17, 101:6, 101:8, 101:15, 102:2, 104:16, 105:1, 105:3, 107:10, 107:22, 119:21, 120:10, 120:11, 122:4, 128:2, 128:5, 130:8, 130:17, 131:2, 133:8, 138:21, 150:1, 159:15 figures 64:7, 71:16, 79:4, 80:2, 84:22 final 58:18, 58:22, 112:9, 112:15, 113:3, 113:11, 119:19, 120:10 finalized 150:13 finally 42:13, 95:18 financially 164:4 find 80:8, 113:17 finding 37:13 fine 81:2, 92:1, 108:18, 112:13, 141:8 finish 126:1 finished 27:9, 85:1 fish 3:5, 8:12, 28:21, 29:4, 32:16, 32:18 five 28:3, 53:2, 60:3 fleming 3:4, 17:17,	25:20, 29:8, 33:10, 33:11, 38:1, 50:19, 51:6, 55:18, 65:8, 83:16, 93:4, 117:8, 123:19, 124:1, 160:8, 161:19, 162:3, 162:6, 162:10 flinstone 35:2, 35:6 flinstones 35:2 flipping 53:14 floor 3:6 fm 7:21 focus 7:6 focused 8:19 follow 62:5, 130:22 follow-on 154:12 follow-up 139:1 followed 43:12 following 39:17, 48:10, 102:6, 109:15, 109:18 follows 5:3, 59:6, 139:16 foregoing 163:4 forget 32:10 forgive 50:21 forgot 147:2 form 25:20, 38:1,	50:19, 51:6, 55:18, 65:8, 83:16, 88:10, 93:4, 161:19, 162:3 forming 138:1 formulate 26:13, 35:21 formulating 159:13 forth 77:7, 163:7 found 27:3, 141:11 foundation 8:2 founding 9:11 frame 12:1, 34:12, 34:20, 36:1, 37:9, 44:14, 66:1, 71:6, 85:14, 85:15, 85:16, 140:7 framework 8:1 fraunhofer 12:11 free 25:1 front 11:21, 23:6, 24:17 full 10:22, 11:4, 34:13 functioning 59:12 fundamental 38:20 further 67:9, 155:11, 163:14, 163:17, 163:20, 163:22 G general 34:22
---	---	--	--

generally 36:21, 37:14, 49:22 generated 86:14, 87:1, 87:19 geometry 67:5, 99:1 getting 96:20, 126:22, 140:21 give 9:17, 17:11, 80:7, 82:11, 89:2, 95:15, 95:16, 154:11 given 27:1, 66:17, 107:3, 125:17, 134:11, 140:7, 147:22, 148:5, 150:15, 155:13, 163:11 gives 104:2 gleaned 133:7 go 5:21, 11:18, 15:1, 17:15, 24:5, 26:9, 27:16, 28:10, 29:20, 37:5, 38:2, 46:20, 53:14, 64:14, 72:22, 77:6, 81:19, 81:20, 83:17, 84:3, 98:5, 100:7, 108:19, 115:3, 117:6, 117:8, 127:8, 144:6, 147:18, 159:21 goals 42:10 goes 24:19, 63:22, 66:22, 134:7,	143:9, 145:21, 147:13, 159:14 going 6:1, 6:6, 17:6, 17:10, 18:20, 21:14, 23:16, 28:14, 33:8, 35:3, 37:6, 38:12, 41:12, 41:16, 45:1, 46:17, 49:16, 50:2, 50:4, 50:8, 50:9, 50:10, 51:10, 55:22, 56:7, 56:16, 58:13, 59:9, 59:14, 59:18, 61:20, 62:7, 64:10, 68:7, 70:9, 76:11, 81:21, 81:22, 82:11, 82:14, 94:8, 95:15, 95:16, 95:18, 100:13, 100:15, 103:15, 103:18, 107:1, 107:14, 108:13, 108:20, 111:17, 111:21, 113:22, 114:3, 115:6, 115:10, 116:20, 120:7, 122:3, 123:19, 126:1, 129:1, 132:8, 132:9, 135:6, 135:7, 140:3, 144:17, 145:19, 154:5, 157:22, 159:17, 160:4, 160:16 gone 160:1 good 5:6, 5:7, 6:10, 16:4, 123:21, 130:5, 135:10, 162:8	gotten 122:8 grab 68:7 grabs 83:13 graduate 9:2, 9:22, 14:9 granted 82:6 gray-shaded 77:9, 77:18, 78:6, 78:13 great 35:5, 159:20 green 110:16, 114:2, 114:10, 118:4, 118:19, 126:11, 126:16, 141:20, 142:1, 142:19 grid 100:20, 100:21 ground 31:19, 31:20 grounds 25:13, 26:1, 26:5, 31:17, 99:19 group 13:4, 13:5, 80:15 guaranteed 141:15 guess 11:9, 26:21, 28:14, 49:10, 81:8, 82:5, 95:14, 121:19 guessing 83:19 guesstimate 28:2 H h 37:21 hairs 70:9	half 116:17, 118:1 halfway 153:1, 153:4, 153:6, 153:10, 153:17, 153:19, 154:7 hand 164:7 hands 82:13, 82:14 happen 107:8, 138:17 happened 12:20, 54:3 happens 137:16, 138:11 happy 23:9, 37:5, 84:16, 95:14, 98:6, 100:7 hard 17:3, 23:12, 25:1, 57:22, 93:2, 93:12 havlicek 1:17, 2:8, 4:4, 4:11, 5:2, 5:9, 5:10, 6:18, 17:16, 18:4, 18:10, 24:22, 36:12, 46:16, 47:1, 84:5, 117:11, 124:3, 127:14, 129:12, 130:1, 160:1, 162:11, 163:6, 163:18 head 31:5, 31:7, 64:16, 100:5, 100:9, 103:16 header 147:15, 148:20 heard 12:21 held 2:9
--	---	--	--

help 97:4, 98:1, 140:22 helpful 156:15 here 18:9, 20:9, 22:10, 23:18, 25:10, 26:2, 26:5, 26:7, 30:2, 30:13, 31:10, 46:1, 47:22, 48:14, 48:19, 49:16, 51:8, 57:20, 58:1, 58:22, 60:17, 75:21, 76:18, 77:10, 78:5, 97:14, 98:17, 100:1, 100:10, 101:1, 102:18, 108:19, 116:6, 123:20, 132:9, 139:13, 145:7, 154:5 here's 93:22, 95:13 hereby 163:5 hereinbefore 163:7 herunto 164:6 hey 17:17 high 62:21, 63:1, 67:4, 124:9 highway 12:4 highways 9:17 hirschman 10:10 hit 5:22 hold 6:18, 6:19,	24:6 holding 23:11 honestly 154:8 hope 152:4 hopefully 97:5 horizontal 96:10, 96:14, 97:1, 97:9, 97:10 hour 46:17, 123:20, 159:18 house 15:1 however 8:20, 20:5, 79:9, 137:15, 138:16, 161:1 hundreds 9:16 hybrid 34:9 I i-n-t-e-r 78:8 i-n-t-r-a 78:12 ian 15:17, 15:20, 15:22 ibm 13:7, 13:14, 13:20 ibm's 13:1 idea 55:10, 85:1, 110:4, 110:18, 155:14 identically 140:1 identifier 149:18	identify 74:22, 76:1, 76:8, 125:22, 133:20, 134:4, 151:16 identifying 104:9 ieee 10:4, 10:8 illustrated 104:15 illustration 77:19 illustrative 102:3, 104:16 image 7:10, 7:22, 8:19, 9:1, 9:2, 10:8, 138:8, 140:7 images 8:3 imagine 5:17 immediate 66:6 immediately 52:22, 146:2, 146:5 impact 125:15 implement 13:1 implementation 12:6, 12:9, 119:13 implemented 64:1, 64:6 implementing 49:12 implication 57:20 implies 143:4 important 10:18, 10:21, 69:7, 81:8, 82:21, 94:11,	119:3, 136:6, 137:17, 159:6 impose 102:4, 103:11, 105:2 improve 10:3 improvement 96:1 improvements 20:8 inc 1:5 include 45:9, 45:10, 53:4, 53:20, 57:6, 58:5, 58:6, 62:16, 72:20, 75:3, 78:20, 79:7, 79:22, 107:6, 116:15, 126:6, 129:8, 133:6, 134:19, 142:6, 143:10, 161:8 included 40:13, 40:14, 40:20, 40:21, 56:17, 81:11, 82:8 includes 79:11, 79:16, 123:1 including 32:8, 39:6, 70:21 inclusion 50:11, 56:11, 58:9, 63:21, 71:17, 74:8, 83:14, 90:17, 91:1 incorporate 161:13 incorporated 29:13 incorporates 31:21
---	---	---	---

incrementing 89:15 indeed 75:3 independent 22:22, 74:13 index 55:17, 60:2, 61:17, 63:9, 101:21, 109:3, 110:12, 111:4, 111:9, 111:15, 150:1 indicated 82:13, 95:19, 119:20 indicating 68:4 individual 20:12, 40:12, 40:19, 41:16, 67:7 industry 13:22, 16:22 inform 18:7 information 44:6, 44:9, 44:21, 45:10, 45:17, 45:20, 46:5, 46:8, 48:21, 52:16, 70:20, 89:8 inherits 39:10 initial 26:22, 106:11, 107:5, 113:4, 113:10, 122:15 initialization 79:21, 80:6, 81:16, 83:12, 84:8, 85:3, 88:10, 106:13, 126:14, 127:3 initialize 83:3, 88:21, 105:22	initialized 85:13, 88:17, 88:18, 105:21, 112:20, 114:8, 122:1, 122:9, 123:2, 123:5 inserted 54:5 instance 46:4, 106:3 instead 35:5, 62:10, 92:4, 94:15 institute 12:12 integrated 9:13 intelligent 9:12, 10:5 intended 62:13 inter-coded 44:13, 78:5, 78:9 inter-prediction 34:16, 34:19 interested 164:4 interesting 10:13, 160:21 international 1:6, 10:5, 12:22 interpretation 10:9, 110:21 interrupting 148:7, 148:8 intra 34:16 intra-coded 46:2, 46:12, 73:22, 75:18, 78:12, 138:8, 138:9 introduce 18:20, 20:15, 21:21 introductory 27:9	intuitively 115:5, 145:19 invalidity 72:19, 74:21, 122:12, 122:20, 123:8, 133:21, 134:5 inventor 20:6, 20:14, 21:3, 21:6, 22:10, 22:18 involved 34:22 involves 153:13 involving 26:20 ipr 1:12, 26:19, 32:3, 160:20, 161:7 iprs 25:12 issue 26:6, 130:2 issues 25:12 item 30:14, 43:9, 70:8 items 5:22, 30:19, 30:20, 43:15, 70:7, 96:9 iteration 107:21 iterative 153:14, 154:4 itself 45:18	jian-liang 22:10 job 1:22, 13:1, 13:16 joe 17:17, 123:19 joseph 1:17, 2:8, 3:11, 4:4, 5:2, 5:9, 18:3, 163:6, 163:18 jpeg 13:1 jumping 156:20
			K
			karczewicz 4:14, 18:18, 20:21, 21:3, 21:4, 21:12, 23:22, 26:13, 32:9 keep 19:7, 53:12, 111:17, 134:2, 141:21, 144:17, 156:13 kicked 111:22, 112:2, 120:15 kind 55:15, 74:17, 95:22, 156:4, 156:6 kirkley 13:19 klinger 1:21, 2:9, 163:3, 164:11 knew 83:5 know 6:3, 6:8, 9:17, 11:17, 12:3, 12:8, 13:6, 13:11, 14:5,
		J	
		january 13:13, 13:20, 14:4 jeremy 29:9 jian 22:10	

14:6, 14:8, 14:12, 14:20, 14:21, 14:22, 15:2, 16:15, 16:18, 17:5, 17:18, 18:22, 19:5, 20:4, 20:11, 21:11, 21:15, 22:13, 22:16, 23:1, 23:17, 27:8, 27:11, 28:2, 28:4, 35:2, 36:7, 38:18, 50:14, 51:7, 52:18, 55:8, 58:1, 59:7, 59:8, 61:9, 66:21, 67:4, 67:12, 74:16, 81:14, 82:3, 87:11, 94:5, 100:2, 102:16, 103:1, 105:14, 106:7, 106:18, 119:14, 119:15, 125:6, 125:7, 129:18, 135:11, 135:13, 135:18, 135:20, 135:22, 136:2, 146:17, 153:18, 154:4, 154:19, 156:14, 156:15, 161:21 knowing 15:11, 15:12, 23:1 knowledge 54:7, 162:4 known 36:4 kyle 3:4, 29:8, 162:10 L label 107:15, 155:2	labeled 17:16, 20:16, 30:20, 33:16, 43:6, 43:9, 44:2, 45:22, 70:8, 89:5, 89:21, 96:9, 96:12, 97:8, 98:17, 100:15, 108:3, 108:15, 113:17, 133:8, 141:10, 144:11 labels 68:3 laboratory 14:11 lack 73:4 laid 29:16 lake 15:8 language 45:12, 45:19, 49:7, 49:16, 50:6, 50:7, 58:4, 69:17, 73:3, 75:21, 82:20, 93:11, 98:3, 116:21, 118:14, 123:9, 135:15, 141:22, 142:10, 142:20, 143:1, 143:6, 144:17, 152:20 large 24:5, 24:7, 34:15, 35:13, 43:5 larger 38:19, 38:20, 39:2 last 33:8, 58:3, 117:15, 119:21, 120:13, 128:21, 157:3, 157:6, 158:1	later 67:10, 68:22, 104:12, 112:4, 112:5, 128:5 lead 54:12, 54:17, 57:17, 101:20 least 50:1, 84:11, 86:4, 90:8, 91:9, 105:9, 115:9, 144:2, 144:3, 158:3 leave 37:6, 79:9, 100:8 led 39:5 left 77:8, 97:21, 106:2 left-hand 85:11 leftmost 77:4 length 101:21 lengthy 82:12 less 28:17 let's 14:22, 16:15, 27:16, 28:10, 38:4, 46:20, 47:9, 60:10, 79:9, 81:13, 82:15, 115:3, 117:8, 124:1, 125:21, 126:12, 152:19, 162:6 level 9:2, 12:6, 12:9, 49:11, 62:21, 63:1, 124:9 leverage 10:2	library 11:14 likely 140:2 likewise 131:7 limitation 48:10, 51:12, 56:19, 58:22, 123:18, 124:15 limitations 57:21 lin 4:16, 18:18, 22:6, 22:11, 22:14, 22:17, 24:3, 26:13, 32:9 line 13:2, 42:8, 47:4, 57:8, 57:11, 59:10, 60:8, 66:17, 67:2, 96:10, 96:11, 132:13, 134:6, 134:8, 143:6, 143:9, 144:1, 144:20, 153:2 linhong 29:7 listed 20:6, 20:13, 22:17, 30:13 listen 144:19 lists 150:7 literature 16:21 litigation 16:8 little 42:20, 45:2, 46:17, 50:13, 53:18, 82:11, 119:7, 120:7, 125:8, 159:18
---	---	--	--

Transcript of Joseph Havlicek, Ph.D.
Conducted on February 16, 2026

183

loaded 18:1 located 8:11, 154:18 location 51:15, 55:20, 56:3, 72:2, 119:1, 123:11, 136:10, 138:19, 142:15, 145:2 locations 44:2, 48:21, 52:17, 90:15 logical 119:12, 125:12, 139:9 long 8:20, 27:22, 28:5, 28:11, 28:15, 32:19, 69:7, 103:13 longer 46:17, 89:15 look 11:19, 18:10, 25:6, 30:19, 32:12, 36:8, 38:2, 42:21, 43:1, 45:21, 47:3, 47:9, 47:16, 60:10, 65:20, 67:19, 69:1, 73:17, 74:5, 74:14, 74:15, 76:13, 84:16, 89:14, 97:7, 109:12, 112:17, 112:18, 125:21, 126:1, 131:2, 133:13, 134:6, 146:8, 148:19, 152:19 looked 29:18, 29:19, 31:7, 90:11, 96:8, 98:21 looking 17:11, 19:3,	19:7, 19:16, 20:20, 24:10, 36:10, 43:4, 51:12, 56:18, 60:17, 64:17, 68:9, 73:9, 85:8, 85:10, 96:6, 100:18, 107:19, 109:9, 111:6, 121:3, 121:6, 130:5, 141:3, 141:21 looks 75:12 loosey 125:8 lost 108:13, 117:5 lot 11:6, 13:3, 13:7, 14:11, 15:9, 48:14, 106:8, 159:3, 160:2 low 35:11 luminance 37:9, 38:5 M machines 12:22 macro 86:13 macroblock 37:7, 38:6, 38:10, 38:21, 39:3 macroblocks 37:4, 85:16 made 9:21, 9:22, 12:10, 21:16, 35:20, 42:11, 56:21, 58:19, 60:2, 116:14, 124:17, 132:20, 142:5, 161:10	main 8:6, 8:13, 32:10, 159:11 make 6:9, 11:7, 11:16, 16:5, 17:8, 20:8, 30:12, 32:22, 35:1, 40:17, 41:13, 42:22, 44:19, 45:2, 45:15, 63:3, 63:14, 75:20, 81:3, 101:3, 110:22, 111:20, 112:6, 113:6, 114:3, 119:9, 120:14, 123:5, 123:6, 123:15, 126:17, 126:21, 133:12, 140:19, 146:19 makes 81:13, 95:14, 114:4, 115:13 making 11:1, 11:10, 41:19, 58:15, 63:17, 108:19, 109:17, 109:19, 111:1, 111:12, 123:16, 143:6 mandatory 159:7, 159:13 many 5:13, 21:5, 21:6, 21:9, 21:17, 27:4, 42:7, 63:22, 66:20, 92:6, 92:9, 93:22, 97:18 map 69:17, 119:4, 145:22 mapping 119:10, 121:12 mark 17:19, 17:22,	18:2, 18:22, 20:17, 22:1, 33:17, 100:15 marked 18:5, 18:6, 19:2, 20:18, 22:2, 22:5, 33:18, 65:5, 71:3, 100:17, 107:17, 114:10, 120:18, 120:19, 126:2, 126:16, 128:3, 128:6, 128:10, 130:15, 131:3, 131:6, 131:9, 131:18, 132:6, 142:19 marking 17:17 markings 19:4 marks 24:9 marriage 164:2 marta 21:3, 21:4, 21:11 master 6:20 master's 7:14, 12:10 match 115:5 materials 30:3, 30:7, 31:14 mathematical 8:1 matrix 65:22 matter 30:8, 73:17, 158:10, 161:18, 164:5 matters 16:8 maybe 28:3, 28:17,
--	--	--	--

42:21, 60:3, 65:15, 95:13, 97:13, 98:8, 102:21, 117:3 mckool 3:12 mean 12:8, 12:9, 12:13, 12:15, 21:16, 28:8, 31:13, 41:5, 48:11, 48:16, 49:18, 53:20, 55:9, 65:6, 93:6, 95:6, 98:7, 98:12, 102:8, 104:2, 104:14, 115:18, 118:7, 127:7, 132:12, 135:7, 139:8, 139:22, 141:18, 141:19, 150:7, 152:3 meaning 9:11, 31:12, 49:8, 51:7, 96:13, 108:19, 109:6, 109:8 means 50:9, 51:9, 58:13, 87:3, 115:5, 117:1 meant 62:19, 119:9, 146:19, 152:3 meet 33:6, 33:12 meeting 16:17 meetings 15:3, 31:15, 33:2, 33:5, 33:7 meets 123:18 member 9:11, 45:17, 72:6, 114:18, 116:3, 130:11,	131:9 members 39:14, 41:17, 41:18, 42:3, 42:12, 50:17, 51:4, 56:10, 79:16, 80:13, 88:19, 122:13 memory 119:1, 119:14, 125:14, 137:12, 138:15, 139:12, 140:13 mentioned 19:9, 29:4, 37:20, 42:3, 62:7, 80:18, 84:12, 115:17, 161:1 mentions 92:7 merge 36:4, 36:5, 36:9, 36:17, 36:18, 36:22, 37:14, 38:8, 38:15, 39:9, 39:12, 39:13, 39:14, 40:13, 40:20 merged 37:18 merit 2:9 met 21:7, 26:16, 28:21, 32:16, 33:9, 57:21, 158:4, 158:9 method 20:8, 47:7, 59:13, 60:18, 71:1, 71:2, 104:9, 139:13, 140:4, 145:20, 147:13 methodologies 43:12	methods 16:20, 35:18, 41:22 metric 66:4, 92:8, 93:9 micheli 3:11, 4:5, 5:5, 17:22, 46:20, 84:3, 117:14, 123:22, 159:17, 159:21, 162:5, 162:8, 162:14 middle 43:6, 65:21, 86:8, 86:9, 87:3, 87:7, 100:20, 138:21 might 39:19, 39:20, 53:17, 77:22, 79:12, 79:17, 80:11, 83:4, 83:22, 86:5, 102:22, 104:13, 110:1, 111:11, 112:10, 114:12, 114:13, 115:2, 115:3, 122:8, 129:9, 138:15, 153:7, 155:7, 155:9, 158:7 mind 48:7, 159:12 mine 27:15 minutes 162:6 missing 111:11, 153:15 mobile 35:3, 35:6 mode 36:4, 36:5, 36:9, 36:17, 36:18, 36:22, 37:14, 38:8, 38:15, 39:9,	39:12 modeling 8:2 models 7:22 modification 40:4, 89:11 modifications 10:1, 11:1, 11:11, 11:16, 12:11 modify 10:14 mods 11:8 module 8:22, 9:1 modules 11:21 moment 109:10 monaldo 29:9, 33:9, 33:11 month 28:2, 28:17 more 9:17, 10:19, 17:3, 32:21, 33:2, 36:21, 39:3, 41:2, 49:22, 50:2, 51:18, 56:22, 57:2, 65:18, 84:18, 85:4, 85:17, 85:21, 86:19, 88:13, 92:18, 101:20, 115:9, 120:8, 128:1, 136:6, 143:2, 144:3, 145:12, 158:18, 160:3, 162:14 morning 5:6, 5:7 most 25:3 move 35:7, 35:8,
--	---	---	--

Transcript of Joseph Havlicek, Ph.D.
Conducted on February 16, 2026

185

85:2, 118:19, 135:1 much 6:11, 25:5, 35:4, 55:13, 68:17, 93:15, 101:9, 130:7 multimedia 8:18, 13:2 multiple 32:16, 33:1, 86:10, 125:7, 143:21, 146:17, 149:5, 150:7 must 40:10, 58:17, 91:12, 91:15, 91:18 mutable 113:9, 113:21 mutations 113:15 myself 12:19, 13:9, 16:6, 48:8, 69:17, 108:13, 117:13	names 64:10 naval 14:10, 15:8 nearer 67:8 necessarily 57:14, 106:7, 112:9 necessary 11:3, 68:19, 81:15, 93:19, 123:15, 144:2 need 6:7, 6:13, 16:12, 16:18, 35:20, 57:21, 78:13, 97:4, 127:8, 145:22 needs 118:15, 124:13, 129:7, 142:21, 155:16 negotiable 158:20 neighbor 102:11, 102:12, 114:2 neighborhood 106:3 neighbors 138:8 network 9:15 never 13:9, 21:7, 21:8, 92:15, 112:5, 115:13, 117:2, 118:8, 118:16, 132:3, 139:20, 143:17, 148:2, 155:20, 161:20 new 3:7, 7:22, 39:5, 87:6, 132:22, 133:3, 134:14, 134:17,	134:19, 155:16, 156:9, 157:9, 160:11, 160:14 next 51:12, 85:2, 118:19, 127:11, 133:1, 135:1, 135:12, 135:13, 135:18, 135:20, 135:22, 136:3, 136:7, 136:17, 157:21 niche 17:5 nokia 1:9 none 105:16, 106:20 norman 8:6 north 102:11, 107:12, 114:2 northeast 102:12 northwest 102:12 notation 64:18 note 23:5, 89:14 noted 26:3, 128:2 notes 70:1 nothing 63:6, 82:16, 141:13 notice 4:10, 17:19, 18:1 notion 41:3, 41:12, 67:5, 139:8, 139:11 notions 92:6 notwithstanding 21:14	nrl 15:8 number 18:17, 19:5, 23:16, 32:10, 35:19, 42:10, 85:15, 110:16, 112:20, 140:11 numbered 24:18, 25:8, 25:16 numbering 89:15 numbers 64:19, 65:11 numeral 90:4, 90:7 O objection 25:20, 38:1, 40:3, 50:19, 51:6, 55:18, 65:8, 83:16, 93:4, 160:8, 161:19, 162:3 obligatorily 81:11 obtain 7:1, 7:4, 7:11, 7:16, 81:4 obtained 71:15, 79:3, 122:3, 124:11, 124:18, 132:1, 133:7 obtaining 7:7, 14:1 obvious 26:14 obviously 124:14, 125:2 occasionally 62:9 occasions 32:17 occupy 99:9
N nail 81:14, 101:17 nakamura 30:14, 30:20, 31:11, 31:14, 31:16, 31:21, 32:2, 32:4, 32:10 name 5:8, 5:9, 15:2, 15:4, 20:12, 20:13, 21:9, 21:17, 130:4, 150:15 named 19:21, 21:2, 21:5, 22:9, 29:7, 29:8, 29:9, 29:10			

occur 35:11, 76:7, 116:20, 118:22, 128:17, 139:22, 140:7, 140:15, 140:16, 146:2 occurred 163:18 occurrences 134:9 occurring 113:16 occurs 24:12, 24:17, 37:2, 37:3, 38:3, 50:16, 51:2, 53:21, 61:7, 62:11, 118:21, 124:20, 138:14, 140:17, 156:4, 156:7, 156:9, 157:11, 157:19, 158:15 offer 15:6, 18:16, 22:7, 31:20, 32:1, 72:12, 99:21, 119:4 offered 31:18 offering 26:1 offers 32:4 office 1:1, 32:18 offices 8:12 officially 150:14 oh 11:15, 60:12 okay 5:16, 17:13, 93:13, 97:15, 98:4, 110:22, 117:22, 125:21, 126:21	oklahoma 8:6, 8:7, 8:9, 9:12, 9:14 omits 96:22 omitted 78:14 on-the-fly 87:12 once 42:13, 56:14, 76:5, 85:1, 85:4, 85:13, 87:8, 134:22, 135:10, 135:17, 142:18, 158:22 one-to-one 44:7, 44:9, 71:13, 121:1 ones 66:3, 67:14, 67:21, 79:4, 83:1, 92:7, 94:19, 96:8, 96:18, 97:10, 97:11, 101:7, 102:22, 103:2, 104:1, 104:12, 109:19, 112:2, 122:2, 122:9, 126:7, 129:19, 149:14, 150:21, 152:8, 155:17, 155:19, 155:21 only 6:12, 23:1, 34:13, 36:6, 79:11, 79:16, 83:1, 105:6, 122:12, 122:21, 131:12, 140:11, 143:14, 143:15 onsite 13:17 open 17:15, 18:8, 20:19, 68:8, 107:18	opened 18:22 opining 26:5 opinion 16:4, 38:18, 49:6, 72:12, 73:20, 87:18, 87:21, 88:2, 88:16, 88:20, 99:18, 111:16, 119:4, 125:16, 136:15, 149:1 opinions 18:17, 19:14, 20:22, 22:7, 25:11, 25:17, 25:22, 26:1, 26:4, 26:13, 27:4, 27:14, 30:17, 31:2, 31:18, 31:20, 32:1, 32:4, 54:9, 72:19, 74:22, 99:13, 99:21, 122:12, 122:20, 133:21, 134:5, 159:13, 161:13, 161:15 opposed 45:18, 104:18 option 40:3, 87:19, 87:22 options 86:11, 93:22 order 7:11, 7:16, 10:3, 10:15, 11:1, 11:2, 11:22, 33:13, 35:20, 49:12, 50:3, 67:20, 68:4, 68:6, 68:14, 69:14, 75:5, 75:6, 76:20, 77:1, 91:10, 93:8,	93:18, 93:21, 94:9, 98:22, 99:5, 99:8, 99:15, 99:17, 101:18, 102:4, 102:7, 102:8, 102:13, 103:4, 103:10, 103:11, 103:13, 104:17, 104:18, 104:22, 107:9, 120:10, 122:4, 124:12, 125:3, 127:16, 128:17, 128:22, 129:2, 131:1, 131:2, 131:14, 135:1, 136:5, 136:11, 138:5, 143:21, 145:4, 147:13, 149:10, 149:15, 149:22, 154:5, 160:14 ordering 57:22, 68:12, 90:22, 91:4, 103:3, 103:6, 103:20, 105:2, 105:8 orderings 105:7 orders 99:16, 99:22 ordinarily 49:6, 96:4 ordinary 49:8, 62:18, 94:1, 102:9, 117:1, 131:16, 144:16, 158:11, 159:2 organization 13:8 other 8:9, 20:12, 22:16, 30:20, 33:11, 33:12, 34:21, 54:11, 57:16, 58:1,
---	--	--	--

Transcript of Joseph Havlicek, Ph.D.
Conducted on February 16, 2026

187

58:2, 64:5, 66:3, 79:22, 81:4, 82:2, 83:1, 87:22, 90:9, 92:7, 92:14, 92:17, 93:7, 93:16, 96:13, 96:17, 97:19, 98:8, 98:16, 99:16, 99:22, 105:6, 105:21, 106:14, 108:11, 114:12, 114:21, 114:22, 115:1, 118:6, 118:7, 132:2, 151:7, 154:14, 158:7, 161:14 others 83:10, 97:8, 101:7 otherwise 26:3, 91:17, 164:4 ou 9:11 ourselves 135:4 out 12:3, 14:5, 15:7, 15:9, 39:7, 57:18, 81:5, 87:11, 92:10, 95:12, 106:5, 113:15, 141:6, 146:14, 158:11 outcome 164:5 outside 32:16 outward 93:13, 103:7, 103:8, 157:22 outwards 93:2, 121:8 over 9:16, 33:2,	106:2, 117:21, 123:20, 159:18, 160:2 overview 5:22 owner 1:10, 3:10 owner's 32:15 oy 1:9 P packet 31:13 page 4:3, 4:9, 24:13, 24:18, 24:19, 24:20, 25:6, 25:8, 25:9, 29:20, 30:1, 30:2, 30:11, 31:10, 43:2, 76:13, 76:16, 121:4, 121:5, 140:19 painful 144:18 pair 56:2, 143:7 paired 111:9 paper 9:20, 10:4, 10:7, 11:19, 27:7 papers 9:4, 9:6, 9:8, 21:6 paragraph 25:16, 60:22, 61:3, 61:8, 61:14, 65:4, 66:7, 66:12, 66:18, 67:2, 67:15, 67:19, 67:22, 68:5, 68:13, 68:17,	70:2, 73:9, 73:14, 80:9, 80:10, 80:19, 80:21, 82:8, 84:10, 84:11, 85:8, 85:11, 86:2, 86:10, 89:2, 89:3, 92:22, 94:6, 94:12, 94:20, 95:1, 97:14, 97:17, 104:5, 105:22, 106:6, 109:9, 109:12, 111:6, 111:13, 112:18, 113:3, 115:10, 115:11, 116:5, 121:7, 121:14, 124:21, 124:22, 125:18, 133:13, 133:14, 133:15, 133:19, 133:22, 134:3, 134:6, 134:12, 146:3, 146:5, 146:8, 146:14, 147:9, 147:12, 147:15, 148:9, 148:13, 148:20, 149:1, 150:8, 151:13, 151:22, 152:6, 152:10, 152:15, 152:20, 153:3, 154:6, 154:14, 154:19, 156:18, 156:21, 156:22, 157:3, 157:7, 157:8, 158:2, 158:17, 158:21, 159:9 paragraphs 68:6, 68:10, 94:12, 156:19 paraphrase 50:13 paraphrasing 90:3 park 29:10	parse 113:15 parsimonious 27:13 part 7:18, 40:22, 46:14, 73:2, 81:17, 99:5, 99:7, 99:9, 105:9, 120:14, 122:13, 122:22, 123:8, 123:17, 128:11, 130:16, 130:20, 138:7, 159:6 particular 10:16, 26:4, 54:22, 55:6, 94:19, 96:8, 103:4, 103:5, 140:8 parties 164:1, 164:3 partnership 9:14 party 163:14 pass 114:13, 132:2, 162:5, 162:12 passed 132:19, 155:10 passes 114:3, 114:11, 114:13, 132:6, 134:18, 134:20, 145:17 patent 1:1, 1:3, 1:10, 1:13, 3:10, 4:12, 4:14, 4:16, 4:18, 16:8, 19:12, 20:5, 20:7, 22:18, 23:13, 26:15, 26:20, 32:7, 32:15, 33:21, 33:22,
---	--	---	--

34:5, 34:8, 34:18, 35:15, 35:18, 36:3, 40:11, 40:18, 41:2, 41:3, 41:22, 43:2, 43:12, 43:18, 46:10, 47:2, 47:5, 50:7, 52:14, 54:8, 62:2, 65:2, 73:16, 74:18, 89:1, 92:12, 119:6, 124:6, 132:13, 138:12, 142:20, 143:1, 144:19, 151:18, 161:7 patent's 160:6 patents 21:5 pattern 63:19, 64:1, 64:6, 64:13, 69:10, 69:13, 70:7, 80:20, 93:12, 94:14, 96:1, 96:7, 96:22, 97:16, 97:18, 101:12, 101:14, 103:7, 107:21, 111:22, 131:1, 139:18, 139:21, 140:6, 140:15, 145:21, 149:8, 150:18, 150:19, 151:1, 159:10, 159:15, 160:13, 160:16 patterns 64:11, 93:1, 95:3, 102:2, 104:15 paul 5:9 pc 8:13, 28:22	pdf 25:9, 43:2 pen 27:7 pending 147:1, 157:17 people 9:21, 13:7, 35:16, 153:7 percent 121:17, 126:20, 147:20, 149:6, 150:12, 161:11 percentage 35:13 perception-based 8:1 perfect 63:5 perform 85:3, 118:17 performance 10:3 performed 26:22, 53:3, 55:1, 55:7, 55:9, 56:15, 57:5, 58:3, 58:18, 116:4, 116:12, 136:21, 141:12, 147:21, 148:4, 156:2 performing 37:11, 106:14, 110:14, 133:16 perhaps 22:13, 46:17 person 16:12, 16:18, 22:20, 62:18, 94:1, 102:9, 116:22, 131:16, 144:15, 158:10, 159:2 personally 14:21 pertain 9:9	pertains 72:9 petition 25:13, 32:14 petitioner 1:7, 3:3, 26:21, 161:22 ph 1:17, 2:8, 4:4, 5:2, 13:21, 14:1, 163:6, 163:18 philosophical 6:21 phrase 58:11, 62:10 pick 50:3, 50:4 picking 104:17 picture 34:12, 34:20, 35:4, 35:6, 38:19, 42:21, 68:7, 68:8, 110:3 pictures 34:21 piece 37:16, 37:17 pieces 37:11, 37:17 pin 42:22 pixel 34:11 pixels 37:8, 38:5 place 123:21, 151:21 placed 53:11, 58:20 places 59:22 placing 100:14 plain 49:7	please 6:3, 6:8, 6:14, 17:15, 18:10, 18:21, 55:3, 66:11, 76:14, 109:11, 129:13, 133:13, 140:22, 152:14 plurality 105:21, 143:17 plus 122:1 pm 153:1 pmv 60:18, 60:19, 60:21, 61:3, 61:6, 71:15, 73:2, 104:5, 106:7, 110:11, 110:19, 111:2, 111:13, 112:16, 121:8, 121:10, 125:1, 125:10, 129:4, 129:18, 132:20, 146:8, 147:6, 147:10, 147:11, 148:10, 148:11, 148:16, 148:22, 151:13, 151:21, 152:4, 152:10, 152:15, 152:21, 153:2, 153:3, 153:4, 153:10, 153:11, 153:16, 153:21, 154:6, 154:16, 155:3, 156:7 pmv_cand 146:18, 150:13, 151:2 pmv_cands 60:21, 61:2, 61:10, 61:13, 61:22, 62:13, 62:22, 63:11, 71:17, 73:1, 80:11, 80:16,
--	---	--	--

81:17, 85:5, 85:12, 85:20, 86:11, 87:19, 88:1, 88:3, 88:17, 88:18, 105:18, 106:11, 106:17, 106:18, 107:5, 108:9, 108:17, 109:1, 109:6, 109:17, 109:22, 110:9, 110:10, 110:17, 110:20, 111:2, 112:1, 112:7, 112:14, 112:19, 113:2, 113:4, 113:8, 113:16, 114:18, 116:3, 119:5, 119:11, 119:18, 120:1, 120:11, 120:15, 120:20, 120:22, 121:10, 121:12, 121:16, 125:5, 125:6, 125:7, 125:11, 146:6, 149:2, 149:5, 149:18, 149:21, 150:6, 150:7, 157:9, 157:19, 160:17 pmv_sands 62:10 pmvs 79:22, 120:13, 122:2, 122:7, 150:2 point 14:4, 27:19, 57:18, 59:22, 62:17, 80:4, 98:12, 105:5, 109:16, 111:1, 112:12, 112:13, 116:3, 120:17, 122:11, 124:11, 126:14, 135:10, 136:14, 136:15,	137:15, 139:17, 142:9, 154:21, 158:14 pointed 39:6, 87:11, 106:5, 111:7 pointing 92:10, 121:21, 122:19, 124:6, 134:10 points 120:16 popr 161:2 portion 31:17, 46:9, 156:17 portions 161:3 posed 62:4, 92:14 posita 112:8 position 123:8 positions 69:20 possession 138:10, 154:1 possibilities 106:9 possible 46:1, 46:3, 67:14, 69:19, 70:6, 73:21, 100:4, 102:19, 111:19, 112:3, 130:9, 130:14, 130:16, 130:19, 131:8, 139:19, 139:22 possibly 75:12, 84:13 post-modification 40:5 potential 56:11, 160:11 potentially 71:7, 85:3	practical 16:19, 16:22, 73:17, 158:10, 158:14 practically 82:21 practice 70:6, 84:2 practicing 35:16 precise 51:7, 59:9, 64:8, 75:21, 132:9, 135:15 precisely 18:14, 27:18, 125:5 predefined 80:12, 80:15, 81:9, 88:13, 88:14, 88:19, 88:21, 106:12, 112:21 predetermined 149:9, 159:10 predict 34:13, 35:22 predicted 34:20, 60:19, 61:15, 61:17, 80:1, 106:2, 109:1, 109:4, 122:2, 122:7, 124:10, 150:17, 160:10, 160:12, 160:14 predicting 34:11, 44:17 predictions 34:14, 35:22, 37:13 predictive 120:13 preferable 16:21, 97:2 preferred 95:21 preliminary 32:15	preparation 28:9, 28:10, 28:12 prepare 32:5, 33:3, 33:13 preparing 26:9, 27:21, 28:6, 28:7, 28:18, 28:20, 29:6, 30:3, 30:16, 31:2, 32:19, 160:18 presence 121:20, 124:7 present 75:13, 76:7, 89:17, 90:5, 91:7, 104:22, 114:2, 114:17, 122:15, 126:3, 126:4, 130:3, 130:10, 131:5, 137:11, 138:3, 142:4, 144:11 presents 86:10 pretty 10:13, 55:10, 55:13 previous 29:12, 95:3, 97:16, 104:7, 104:11, 106:2, 106:3, 146:11, 146:15, 146:22, 152:7, 152:12, 152:17 previously 17:18, 18:1, 41:6, 44:12, 49:15, 51:20, 70:22, 71:7, 86:8, 92:3, 93:1, 94:19, 96:8, 112:21, 124:18, 126:7, 135:3, 146:10,
--	---	--	--

152:7, 152:12, 152:17, 154:2, 161:1 primarily 8:18, 38:18, 89:1 primary 16:1 principle 67:11 print 23:21, 24:9 printout 23:12, 23:15, 24:2 prior 5:15, 14:8, 14:9, 26:19, 29:12, 30:4, 48:4, 85:5, 97:17, 122:10, 122:15, 123:2, 127:1, 129:15, 129:17, 131:13, 160:20 probably 27:8, 30:8, 84:2 problem 34:7, 70:1, 70:4, 93:1, 93:5, 93:11, 94:6, 95:12, 149:4 proceed 77:4, 136:4, 137:22, 150:17 proceeding 18:13, 18:15, 32:4, 161:7 proceedings 26:20, 160:20, 161:8 proceeds 137:4, 157:21 process 5:19, 26:17, 28:18, 28:20,	40:11, 40:18, 41:1, 50:16, 51:3, 55:1, 55:7, 55:9, 57:4, 67:7, 70:14, 75:11, 77:12, 79:13, 79:17, 79:21, 80:18, 83:10, 83:12, 83:13, 84:8, 85:3, 85:9, 85:12, 89:20, 90:14, 90:15, 106:14, 110:14, 113:17, 120:17, 120:18, 122:14, 122:16, 122:22, 123:3, 125:3, 127:4, 132:21, 133:9, 133:12, 138:1, 148:17, 148:19, 153:13, 153:14, 154:5 processed 85:15, 102:20, 112:19, 155:4 processing 7:10, 8:2, 9:2, 37:2, 38:21, 76:20, 120:9, 142:19, 148:5, 156:8 products 13:2, 13:6 professionally 14:22 professor 8:14, 13:12, 14:2, 15:13 profit 11:8 programmer 13:17, 14:7 progresses 121:8 prolific 21:20	pronouncing 15:4 properties 10:12 property 95:4 proposed 92:3, 96:1 proposes 20:7, 94:13 provide 17:3, 17:6, 19:13, 20:22, 73:7, 78:1, 100:13, 107:14, 138:13, 150:19 provided 95:9, 101:9, 132:18, 133:2, 150:20, 151:6 provides 128:7 providing 128:7, 144:17 provisional 62:16 prv_cands 84:9 pu 39:7, 55:12 publication 4:13, 4:15, 4:17, 19:12, 20:7, 22:19, 23:2, 92:12 published 10:4 pulling 81:5 purpose 54:9, 72:19, 121:20, 122:12, 122:20, 133:21, 134:5 purposes 17:18, 43:17, 46:9, 74:21 put 11:20, 42:22,	78:19, 81:18, 81:22, 82:1, 82:3, 82:15, 82:21, 83:1, 83:2, 105:22, 117:1, 118:16, 118:17, 122:1, 122:9, 155:9 puts 90:21 putting 27:7, 155:12 Q qualify 103:19 qualities 16:12 quality 115:21 quantification 35:8 quantization 10:12 question 6:4, 6:13, 6:14, 45:1, 45:6, 50:22, 53:15, 57:2, 61:8, 62:4, 65:13, 72:9, 74:3, 84:18, 92:5, 92:13, 96:16, 96:18, 97:4, 116:7, 117:15, 120:3, 122:18, 129:14, 134:2, 142:18, 145:1, 145:13, 146:15, 146:22, 147:1, 147:4, 152:14, 155:9, 157:17, 160:21 questions 6:1, 162:12, 162:14 quite 29:17, 93:12,
--	--	--	---

Transcript of Joseph Havlicek, Ph.D.
Conducted on February 16, 2026

191

152:2 quotes 161:3	144:14, 163:20 reads 121:7, 131:17 ready 118:19 real 49:10 really 21:15, 56:2, 82:20, 119:9, 119:16, 125:15 realtime 2:10, 117:15 reason 62:15, 79:19, 87:16, 90:12, 92:21, 99:3, 111:18, 112:7, 113:6, 120:8, 123:9, 127:15, 143:5 reasonable 127:7, 159:4 reasons 75:18, 90:7, 104:2 rebuild 85:7 recall 28:1, 31:4, 100:3, 100:10 received 17:8 recess 46:22, 84:4, 117:10, 124:2, 159:22, 162:9 recited 73:15, 147:6, 151:17, 151:22 recites 49:2, 51:13, 53:4 recoding 35:6 recollect 126:11 recollecting 86:4	recollection 64:9 recommended 159:15 reconsider 53:15 record 24:6, 46:21, 84:3, 88:5, 117:7, 117:8, 117:17, 159:21, 162:7, 163:10 reduce 35:19, 42:10 reduced 140:11, 163:13 redundant 55:11, 110:6, 115:7 refer 19:5, 25:4, 31:9, 43:9, 52:5, 52:8, 52:10, 64:2, 72:18 reference 11:17, 12:12, 16:4, 18:18, 19:9, 19:10, 19:21, 20:22, 21:3, 22:6, 23:22, 59:7, 60:11, 60:16, 60:20, 62:10, 65:14 referenced 47:4, 61:1 references 18:17, 26:11, 26:16, 32:8, 144:18, 146:17 referred 23:21, 24:3, 37:4, 41:13, 41:20, 42:6, 42:7, 43:19, 51:3, 78:2, 82:7, 144:1,	146:21 referring 26:12, 42:20, 45:8, 54:15, 80:5, 84:20, 145:1, 146:12, 146:21 refers 37:14, 61:8, 65:16, 74:19, 146:8, 149:19 refined 40:10 regarding 9:9, 10:9, 27:17, 29:2, 29:5, 32:1, 140:20, 144:7 regardless 155:2 regards 102:2, 131:5 region 77:10, 77:18, 78:4, 78:6 registered 2:9, 92:16 regular 6:6 reinitialize 83:22, 87:6 reinitialized 86:6 reinitializing 84:13, 86:7 related 25:13, 25:22, 36:3, 44:10, 163:22 relationship 157:6 relative 68:22, 90:4, 136:10, 138:20 relevant 9:19 remain 54:4, 139:4
---------------------------------	--	--	--

Transcript of Joseph Havlicek, Ph.D.
Conducted on February 16, 2026

192

remember 11:19, 15:10, 15:12, 23:16, 27:5, 27:18, 31:8, 100:5, 140:22 remembering 87:12 remind 60:12 remote 1:16, 2:8 remotely 32:17, 163:18 remove 110:6 removed 89:12, 116:21 removing 118:11, 118:14, 118:15 render 26:14 repeat 45:5, 50:22, 53:13, 55:3, 66:11, 79:14, 91:11, 107:2, 108:14, 122:17, 134:1, 135:16, 145:13, 152:14 rephrase 53:17 reported 1:21 reporter 2:10, 117:6, 117:18, 117:22, 163:1, 163:3 represent 33:20, 65:12, 65:15, 161:18 represented 163:15 representing 8:3 represents 66:1, 88:6	reproduction 68:3 require 43:21, 97:18 required 118:9 requirement 57:22 requirements 7:18 requires 93:20, 104:4 reread 133:22 rereading 100:1 research 7:6, 7:9, 14:10 respect 38:14, 67:17, 72:17, 80:21, 86:7, 87:18, 87:21, 88:16, 91:9, 99:14, 99:21, 116:3 response 32:15 restart 106:7 restricted 36:8 result 91:1 return 140:18 review 26:18, 29:14, 29:17, 30:16, 31:1, 160:19, 160:22 reviewed 29:15, 30:18, 31:3, 32:7, 33:22, 34:3, 34:4 reviewing 29:11, 45:3, 100:2	richardson 3:5, 8:13, 15:18, 15:21, 15:22, 16:9, 28:22, 29:5 rmr-crr 1:21, 164:11 role 13:12, 13:15 roles 13:22 roughly 33:8 row 77:5 rule 68:19, 69:2, 69:5, 69:8 rules 5:17, 139:16 run 16:7 rusert's 20:5, 62:16, 65:20, 70:22, 71:1, 79:12, 79:17, 89:10, 95:20, 95:22, 101:6, 101:8, 102:2, 103:14, 104:4, 110:21, 118:9, 119:3, 131:12, 145:20, 147:12, 147:20, 149:8, 149:20, 154:3, 157:2, 159:6, 159:14, 160:13 russians 91:22 S s 3:1, 44:17 sacrifice 11:4 said 22:15, 28:4,	30:10, 34:1, 42:4, 49:19, 52:20, 56:9, 57:15, 63:14, 67:16, 73:13, 78:8, 78:11, 86:5, 86:22, 87:9, 90:2, 95:11, 98:22, 102:16, 104:7, 106:6, 111:2, 113:2, 113:21, 126:9, 132:3, 135:5, 139:3, 139:4, 152:2, 163:11 sake 126:13 same 27:4, 30:7, 44:14, 51:19, 54:18, 56:19, 59:14, 59:22, 68:20, 85:4, 86:19, 87:5, 87:22, 101:6, 120:5, 137:7, 137:12, 137:17, 138:11, 140:1, 140:19, 147:7, 149:2, 152:11, 152:16, 153:4 sands 62:19 say 10:20, 12:5, 15:1, 16:15, 16:17, 17:3, 20:3, 21:14, 21:18, 26:2, 28:7, 31:4, 33:8, 35:7, 36:20, 37:7, 38:4, 39:12, 44:1, 45:4, 49:17, 52:20, 61:5, 61:12, 62:14, 73:22,
---	---	--	--

Transcript of Joseph Havlicek, Ph.D.
Conducted on February 16, 2026

193

74:4, 74:22, 77:22, 81:21, 81:22, 83:7, 83:20, 84:19, 86:2, 88:4, 90:3, 91:21, 97:10, 101:5, 103:19, 104:11, 104:17, 106:16, 109:17, 120:7, 123:4, 124:6, 127:17, 127:20, 128:12, 134:8, 137:18, 143:4, 143:5, 143:9, 146:7, 149:19, 150:11, 151:20, 152:3, 153:7, 155:10, 157:14, 158:5, 158:7, 159:4 saying 33:1, 45:16, 58:16, 87:4, 87:5, 87:10, 87:13, 93:22, 95:3, 103:19, 110:2, 110:4, 111:18, 118:13, 120:8, 121:13, 121:15, 128:16, 144:9, 147:7, 148:11, 148:21, 152:18, 153:5, 155:15, 156:13 says 24:19, 47:22, 50:7, 60:2, 62:19, 65:4, 65:7, 67:19, 80:12, 83:21, 86:11, 87:7, 87:15, 94:22, 95:7, 97:18, 98:19, 101:18, 101:20, 103:22, 104:4, 105:8, 109:14, 109:17,	110:10, 111:8, 123:10, 124:15, 125:6, 134:7, 139:13, 140:5, 143:6, 144:20, 152:21, 157:5, 157:15, 158:1, 158:8, 159:9 scan 69:10, 69:13, 70:7, 79:12, 79:17, 92:22, 93:18, 93:21, 95:3, 95:21, 96:1, 96:7, 96:22, 99:5, 99:8, 99:15, 99:16, 99:17, 99:22, 101:12, 101:13, 101:18, 102:1, 103:7, 103:10, 104:15, 107:9, 107:21, 111:21, 120:10, 120:16, 121:8, 122:4, 122:10, 124:12, 125:3, 128:22, 131:1, 131:14, 135:1, 136:5, 136:11, 138:5, 139:17, 139:21, 140:6, 140:14, 140:20, 145:21, 147:13, 149:8, 149:15, 149:22, 150:18, 151:1, 154:5, 157:2, 157:22, 158:2, 158:13, 158:15, 158:19, 159:10, 159:15, 160:13, 160:16 scanned 159:10 scanning 63:19, 64:1, 64:5, 64:11, 64:13, 76:22,	80:20, 89:20, 90:14, 94:14 scenario 86:18 scenarios 75:2 school 14:9, 67:4 science 6:19, 6:20, 113:9 screen 22:3, 35:3 se 161:1 search 83:18 second 17:11, 24:6, 24:20, 30:6, 30:10, 55:12, 56:1, 66:17, 67:2, 80:8, 115:16, 118:16, 118:17, 147:18, 155:8 second-to-last 121:6 section 128:16 sections 27:9 see 15:3, 17:13, 19:17, 19:19, 20:6, 22:3, 23:5, 23:11, 30:13, 30:15, 30:21, 36:8, 38:3, 39:22, 43:6, 47:20, 58:15, 64:17, 74:14, 76:16, 81:9, 85:18, 98:10, 100:19, 100:22, 109:12, 112:22, 114:16, 125:22, 156:19,	156:20, 156:22 seeing 98:10 seeking 63:2 seeks 34:8 seem 66:10 seemed 27:3 seems 59:1, 66:12, 92:20, 113:7 seen 21:5, 21:6 select 47:18, 47:22, 49:2, 49:9, 49:13, 50:8, 50:15, 51:1, 57:3, 60:6, 63:9, 67:20, 91:5, 91:15, 132:22, 135:2, 135:6, 135:8, 139:13, 142:12, 142:21, 143:15, 144:2, 150:2, 152:6 selected 52:1, 57:12, 58:8, 68:4, 69:21, 75:7, 79:12, 79:17, 81:10, 81:21, 82:8, 90:1, 90:16, 91:13, 91:18, 116:14, 127:22, 128:13, 128:19, 129:5, 129:20, 130:9, 130:12, 130:21, 131:8, 131:13, 131:18, 135:12, 135:18, 136:13, 145:5, 145:16 selecting 49:4, 56:6,
--	--	--	--

56:9, 58:11, 58:12, 59:2, 60:18, 70:14, 72:13, 73:10, 74:18, 74:19, 75:1, 76:2, 124:12, 143:2, 146:9, 153:13, 154:1 selection 51:8, 73:14, 73:15, 75:11, 75:12, 76:8, 80:20, 91:10, 116:18, 118:2, 129:15, 129:17, 135:4 selective 161:3 semantic 82:5 semantics 82:2 sense 39:17, 44:8, 58:10, 69:14, 75:14, 101:3, 120:22, 155:6 sentence 121:7, 157:3, 157:6, 158:1 separates 24:13 sequence 27:6, 69:19 sequential 96:1 sequentiality 57:20 set 41:4, 41:15, 41:17, 41:20, 41:21, 42:3, 42:20, 43:17, 43:20, 43:22, 44:1, 44:5, 44:20, 45:8, 45:9, 45:13,	45:17, 45:20, 46:9, 46:14, 48:2, 48:4, 48:7, 48:9, 48:16, 48:19, 48:20, 49:14, 49:17, 49:20, 49:21, 49:22, 50:17, 50:18, 51:4, 51:5, 51:19, 51:22, 56:11, 70:14, 70:17, 70:20, 71:6, 71:9, 71:10, 72:6, 72:9, 72:11, 72:14, 72:17, 72:20, 77:19, 78:3, 78:6, 78:19, 79:1, 79:6, 79:10, 79:15, 80:11, 82:18, 99:9, 105:19, 127:17, 127:18, 127:19, 143:7, 143:14, 163:7, 164:6 sets 48:14 setting 88:11, 88:12 seven 111:7, 139:15 several 26:16, 75:17 shade 108:18, 109:7, 111:12 shall 69:15, 110:11, 111:3, 111:14, 145:18 shares 38:9 short 156:21 short-circuited 108:10	shorthand 163:1 should 13:11, 14:4, 18:21, 20:16, 21:22, 24:22, 29:13, 34:2, 40:14, 40:21, 64:2, 101:19, 103:20, 117:6 shouldn't 82:12 showed 119:22 showing 117:16 shown 68:16, 69:19, 71:16, 84:22, 102:5, 109:20, 111:13, 146:2, 146:4, 146:13, 147:8, 147:15, 148:13 shows 69:14, 124:7 side 77:12 signal 63:8 signaled 39:14, 42:15, 59:18, 61:16, 71:19, 109:2, 110:12, 111:3, 111:14, 151:3 signature-plkal 164:9 signing 163:20 similar 11:14 simple 55:10, 102:9 simply 27:13, 35:7, 40:1, 81:10, 102:3	since 27:14, 29:18, 42:7 single 102:1 sir 5:8, 5:20, 6:5, 6:11, 7:19, 8:10, 14:17, 19:11, 19:19, 23:9, 25:15, 30:1, 30:15, 31:15, 31:19, 33:4, 34:2, 34:6, 36:11, 36:13, 46:19, 47:8, 47:12, 54:17, 67:1, 68:1, 77:8, 77:14, 80:7, 80:14, 101:4, 111:5, 131:11, 133:18, 134:16, 141:3, 144:8, 145:9, 148:7, 151:19, 157:4, 160:21, 161:4, 162:1 sitting 26:7, 100:1, 100:9 six 28:14 sizes 38:19 skill 62:18, 94:2, 102:9, 117:1, 131:17, 144:16, 158:11, 159:2 skilled 49:6, 96:4 slice 44:14 slide 32:12 slightly 32:21, 33:2,
---	---	--	--

Transcript of Joseph Havlicek, Ph.D.
Conducted on February 16, 2026

195

82:12, 103:18, 109:7 slow 108:19 small 23:10, 24:4, 82:13 smaller 37:11 smart 104:13 smith 3:12 smooth 10:22 soft 25:2 solve 34:8 some 10:2, 11:7, 11:21, 16:18, 16:22, 17:3, 24:10, 27:19, 29:17, 40:4, 52:21, 70:4, 78:12, 78:13, 81:18, 88:12, 89:2, 89:4, 92:14, 96:7, 106:11, 106:14, 108:11, 115:22, 120:13, 127:7, 140:11, 151:10, 153:6, 153:7, 154:21, 155:6, 156:4, 156:6 someone 12:5 something 11:14, 14:3, 28:3, 49:4, 62:7, 98:10, 98:13, 116:8, 125:11, 145:22 sometimes 61:10, 120:4, 120:5, 120:6	somewhere 8:9 sooner 68:21 sorry 10:18, 91:11, 102:17, 105:14, 108:13, 112:12, 122:17, 129:4, 130:18, 134:2, 141:22, 147:2, 154:10 sort 14:13, 40:2, 56:22, 64:9, 81:20, 159:11 sorts 116:6 sought 38:20 sound 6:10 sounds 11:10, 91:8, 144:9, 148:10, 159:20, 162:8 south 102:11 southeast 102:13 southwest 10:8, 102:12 spare 9:18 spatial 45:13, 47:18, 48:1, 48:2, 48:19, 49:3, 49:13, 50:8, 50:15, 51:1, 51:14, 51:16, 52:2, 52:5, 52:8, 52:14, 53:5, 53:9, 53:22, 56:3, 57:7, 57:13, 58:6, 58:12, 60:7, 70:15,	70:17, 75:8, 76:2, 76:8, 77:19, 78:7, 78:17, 78:19, 79:1, 79:6, 79:10, 79:15, 91:18, 99:9, 116:12, 123:10, 123:12, 129:21, 130:12, 132:17, 133:4, 136:10, 142:2, 142:6, 142:12, 142:14, 142:16, 142:21, 143:2, 143:7, 143:10, 143:15, 143:21, 144:3, 144:20, 145:3, 145:6 speak 10:19, 29:1 speaking 65:18 special 81:20 specific 8:16, 10:2, 35:17, 36:17, 51:10, 52:19, 81:14, 124:19, 128:1, 146:1, 147:14 specifically 10:9, 18:17, 26:21, 42:9, 65:14, 69:3, 70:21, 86:15, 87:1, 87:20, 88:2, 99:14, 110:9 specification 64:11, 102:8 specified 58:4, 156:3 specify 127:16, 137:18 specifying 69:18, 126:11	spend 28:6, 28:12, 28:15, 32:19 spiral 93:2, 93:12 spirit 119:3 split 70:9 spoke 29:7 spoken 21:8, 29:10, 161:20 spot 81:1 square 3:6, 43:5, 66:9, 100:20 staff 12:13 stage 53:9, 127:11 stages 75:10 standard 5:17, 38:2, 38:3, 38:13, 38:14 standardization 12:17 standardized 12:2 standards 12:18, 16:17, 16:20, 31:15 start 5:22, 13:12, 28:11, 80:11, 80:12, 82:3, 85:13, 115:1, 117:20, 122:10, 122:16, 141:8 started 13:15, 14:4, 27:7, 27:8, 30:10, 85:5, 141:6
---	--	--	--

starting 14:9, 56:22, 67:6, 75:22, 80:15 starts 57:11 state 2:11, 5:8, 9:14, 9:16, 25:10, 88:13, 101:22, 106:11, 106:12, 106:13, 107:5, 113:10, 113:11, 140:20 stated 27:14, 42:10, 71:2, 71:22, 90:7, 90:21, 128:21 statement 67:11, 86:1 states 1:1, 22:18, 68:17, 158:21 stenographically 163:12 step 27:16, 47:17, 53:20, 56:6, 56:7, 56:8, 56:9, 56:14, 56:19, 56:20, 57:3, 57:11, 59:5, 59:6, 66:6, 73:15, 74:18, 86:6, 127:1, 140:6, 140:14 steps 57:20 still 13:6, 13:21, 93:17, 93:18, 106:1, 130:3, 138:1 stop 24:12, 24:16, 61:21, 138:22,	159:16 stopping 159:7 stops 24:11 stored 121:9, 139:12, 140:13 story 158:12 strict 110:21 strike 52:7 string 61:9 structure 43:6, 119:12, 125:13, 139:10, 147:8, 149:2 student 12:10 students 9:22, 12:13, 16:5 studied 26:15 studies 7:9 studying 7:7, 10:11 subdivided 37:10, 38:6, 38:9, 38:10 subject 7:20, 7:22, 58:13, 160:2 subjects 9:8 submitted 18:12, 18:15, 32:3, 32:14, 161:6 subsequent 24:18 subsets 140:1 substance 25:11, 25:22,	90:20, 93:14, 116:7 substantive 47:16 succeeded 152:4 successively 113:10, 157:20 sufficient 81:15, 93:20, 99:17, 100:4, 100:10, 154:11 sufficiently 115:3 suggest 92:20 suggests 92:22, 94:18, 96:22, 101:19 suite 3:13 sum 66:14 summarize 14:7 supervised 12:13 suppose 26:3, 82:15, 95:10 supposed 61:10 sure 6:9, 12:8, 15:10, 17:9, 17:22, 30:5, 31:6, 32:22, 36:6, 36:7, 40:17, 44:19, 45:2, 45:8, 45:15, 51:7, 55:8, 58:15, 64:13, 70:3, 72:8, 72:10, 74:2, 75:20, 82:1, 97:11, 110:22, 113:7, 117:4, 119:9,	121:5, 126:21, 133:12, 138:22, 140:19, 141:9, 146:19, 149:19, 154:8, 161:11 surround 65:11, 103:12 surrounding 43:15, 64:19, 101:3, 101:7, 105:12, 106:21, 107:4, 107:7 susan 1:21, 2:9, 117:14, 163:3, 164:11 sworn 5:3, 163:8 symbol 66:5 symposium 10:8 synchronization 59:20, 63:5 synchronously 63:5, 63:16 synonymous 49:9, 94:6 systems 9:13, 10:6, 14:13 T tab 23:14, 23:19, 24:11, 24:12, 24:16 table 23:6, 109:13, 109:20, 111:12, 124:20, 125:17, 146:2, 146:4, 147:8, 148:13, 154:18, 156:11 take 6:6, 6:8, 6:15, 18:10, 26:6, 45:22, 46:18,
---	---	---	--

Transcript of Joseph Havlicek, Ph.D.
Conducted on February 16, 2026

197

60:10, 70:17, 88:10, 117:2, 123:21, 123:22, 130:5, 135:6, 147:14, 159:18, 162:6 taken 106:19, 131:13, 163:4, 163:9, 163:12 takes 151:21 taking 8:8, 82:6, 115:15, 132:12 talk 13:7, 50:5 talked 56:6, 86:18, 88:9, 141:7 talking 23:17, 43:1, 47:2, 48:4, 51:20, 84:7, 86:7, 88:5, 97:12, 98:18, 109:5, 111:17, 141:4, 149:6, 154:9 talks 159:3 targeted 84:18 taught 8:20, 67:4, 91:4, 140:5 teach 8:14, 8:17, 9:3 teaches 71:14, 75:14, 82:22, 99:18, 103:20, 113:18, 123:16, 125:9, 125:16, 129:1, 130:22, 132:21, 137:20, 138:16, 138:17, 140:15, 150:5, 152:5,	154:3, 159:8 teaching 81:18, 92:9, 93:15, 93:20, 94:11, 95:20, 102:6, 103:5, 104:4, 110:21, 118:9, 146:1, 147:21, 149:8, 149:20, 157:12, 159:5, 159:6, 159:11 teachings 102:15, 103:14, 104:20, 111:20, 127:20, 130:14, 154:3 technical 25:11, 25:22 technically 7:13, 13:16 technique 36:3 technologies 1:9 tell 23:7, 48:6, 111:17, 145:19, 153:9, 153:19, 155:7, 160:4 telling 93:19, 116:19, 161:11 tells 104:12, 119:2, 153:11, 153:21, 153:22 term 16:14, 17:4, 38:3, 60:20, 61:6, 62:1, 108:22, 113:9, 125:6, 125:8 terminate 157:13 terminated 157:2, 158:3, 158:6, 158:8	terminates 158:16, 158:20 termination 157:10, 157:19, 159:5 terminology 39:5, 50:18, 51:5 terms 37:3, 71:2 test 58:16, 114:4, 114:11, 115:2, 115:8, 115:9, 115:16, 115:17, 116:4, 118:8, 118:17, 118:21, 132:3, 132:4, 133:16, 134:20, 145:17, 148:3, 155:10 tested 155:11 testified 5:3 testimony 152:13, 160:19, 163:10, 163:11 tests 58:2, 58:14, 58:17, 97:19, 113:22, 114:5, 114:12, 114:15, 114:21, 115:1, 116:6, 116:8, 118:2, 118:6, 118:7, 132:2, 132:6, 132:19, 147:21, 155:7, 155:11, 156:1 texas 2:11, 3:14, 7:2, 164:12 th 3:6, 164:7 thank 6:11, 25:5, 84:6, 130:4,	130:7, 133:11, 162:11 thereafter 163:12 thereby 71:7 therefore 44:15, 46:13 thesis 7:11, 7:14 thing 6:12, 59:14, 61:12, 87:5, 93:6, 110:2, 119:14, 138:11, 139:2, 140:1, 140:17 things 12:14, 61:6, 84:12 think 10:7, 15:11, 16:21, 17:2, 19:6, 20:3, 21:16, 21:18, 23:17, 27:5, 29:18, 30:7, 30:9, 33:22, 43:20, 46:16, 47:4, 48:7, 48:18, 52:13, 52:20, 53:12, 53:13, 57:19, 57:21, 58:3, 61:20, 62:3, 64:1, 64:8, 64:15, 66:7, 69:7, 69:9, 71:21, 73:13, 74:2, 74:10, 78:8, 81:7, 82:20, 83:7, 84:16, 86:21, 87:4, 87:5, 87:11, 87:14, 91:3, 91:22, 92:5, 92:8, 92:18, 93:5,
---	--	--	---

93:13, 93:14, 95:6, 95:19, 98:14, 99:12, 100:8, 103:3, 103:4, 103:8, 103:19, 103:21, 104:3, 104:14, 104:16, 105:5, 107:1, 113:5, 115:13, 116:5, 116:7, 116:19, 116:22, 118:12, 118:14, 119:2, 119:7, 119:15, 123:20, 125:5, 127:8, 136:6, 136:14, 150:12, 152:2, 153:16, 156:3, 157:5, 158:14, 159:4, 159:17 thinking 35:16, 72:11, 102:18, 110:3 third 60:4, 155:8 thomas 19:20, 20:1, 20:4, 20:9 thought 92:15, 98:21, 121:11 three 28:17, 61:7, 116:6, 132:19 threshold 115:16, 115:22, 116:1, 118:8, 132:3, 155:19 threshold-based 116:11 throttle 11:3 through 6:1, 16:1, 16:7, 31:10, 43:16, 53:15, 59:12, 63:22,	64:7, 64:11, 64:12, 66:22, 94:12, 98:10, 100:7, 127:8, 139:21, 140:14, 141:7, 148:17, 150:18, 153:13, 154:2, 154:5, 156:18, 157:11 throughout 6:7, 60:20, 149:3 throwing 92:9 tie-breaking 68:19, 69:2, 69:5 time 3:6, 6:13, 7:7, 8:21, 13:3, 27:20, 29:17, 83:22, 84:14, 84:19, 87:6, 106:8, 116:12, 125:3, 130:17, 130:21, 131:7, 132:17, 138:4, 138:17, 139:21, 145:12, 147:14, 148:18, 151:20, 154:21, 155:4, 156:8, 156:11, 160:3, 161:12, 162:11 times 5:13, 26:17, 61:7, 84:19, 125:4 tiny 135:9 title 7:21, 13:16 today's 32:5, 32:20, 33:3, 160:18 told 99:12, 161:21 took 47:1, 67:20,	84:7, 118:18, 123:13, 124:3 top 19:16, 31:5, 31:7, 64:15, 77:4, 77:5, 77:6, 77:8, 100:5, 100:9, 103:16 trademark 1:1 traffic 10:3, 10:15, 10:18, 10:21, 11:6 transform 10:10, 10:12, 39:7 transmitted 63:7, 143:20 transpired 33:7 transportation 9:12, 10:6 tree 39:1, 39:2, 39:6 trial 1:3 tried 152:3 trouble 97:3, 97:5, 98:14 true 72:3, 78:10, 89:18, 96:15, 99:6, 106:16, 114:20, 126:10, 134:16, 135:22, 136:1, 137:2, 163:10 trump's 153:5 try 6:6, 23:16, 45:6, 103:17, 108:20	trying 71:21, 74:4, 81:1, 110:6, 113:15, 126:19, 140:8, 150:11 turn 23:3 turning 56:5, 113:14 turns 15:7 two 16:1, 23:6, 25:18, 30:20, 34:15, 37:17, 37:18, 71:14, 75:10, 87:16, 115:1, 119:21, 120:13, 132:2, 134:9, 161:15, 162:6 two-sided 23:12, 23:15, 23:20, 24:2, 24:8 type 115:8, 115:9 typewriting 163:13 typo 61:11, 62:17 typographic 62:12 U ultimedia 13:2 unavailable 89:12 unchanged 139:4 unclear 116:22 unclearly 65:19 under 52:11, 114:16, 120:1, 127:7,
---	---	---	---

Transcript of Joseph Havlicek, Ph.D.
Conducted on February 16, 2026

199

138:20, 148:13, 149:11, 150:14, 163:13 underscore 60:21 understand 6:2, 31:11, 31:13, 31:16, 44:19, 45:1, 45:15, 49:8, 49:11, 49:17, 51:17, 52:7, 52:10, 53:19, 59:4, 59:6, 61:2, 61:22, 65:6, 65:9, 65:13, 68:2, 75:19, 89:10, 94:2, 101:4, 106:20, 111:1, 115:18, 142:18, 147:17, 148:15, 152:22, 155:15, 157:5, 157:6, 158:11 understanding 33:1, 34:7, 36:18, 36:22, 38:15, 43:17, 47:8, 49:4, 53:8, 54:2, 60:6, 61:13, 62:11, 62:15, 64:21, 69:4, 81:8, 89:19, 95:2, 96:18, 102:1, 102:5, 112:14, 133:12, 144:14 understood 53:13, 56:5, 62:19, 90:3, 121:11 undesirable 95:4, 95:7 unique 68:11, 68:12, 68:18, 131:20	unit 12:2, 38:21, 39:1, 39:2, 39:6, 39:7, 39:8, 39:10, 39:11, 54:21, 54:22, 55:5, 55:6, 55:12, 56:2, 102:21, 150:9 united 1:1, 22:18 units 12:3, 37:3, 37:8, 37:18, 37:20, 37:21, 55:17 universally 21:18 university 7:2, 8:5, 9:11 unless 17:2, 26:3, 74:14, 104:20, 153:15 unnecessary 110:6 until 13:14, 15:12, 53:21, 58:8, 74:15, 76:14, 77:5, 112:15, 113:11, 127:21, 129:20, 131:4, 136:12, 149:15, 157:10, 157:18 update 80:18, 122:13, 122:22, 123:2, 134:22, 135:10, 135:17 updated 80:16, 112:20, 113:10, 121:9, 132:7, 134:19, 157:9, 157:20 updating 83:13, 122:16,	133:16, 133:20, 134:4, 134:7 uploaded 17:18, 25:2 use 10:9, 10:11, 25:1, 40:1, 40:5, 50:18, 51:5, 59:4, 82:14, 86:19, 87:22, 92:10, 92:17, 93:15, 94:1, 94:5, 103:3, 103:5, 113:9, 135:8, 159:8 uses 42:18, 93:10, 95:6, 116:21, 118:13 using 34:21, 49:18, 49:19, 60:4, 75:21, 92:4, 92:21, 93:8, 98:15 v vaguely 26:19 valid 105:2, 105:6, 133:2 validity 161:6 values 34:11, 34:13, 104:10, 119:14, 139:12, 140:13 variable 101:21 variations 92:9 various 16:8, 69:11, 148:12 vectors 35:12, 35:17,	37:13, 46:15, 59:17, 60:3, 61:15, 70:21, 71:8, 71:11, 71:12, 77:21, 78:16, 79:11, 81:16, 83:13, 88:14, 88:21, 90:16, 90:17, 105:21, 106:2, 106:19, 107:6, 112:21, 120:14, 122:1, 122:2, 122:8, 122:15, 122:21, 123:1, 124:17, 131:13, 131:20, 131:22, 132:16, 133:7, 137:11, 138:3, 138:7, 138:10, 138:13, 138:18, 140:10, 146:10, 151:7, 152:7, 152:12, 152:16, 154:1, 157:10 verify 103:17 version 40:6 versus 74:12, 125:13, 150:9 vertical 96:10, 96:15, 97:1, 97:9, 97:11 vetting 83:10 video 8:15, 8:16, 8:19, 9:1, 9:4, 9:7, 9:9, 9:14, 10:3, 10:11, 10:15, 10:21, 11:7, 12:1, 12:17, 13:6, 14:8, 14:11, 14:13, 14:16,
--	--	--	--

Transcript of Joseph Havlicek, Ph.D.
Conducted on February 16, 2026

200

15:15, 16:10, 16:13, 16:14, 16:19, 20:2, 20:8, 21:13, 21:19, 22:14, 34:10, 34:11, 34:20, 35:14, 36:1, 37:9, 38:19, 66:1, 85:14, 130:2, 158:18 videos 10:18, 11:6 view 16:13, 20:1, 44:20, 45:15, 46:7, 50:14, 51:1, 58:5, 62:18, 70:13, 71:10, 73:14, 77:18, 99:7, 158:15 viewing 33:19 viewpoint 104:15 visit 70:7, 70:10, 71:22, 75:15, 91:6, 91:12, 94:10, 101:16, 113:16, 114:9 visitation 91:9 visited 67:9, 67:10, 68:21, 76:5, 89:22, 90:15, 105:13, 105:17, 106:21, 107:4, 107:11, 107:21, 122:3, 124:18, 134:15, 135:14, 135:20, 136:1, 136:3, 136:16, 136:17, 136:20, 137:3, 141:10, 154:20	visiting 67:7, 75:22 visits 108:2, 134:11 visual 7:22 vitae 14:6 W wait 29:21, 62:5, 76:14, 109:10 want 17:19, 31:4, 37:5, 38:2, 44:19, 61:22, 75:20, 83:18, 83:19, 87:17, 91:2, 94:5, 97:6, 98:4, 98:5, 101:22, 110:22, 125:10, 132:11, 133:11, 139:1, 140:18, 144:6, 146:7, 147:4, 147:18, 148:9, 149:17, 154:11, 156:17, 160:3 wanted 81:3, 113:6, 146:16 wanting 62:16 wants 63:3, 63:8, 63:14 washington 8:13, 32:18 watching 35:1 way 11:9, 34:10, 45:5, 49:18, 50:5, 54:21, 55:5, 69:1, 77:3, 78:19,	94:3, 96:3, 96:4, 98:9, 98:21, 110:3, 112:10, 118:15, 118:18, 119:17, 130:6, 131:15, 131:16, 144:15, 148:4, 164:4 ways 39:3, 63:22, 64:5, 66:21, 81:4 we'll 83:20 we're 6:1, 17:12, 23:17, 24:9, 30:6, 41:10, 41:11, 41:12, 42:22, 50:4, 56:18, 59:14, 60:4, 62:22, 75:20, 77:12, 87:4, 87:5, 88:5, 95:18, 98:15, 110:15, 112:10, 113:20, 115:6, 119:19, 120:17, 122:5, 122:6, 126:19, 127:3, 140:19, 149:6, 149:17, 154:9 we've 9:21, 46:16, 52:19, 56:7, 57:15, 101:14, 109:5, 123:19, 144:10, 159:17, 160:1 weapon 14:13 weapons 15:8 week 32:21, 33:3 weeks 28:3, 28:14,	28:17 welcome 84:5 weren't 102:21 west 102:11 whatever 92:1 whatsoever 24:9 whenever 25:3, 86:5, 123:20 wherein 104:5, 110:14 whereof 164:6 whether 26:14, 40:7, 40:9, 40:13, 40:20, 41:11, 41:16, 42:4, 51:9, 58:2, 58:19, 87:17, 88:20, 90:18, 93:15, 106:12, 108:4, 110:8, 114:1, 116:15, 116:19, 118:6, 118:9, 125:10, 125:12, 128:9, 128:12, 128:18, 147:21, 150:13, 155:8, 155:9, 155:11, 156:1 whichever 25:3, 110:15 whole 59:22, 85:7, 112:10, 138:7, 139:21 withdraw 147:3 within 82:19, 116:1, 135:8, 155:18 without 38:12, 39:18,
---	---	---	---

Transcript of Joseph Havlicek, Ph.D.
Conducted on February 16, 2026

201

40:2, 100:1, 143:6 witness 4:3, 117:5, 117:20, 159:20, 162:5, 162:13, 163:6, 163:11, 164:6 wondering 53:19 word 49:8, 51:8, 58:10, 75:22, 95:7, 98:15, 135:8 words 25:15, 42:7, 67:22, 69:2, 93:7, 94:22 work 9:13, 13:22, 15:9 worked 13:5, 14:7, 14:10, 14:11 working 9:21, 11:13, 12:14, 12:16, 12:21, 13:17, 13:19, 13:21, 15:12, 16:19, 17:9, 41:10, 50:10, 140:21, 161:22, 162:2 works 77:3 worth 15:7 wouldn't 70:6, 84:2, 93:10 write 7:11 writing 27:8, 28:9, 28:16, 125:14 written 9:4, 9:9,	119:1, 119:14 wrong 130:5 wrote 7:16, 16:3 Y y-position 94:21 yeah 11:12, 12:12, 64:12, 92:1, 103:18, 116:5, 129:14, 140:21, 161:11 year 9:3 years 8:17, 11:15, 16:18 york 3:7 you-all 17:18 yourself 14:15 Z zhang 29:8, 33:10, 33:12 zoom 32:17 . .264 10:1, 10:14, 11:14, 16:3, 36:20, 37:1, 37:2, 37:21, 38:6, 38:16, 102:19 .265 36:20, 38:14, 38:20, 39:9, 102:18 .4000 3:15	.5070 3:8 0 00 81:19, 82:6, 82:15, 83:4, 105:20, 114:9, 114:10, 133:14 0012 146:8, 146:21, 147:12 0041 86:2, 87:13 0042 150:8 0071 133:14 0091 146:3, 146:14, 147:16, 154:19 0092981 4:17 01153 1:12 0194609 4:13 0249721 4:15 03 2:4, 163:19 1 1 124:2, 127:6 1.1 4:19, 100:15, 100:18, 100:19 1.2 4:20, 107:15, 141:1 10 84:4, 164:12 10,536,714 1:13, 4:18 100 4:19, 121:17, 126:20, 147:20,	149:6, 150:12, 161:11 1001 33:16 1003 17:14, 17:16, 18:3, 18:8, 24:10 10036 3:7 1004 18:21, 19:3, 19:6, 60:13 1005 20:16, 20:19 1006 22:1, 22:3, 22:5 1007 30:14, 31:10 1008 30:19, 31:6 1009 30:19, 31:6, 31:10 107 4:20 11 84:4, 104:5, 164:13 12 5:15, 83:2, 117:10, 124:2, 147:6, 148:9, 148:12, 149:1, 151:14, 151:22, 152:6, 152:10, 152:15, 152:20, 153:3, 154:6, 154:14 1200 3:13 123 121:7 126 76:13, 76:16 13 5:15
--	---	--	---

Transcript of Joseph Havlicek, Ph.D.
Conducted on February 16, 2026

202

14 43:2, 46:22 140 121:4, 121:5 14487 164:13 16 1:18, 2:3, 163:19 18 4:10, 4:11 19 4:12, 164:7 1993 13:21 1996 7:5 1997 13:13 2 2 159:22, 162:9, 162:15, 163:19 20 3:6, 4:14 2011 4:13, 4:15 2014 4:17 2020 10:8 2025 1:12, 27:19 2026 1:18, 2:3, 163:19, 164:7 21 116:5 212.765 3:8 214.978 3:15 22 4:16 23 47:9, 47:10, 47:12, 47:13,	47:17, 51:13, 54:6, 54:19, 55:15, 56:5, 58:16, 59:7 25 42:8, 54:13, 54:16, 54:20, 55:4, 55:14, 55:21, 159:22 26 46:22, 164:13 264 12:12 27 59:10, 164:12 28 84:4 3 3-by-3 100:20 30 164:13 300 3:13 309 29:21, 30:1, 30:2, 30:5 31 13:20, 42:8, 47:5, 123:14, 132:13, 143:5, 144:2, 144:19, 164:12 33 4:18 338 24:18 34 117:10, 123:14, 132:13, 144:20 37 47:10, 59:9, 59:10, 60:9 38 84:4 39 80:9, 80:10,	80:19, 82:8, 84:10, 84:11, 106:1, 117:10 396 30:11 3a 64:7, 64:9, 64:14, 64:17, 64:22, 65:1, 65:5, 65:14, 65:20, 67:6, 67:17, 68:3, 68:16, 69:9, 69:20, 71:4, 71:16, 79:5, 80:3, 83:11, 84:22, 86:9, 87:3, 88:6 3b 64:12, 68:2, 68:14, 69:6, 69:13, 69:14, 69:18, 69:20, 70:1, 71:16, 79:5, 80:3, 83:11, 84:22, 86:9, 88:22, 89:5, 89:11, 89:21, 90:5 3c 89:10, 89:14, 89:17, 90:4, 90:8 3h 64:12 3m 64:7, 97:17 3n 64:4, 95:18, 95:20, 95:22, 96:6, 96:12, 96:17, 97:7, 98:17, 98:22, 99:4, 99:15, 99:17, 99:22, 100:3, 100:10, 105:1, 107:10, 107:22, 120:10,	120:12, 122:4, 128:2, 128:5, 130:8, 130:17, 131:2, 133:8, 138:21, 150:1, 159:15 4 41 85:8, 85:11, 86:10, 106:6, 112:18, 113:3 419 32:11 42 143:6 43 159:22 44 57:9, 57:11, 143:9, 157:3, 157:7, 157:8, 158:2 45 156:18, 156:21, 156:22, 157:11, 158:15 46 156:22, 158:17 47 156:22, 158:21, 162:9 48 157:1 49 144:1, 156:18, 157:1, 157:11, 159:9, 162:9, 162:15, 163:19 5 50 60:8 51 13:5 52 65:4, 66:7, 66:12, 66:18,
--	--	---	---

Transcript of Joseph Havlicek, Ph.D.
Conducted on February 16, 2026

203

67:2, 67:15 53 67:15, 67:19, 68:1, 68:5, 68:14, 68:17, 73:9, 73:14, 80:22, 89:2 54 70:2, 89:3 55 92:22, 94:7, 95:13 56 94:12, 94:20, 95:1, 124:2 59 94:13	43:2, 43:18, 46:10, 47:2, 52:14, 54:8, 62:2, 63:1, 63:3, 65:2, 69:18, 69:22, 73:16, 73:20, 73:21, 74:18, 88:8, 119:6, 123:14, 124:5, 125:20, 132:13, 138:11, 142:20, 143:1, 144:19, 151:18, 160:6, 161:7 74 24:13 75201 3:14		
6	8		
6's 137:7 604 161:8 605 161:8 618828 1:22 65 97:14, 98:5, 98:7 6531 164:12	8 2:4, 70:8, 163:19 8-by-8 38:4		
7	9		
71 133:13, 133:14, 133:15, 133:19, 134:3, 134:6, 134:12 714 23:13, 26:15, 32:7, 33:21, 33:22, 34:5, 34:8, 34:18, 35:15, 35:18, 36:3, 40:11, 40:18, 41:2, 41:3, 41:22,	9 46:22 90 115:10 900 43:6, 43:9, 44:17, 60:5, 63:2, 65:2, 88:7 91 109:9, 109:12, 109:14, 111:6, 111:8, 111:13, 124:22, 125:18, 146:5, 147:9, 148:13, 148:20 93 12:22, 13:14 96 14:3, 115:11 97 14:4, 115:11		