

UNITED STATES. PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

META PLATFORMS, INC., INSTAGRAM, INC., WHATSAPP LLC,
META PLATFORMS TECHNOLOGIES, LLC, AND GIPHY, INC.,

Petitioner

v.

VL COLLECTIVE IP LLC,

Patent Owner.

IPR2023-00924
Patent 7,436,980 B2

Record of Oral Hearing
Held: September 10, 2024

Before KARL D. EASTHOM, JEFFREY S. SMITH, and
DAVID C. McKONE, *Administrative Patent Judges*.

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IPR2023-00924
Patent 7,436,980 B2

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The above-entitled matter came on for hearing on Tuesday, September 10, 2024, commencing at 3:36 p.m., at the U.S. Patent and Trademark Office, 600 Dulany Street, Alexandria, Virginia.

P R O C E E D I N G S

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2 THE CLERK: All rise.

3 JUDGE SMITH: Please be seated. Good afternoon, everybody.
4 Welcome to the Patent Trial and Appeal Board. My name is Judge Jeffrey
5 Smith. With me in person is Judge Karl Easthom and from Detroit is Judge
6 David McKone.

7 This hearing is for IPR2023-00924 *Meta Platforms v. VL Collective*
8 *IP*.

9 The panel has access to all your papers filed with the Board, including
10 demonstratives. When presenting your case, please identify clearly and
11 specifically each slide number you are discussing so that when we read the
12 transcript, we can identify the slide used. Each party has 60 minutes. I think,
13 Petitioner, you have an extra 10 minutes for this case?

14 MR. BAKER: Yes, Your Honor.

15 JUDGE SMITH: Petitioner has 70 minutes and Patent Owner has 60
16 minutes to present arguments for this hearing. Petitioner will open the
17 hearing by presenting his case regarding the challenge claims for which the
18 Board needs to do a trial. Thereafter, Patent Owner will respond to
19 Petitioner's arguments. Petitioner may reserve time for rebuttal to respond
20 to arguments presented by Patent Owner. Patent Owner may reserve time
21 for surrebuttal. I will call up the time only after your time has expired. I ask
22 you to track your own time during your presentation.

23 Petitioner, please step up to the podium and state your name and the
24 names of those who are here with you.

1 MR. BAKER: Good afternoon, Your Honors. Todd Baker of
2 Kirkland & Ellis. Here with me today are Yan-Xin Li, Jonathan Brit and
3 Ethan Perbohner. We represent the Petitioner, Meta Platforms.

4 JUDGE SMITH: Petitioner, do you wish to reserve time for
5 rebuttal?

6 MR. BAKER: Yes, Your Honor, we wish to reserve 10 minutes of
7 time.

8 JUDGE SMITH: Thank you. Patent Owner, please step up to the
9 podium and state your name and the names of those you have here with you.

10 MR. CARDENAS-NAVIA: Good afternoon, again, Your Honors.
11 Jaime Cardenas-Navia of Reichman Jorgensen Lehman & Feldberg on
12 behalf of the Patent Owner. With me is Mr. Eklem and Ms. Lehman. On
13 behalf of the client is Mr. Ira Blumberg.

14 JUDGE SMITH: Patent Owner, do you wish to reserve time for a
15 surrebuttal?

16 MR. CARDENAS-NAVIA: Ten minutes, please.

17 JUDGE SMITH: Thank you. Petitioner, you may begin when
18 ready.

19 MR. BAKER: Good afternoon, again. May it please the board,
20 Your Honor, can we turn to Slide 3 please to begin. Your Honor, there are
21 three primary issues in this IPR.

22 The first issue is claim construction and we believe the resolution of
23 the claim construction of Claims 1 and 9 for render the applicability of the
24 grounds to the claim is reasonably straightforward. We do spend a decent
25 amount of time discussing claim construction as part of our argument here
26 today.

1 The second issue is whether grounds 1, 2 and 3, whether or not they
2 render Claims 4 and 8 obvious. Those two dependent claims are in dispute
3 and the last issue is the prior arts status of TLP and whether TLP's model
4 includes a node corresponding to the object and to the collection of
5 components. That issue will be addressed by my colleague, Yan-Xin Li.

6 Your Honors, if we can turn to Slide 5, please. Claims 1 and 9 are
7 directed to substantially the same subject matter, so for purposes of today's
8 discussion, we are going to refer to Claim 1 but the arguments are equally
9 applicable to Claim 9. We first want to turn our attention to the preamble.
10 Claim 1 is directed to a method for object detection. Notably, it is not to a
11 method for object tracking. This is an object detection method which infers
12 that it's on a frame-by-frame basis.

13 Step 1(a) of the 980 involves providing a spatiotemporal model for
14 an object to be detected. Notably, Claim 1 does not expressly limit that
15 spatiotemporal model to a graphical model.

16 Step 1(b) involves providing a video comprising a plurality of
17 images including the object. Dr. Bajaj, Petitioner's expert, refers to Steps
18 1(a) and 1(b) as precursor steps to Steps 1(c) through 1(e). As inputs, the
19 claim method requires both the spatiotemporal model and the video.
20 Elements 1(c) through 1(e), those are the processing steps.

21 In Step 1(c), the computer measures the object as a collection of
22 components. The '980 patent explains with reference to Figure 3, which is
23 shown here, that objects can be modeled using four overlapping
24 components. For the image 301, this is an image of a pedestrian. The
25 components are the head 208, left arm 209, right arm 210 and legs 202.

1 In Step 1(d), the computer determines that the object is in each
2 image and in order to detect the object in any one of the plurality of images
3 of the video, as recited by Step 1(e), the '980 patent teaches a technique
4 referred to AdaBoost which can be used to boost the confidence that the
5 collection of components are present in the image. Can we turn to Slide 7,
6 please?

7 Your Honors, the Claim terms spatiotemporal model should have its
8 plain and ordinary meaning, explained by Dr. Bajaj in his first declaration,
9 Exhibit 1004 at Paragraph 51, a spatiotemporal model is a model which has
10 both spatial and temporal elements. However, in contrast to the plain and
11 ordinary meaning, in PO's opposition to a motion to dismiss in the parallel
12 district court case, PO contended that the '980's spatiotemporal model is a
13 graphical model compromising nodes corresponding to each of the
14 collection of components and to the object. As you can see here, Claim 3
15 does recite those limitations. Claim 1 is not so limited. Can we go to Claim
16 8, please? I'm sorry, Slide 8.

17 In its sur-reply, PO asserts a claim construction that spatiotemporal
18 model requires the spatiotemporal model must be detectable based on the
19 probabilities that the object is in preceding and/or subsequent images. Your
20 Honors, that construction is impermissibly narrow as it imports limitations
21 from the specification under the guise of lexicography. Slide 9, please.

22 As you're aware, lexicography requires a Patent Owner to meet an
23 exacting standard. In order for lexicography to apply, a Patentee must
24 clearly set forth a definition of the disputed claim term. It is not sufficient
25 for a Patentee to disclose a single embodiment. The Patentee must clearly
26 express an intent to redefine the term and that's not the case here.

1 JUDGE SMITH: Are you saying that -- I want to make sure I
2 understand what you're saying, so based on these slides you provided us
3 with, on Slide 7, there's Claim 3, which is an embodiment in the spec and
4 you're saying Claim 1 isn't that limited and then you're pointing us at Claim
5 8, of Patent Owner's. Are you saying this construction from Patent Owner
6 on Slide 8 encompasses Claim 3 rather than Claim 1. Is that what you're
7 saying?

8 MR. BAKER: Well, at the outset of when we formulated and
9 presented our petition, we argued the claims and claim construction in the
10 alternative. It was plain and ordinary meaning and we used the construction,
11 if you will, but it wasn't an explicit construction --

12 JUDGE SMITH: Okay.

13 MR. BAKER: Of the term spatiotemporal model based on the
14 district court proceeding. Then, as part of the litigation, or I should say the
15 IPR, Patent Owners have provided their own interpretation which is different
16 than what's in the district court.

17 JUDGE SMITH: Okay.

18 MR. BAKER: And we think it's plain and ordinary meaning.

19 JUDGE SMITH: Okay.

20 MR. BAKER: And to the extent you see us arguing the alternative
21 based on the district court, that really is an argument that's directed to Claim
22 3 because Claim 3 aligns with what Patent Owner says a spatiotemporal
23 model needs when they were arguing in opposition to our 101 motion. For
24 today's purposes, we are arguing and stand behind the position that Claim 1
25 and, in particular, the term spatiotemporal model should be given its plain
26 and ordinary meaning.

1 JUDGE SMITH: Okay, I'm just trying to understand this because,
2 and I guess the Patent Owner can speak more to this once they're on.

3 MR. BAKER: So, Slide 8 is their interpretation, the construction,
4 which was offered in their sur-reply.

5 JUDGE SMITH: Okay.

6 MR. BAKER: And as part of that in support of that interpretation,
7 they indicate that that construction is based on lexicography.

8 JUDGE SMITH: Okay.

9 MR. BAKER: Which we know, lexicography is a magic word --

10 JUDGE SMITH: Got it.

11 MR. BAKER: In the patent world and we're saying, hey, you
12 haven't met the standards of lexicography.

13 JUDGE SMITH: Got it.

14 MR. BAKER: Let's go to Slide 10. We've walked through the
15 Patent Owner's arguments and tried to explain why they're incorrect. The
16 lexicography argument fails for many reasons, particularly there's no clearly
17 set forth definition in the '980 or its file history that the spatiotemporal
18 model is used to detect an object based on the probabilities of the object
19 being in earlier or later images. It just doesn't exist. Patent Owner has a
20 long list of citations in support of their lexicography argument, but review of
21 those passages, you'll see that many of them discuss an embodiment of the
22 present disclosure. There's no clear intent to limit the meeting of a
23 spatiotemporal model to any one of those particular embodiments. There are
24 various discussions of how they use their graphical model as an example, but
25 there's no clear disavowal of any claim scope of what that plain and ordinary
26 meaning is. Can we go to Slide 11, please?

1 PO's second argument is that the patent repeatedly explained that a
2 spatiotemporal model has probabilistic connectivity, edges, constraints.
3 These are all characteristics of a graphical model and review of the
4 specification makes that clear, but again, Claim 1 clearly does not recite the
5 graphical model. Claim 3 does recite a graphical model, but under the well-
6 known claim differentiation doctrine, Claim 1 is broader, that language isn't
7 there and it can't be inferred based on mere embodiments in the disclosure.
8 Slide 12, please.

9 Patent Owner also attempts to justify his claim construction by
10 pointing to the patent's comparison of its $w=3$ window smoothing
11 embodiment with what's referred to as a simple fusion detection. There's a
12 lot of discussion about this issue throughout this IPR. Claim 1 is a method
13 of object detection in its standalone and that object can be detected based on
14 analysis of a single frame and we'll discuss why that's the case. But the
15 '980 also has disclosure that you can use what's called a window smoothing
16 technique where you can refer to multiple frames to confirm or disambiguate
17 what you've identified the object to be in the current frame. There's nothing
18 in the claim that says that it is limited to this window smoothing.

19 Of importance, even with the window smoothing, the number of
20 frames is defined as w . The '980 explicitly indicates that w can be set to any
21 odd integer greater than or equal to 1. So, when w is equal to 1, that means
22 you're looking at a frame-by-frame basis. When w is equal to 3, you're
23 looking at the current frame, but you can take measurements from a prior
24 and a latter frame as part of your analysis, but again, Claim 1 is not so
25 narrow. Can we go to Slide 13, please?

1 This is an image of Exhibit 1016, and it has not a definition of what
2 temporal models are, but it describes temporal models as being of varied
3 complexity and there is a list of upward of four or five different types of
4 spatiotemporal models. The point being is that graphical models are not a
5 singular type of spatiotemporal model. Go to Slide 14.

6 Dr. Saber, that's PO's expert, he acknowledged that Zhao's model
7 has a temporal part that includes smooth motion, like reference 7, from
8 Exhibit 1016. So, he's acknowledging that yes, there's a temporal
9 component to Zhao's spatial model, but his retort would always be, but in
10 the context of the '980, it's different and that's a repeated theme. If you read
11 the transcripts of these depositions, if you read the arguments, there's this
12 repeated, let's go back to the specification, let's see what the '980 meant and
13 there's a separation from what the claims recite and how the Claim should
14 be interpreted. Can we go to Slide 15, please?

15 Dr. Bajaj explained that spatiotemporal models have a shared
16 characteristic. They change configurations over time in order to mimic the
17 change configuration of the object that it's modeling and that's there in the
18 bottom of Paragraph 14 of his first, I'm sorry, second declaration, Exhibit
19 1052, where he explains that Claims 1 and 9 are not limited to a graphical
20 model nor a two-layer graphical model, but a spatiotemporal model that
21 consists of a set or collection of components, each with spatial dimensions
22 that are measurable and with the ability of this component collection model
23 to change the configuration in time. Can we go to Slide 16, please?

24 Your Honors, there is also a dispute whether Claim 1 requires the
25 claimed object to be distinct from the collection of the components. It does
26 not. Step 1(c) recites measuring the object as a collection of components.

1 It's clear from the claims and the '980 specification that the object is
2 represented by a collection of components, not that the object is a separate
3 and different in any form from the collection of components and this is clear
4 if we go to Slide 17. The '980 explains that it was common to represent
5 objects as a collection of features. In the next passage, in order to measure
6 the spatial dimensions of an object, the '980 teaches providing detectors for
7 each of the collection of components. Notably, the '980 does not describe a
8 detector for measuring the spatial dimensions of the object as a whole
9 separately.

10 Consistent with the provisions of detectors for each of the collection
11 of components, the '980 states that it measures the object as a collection of
12 the components again. The '980 provisional has a similar passage where it
13 indicates that it explicitly models objects using components. So, I believe
14 the Patent Owner's argument that there's a requirement that the object is
15 separate or distinct from the component fails. I believe it's an apparent
16 argument to try to limit the claims to a graphical model with a node, which
17 is a special type of model, with a node that corresponds to the object, but
18 that's just not claimed in the independent claims.

19 JUDGE SMITH: Well, I think -- I mean looking at the Claim, I
20 think that Patent Owner's point is that the Claim has measuring the object as
21 a collection of components and then it has determining of probability that
22 the object is an image and then detecting the object. So, if we said that the
23 object and the collection of components are synonyms or interchangeable
24 and we read elements 1(b) and 1(d) -- (e) -- to mean determining of
25 probability that the collection of components is in each image, detecting the

1 collection of components by comparing the probabilities for each component
2 that would render the word object superfluous.

3 MR. BAKER: I think if you read the last two elements and were
4 mindful of the background statement in the '980 that objects can be
5 represented by a collection of features, components, then Step 1(d) reads
6 determining a probability that the collection of components which represent
7 the object is in each image and detecting the object in any image upon
8 comparing those probabilities for each image to a threshold for detecting the
9 object, you know, they're not distinct. It's a function of representing
10 something by something else and here we're representing the object as a
11 collection of components. That's how they're measured, that's how they're
12 represented in the modeling.

13 JUDGE SMITH: Okay.

14 JUDGE EASTHOM: So, when they talk about the last step
15 detecting the object in any image, you're saying that any image really refers
16 to an image of a component or?

17 MR. BAKER: In any image of the video. So, what this is saying is
18 that you can pick any image within that video and for that image, you can
19 compare upon at the time, you can compare the probabilities for that image
20 to a threshold for detecting the object.

21 JUDGE EASTHOM: Well --

22 MR. BAKER: Oh, go ahead, I'm sorry.

23 JUDGE EASTHOM: I'm sorry. So, the image itself though, that's
24 an image of each component or is it -- what's the image referring to? Is it an
25 image of --

26 MR. BAKER: It's the image of the object.

1 JUDGE EASTHOM: Oh, okay.

2 MR. BAKER: But the object is represented by its components, so
3 it's like the picture that I had next to the -- so, on Slide 5.

4 JUDGE EASTHOM: So, actually you're detecting the object in any
5 collection of components basically comparing the probabilities for each
6 collection of components?

7 MR. BAKER: Right, so each --

8 JUDGE EASTHOM: Okay.

9 MR. BAKER: Because a part of an object may be obscured in the
10 video, you try to detect each component separately. Just because you can't
11 see my legs, if you're looking here, you're trying to detect me as a collection
12 of components, but right now all you can see are my arms, my trunk and my
13 head, but when I step out here, now you can measure my feet and my legs,
14 so as part of the process of detection, you represent the object as a collection
15 of components and you try to detect each of them, add up all the
16 probabilities that hey, this is an arm, this is a head and say, you know what,
17 if that's over a threshold, then that's a person.

18 JUDGE EASTHOM: Okay, and so this Claim includes looking at
19 successive frames to get these different collection of objects?

20 MR. BAKER: So, when you get to a multiframe analysis, which
21 isn't the dependent claims, then you can say, well, in this frame all I see is a
22 waist up and I can determine the state of his arms and I can draw inferences
23 about other things, but in the next frame, he's out so I can see other things
24 and in a multiframe analysis, which is not -- Claim 1 is broad enough to
25 cover it, but it's not limited to it, then you're only looking at the frame
26 where I'm behind the podium.

1 JUDGE EASTHOM: Okay.

2 MR. BAKER: In a multiframe analysis, you can also gather
3 information when I'm outside of the podium to help infer whether or not I'm
4 an object in the current frame.

5 JUDGE EASTHOM: So, Claim 1 is broad enough to cover a single
6 frame, that's what -- okay.

7 MR. BAKER: It's only an image and the importance of that is
8 shown where they say hey, we can do smoothing, which is let's look at the
9 prior frame, let's look at the later frame --

10 JUDGE EASTHOM: Claim 3, right?

11 MR. BAKER: We can do smoothing, but they say w is set to an odd
12 integer greater than or equal to 1. That is explicitly in their disclosure.

13 JUDGE EASTHOM: Okay.

14 JUDGE SMITH: I'm just curious. I don't want to interrupt your
15 flow here, but just is this claim construction that necessarily only for the
16 scenario where $w = 1$ and we're looking at a single frame? Because from
17 what I remember in our DI, we said that the prior art does use multiple
18 images and compares the probabilities in multiple images to a threshold.

19 MR. BAKER: It does and we have to get to that analysis as well
20 because of the dependent claims.

21 JUDGE SMITH: But I mean in terms of the claim construction, is
22 this claim construction necessary for that scenario where we're using motion
23 vectors from previous frames or no?

24 MR. BAKER: So, the motion information and that's in particular
25 related to Zhao, conveys that Zhao's dynamic body model actually
26 constitutes a spatiotemporal model. Patent Owner's arguing that there's no

1 temporal component to Zhao's body model, but under the plain and ordinary
2 meaning of spatiotemporal model, there is a temporal component. One,
3 because it explicitly says that its RCR algorithm incorporates motion
4 information into the model itself. It's pretty explicit. The Patent Owner
5 position is well, it's not probabilistic. There are other --

6 JUDGE SMITH: Yeah, I guess that's the point I'm making. I mean I
7 don't have the exact language in front of me, but from the DI we said that
8 this motion detector is a result of looking at a frame and determining the
9 probability that this feature is the arm and then comparing that to a threshold
10 and from that determining -- and so, you know, I guess in terms of the multi-
11 image embodiment, I guess what I'm asking is this claim construction
12 necessary for that or no?

13 MR. BAKER: Okay, it is. You still have to decide whether or not
14 Zhao teaches a spatiotemporal model.

15 JUDGE SMITH: Okay, okay.

16 MR. BAKER: And then you have to decide for the dependent
17 claims, whether or not it teaches using information from a prior and a latter -
18 -

19 JUDGE SMITH: Okay.

20 MR. BAKER: Frame to detect the object in the current image. So,
21 at that level, spatiotemporal still has initiative --

22 JUDGE SMITH: Okay.

23 MR. BAKER: Resolving and Patent Owner, as we showed, has a
24 pretty narrow interpretation of what it needs which requires reference to the
25 earlier --

26 JUDGE SMITH: Okay.

1 MR. BAKER: And later frames. At bottom, they're saying all the
2 claims require multiframe analysis to detect the object and we're saying no,
3 no, no for the independent claims as indicated by the fact that everything
4 that you suggest needs to be done, the non-parametric belief propagation that
5 can be done on a single frame as explained by Dr. Bajaj. You indicate that
6 w can equal 1, which again conveys the fact that this is a single frame
7 process.

8 JUDGE SMITH: Okay.

9 MR. BAKER: That is the dispute.

10 JUDGE SMITH: Okay.

11 MR. BAKER: Multiframe or single frame for Claims 1 and 9.

12 JUDGE SMITH: Got it.

13 MR. BAKER: Let's see here. Your Honors, let's go to Slide 35,
14 please. Before I do, are there any questions about claim construction? The
15 main point is spatiotemporal model is not limited to a graphical model.
16 Measuring the object as a collection of components, the object is represented
17 by the collection of components and Claim 1(e) is broad enough to read on a
18 single frame analysis of whether or not the object is detected.

19 Turning to Slide 35, the first dispute is whether Zhao's dynamic
20 human model is a spatiotemporal model, but just as we discussed, we
21 believe it's clear that it is. We point to, let's go to Slide 36, the discussion
22 here that the RCR algorithm is useful for vision tasks such as object tracking
23 as well as by incorporating motion information into the model. We think
24 that's pretty clear. Slide 38, please.

25 PO's expert, Dr. Saber, acknowledged during his deposition that
26 Zhao's temporal modeling is deterministic motion modeling, but we don't

1 see why that would prevent it from reading on Claim 1. He acknowledges
2 that it's temporal modeling. His only concern is that it's deterministic.
3 Slide 39.

4 As we pointed out earlier, Dr. Saber indicated that Zhao's body
5 model includes a temporal part, such as what's described by Reference 7 in
6 Exhibit 1016. Can you go to Slide 42, please?

7 As explained by Dr. Bajaj, Zhao's object model is a dynamic coarse-
8 to-fine model where the model includes levels between the whole body
9 which constitutes the object and the major body parts which is the collection
10 of components. As can be seen in Figure 2.8, the coarse model is an oval
11 representing the whole body. The model is assembled for each frame to
12 detect the object in an image and the model, according to Zhao, they try to
13 add as many components or parts to the body as possible to match what it
14 can see in the image. So, the more parts which are identified in the image,
15 the more likely the contour is a person.

16 So, if the assembled body model includes the components shown to
17 the very right, where you have a head, a trunk, two arms, two legs, there's a
18 higher likelihood that the contour is a person relative to the likelihood that
19 the oval contour is a person. So, if all you can discern from the image is an
20 oval, there's a chance that that's a person, but if you can discern by building
21 a body model that has all the components to the right, there's a higher
22 likelihood that that's a person. So, you build your model, you try to match
23 that to what you can see in the image. The more body parts you can match,
24 the higher likelihood that you detected a person. Slide 43, please.

25 Turning to limitation 1(d), Zhao teaches determining a probability
26 that an object is in each image. According to Zhao, if the probability that a

1 contour corresponds to a person, is greater than that threshold, then the
2 object is deemed detectable. Slide 44, please.

3 JUDGE SMITH: So, this is -- oh, maybe this -- the person and then
4 the vertical line C that means -- looking at one component of the object, is
5 that --

6 MR. BAKER: That C is contour.

7 JUDGE SMITH: And the contour, I guess, if you can to Slide 42
8 real quick. Is the contour shown in Figure 2.8?

9 MR. BAKER: Yeah, so the contour is the oval. That's the contour
10 that they're making the determination based on if that's all the body parts
11 they can put together and the contour is all those parts together, if that's all
12 the body parts that you can put together.

13 JUDGE SMITH: Okay.

14 MR. BAKER: The contour can be any one of those five things.

15 JUDGE SMITH: Okay.

16 MR. BAKER: Zhao tries to build his model to make this
17 determination relative to a threshold.

18 JUDGE SMITH: Okay.

19 MR. BAKER: Where capital C is the contour.

20 JUDGE SMITH: Got it.

21 MR. BAKER: Let's go to the next slide. With regard to Element
22 1(e), Zhao further teaches that a contour C corresponds to a person if the
23 left-hand side of the equation of 3.17 is greater than a threshold, that left
24 hand side is the similarity measure defined in Equation 3.5 below.
25 According to Equation 3.5, the Bayesian similarity measure of the contour in
26 any image is defined as the goodness function of the best hypothesis H. So,

1 I will acknowledge this is a thesis and you have to take your time to kind of
2 parse what those arguments means, but at bottom what this really means is
3 that the more body parts being identified in any image, the more likely the
4 extracted contour is a person and that's what accomplished in Step 1(e).

5 JUDGE SMITH: And can you just real quick kind of correlate the
6 Step 1(e) has the probabilities for each image and if we're weighting this to
7 mean the probabilities for the image, how this Equation 3.17, which is a
8 similar measure defined by Equation 3.5, how did those multiple
9 probabilities --

10 MR. BAKER: So, for each image, you build a body model and it
11 can be as simple as the oval or as complex as the multiple figures. The more
12 body parts that you're able to build, the higher probability that the contour,
13 the overall contour, is a person and for each image, you make that
14 comparison to a threshold.

15 JUDGE SMITH: So, looking at Figure 2.8 again, you're saying for
16 each one of these contours, there's a probability?

17 MR. BAKER: Yes, there's actually a great -- can we go to Slide 54?
18 So, Zhao explains in Figure 3.1 that if all you can build is that oval, the
19 likelihood that that oval constitutes a person is 55 percent and if you're able
20 to build that full body model with all those body parts to the right, then the
21 likelihood that that's a detected person is 100 percent.

22 JUDGE SMITH: I see. So, why would you build more than one of
23 these contours?

24 MR. BAKER: You build them for every image depending on where
25 I am, so, again, if I'm behind this podium, maybe you're only able to build
26 the middle illustration but the waist up. All you have is the trunk, the two

1 arms and the head and from that you'd be able to calculate a likelihood that
2 I'm a person.

3 JUDGE SMITH: But I mean -- no, I understand that.

4 MR. BAKER: Okay.

5 JUDGE SMITH: I guess my question is why would you, for one
6 image, build more than one of those contours?

7 MR. BAKER: No, you build one per image.

8 JUDGE SMITH: One contour?

9 MR. BAKER: Yes. One contour per image.

10 JUDGE SMITH: You wouldn't build all five of those contours?

11 MR. BAKER: No. You would add as many as you can until you
12 can no longer detect parts.

13 JUDGE SMITH: Okay, so if you're building one contour and that
14 has one probability, how do you end up with multiple probabilities?

15 MR. BAKER: That equation above it, the 3.7, that shows you how
16 calculate, how each -- whether the arm, the head and how those are summed
17 up to reach the number 0.75 or 0.84, so there's a probability that you have an
18 arm. There's a probability that you have a head.

19 JUDGE SMITH: Oh, I see.

20 MR. BAKER: And you sum them all up together.

21 JUDGE SMITH: I see.

22 MR. BAKER: And you get that number. So, you'd use 3.7 to
23 calculate the percentage relative to those contours below.

24 JUDGE SMITH: So that -- I'm not sure how to read the left hand
25 side of that, but that Equation 3.7 on the left hand side it's saying this

1 probability is a summation of these individual probabilities on the right hand
2 side?

3 MR. BAKER: Yes.

4 JUDGE SMITH: Is that right?

5 MR. BAKER: In Equation 3.7, lowercase w subscript i is a weight
6 used to evaluate the contribution of the identification of a body part f
7 subscript i which Zhao acknowledges is not in that equation, I'm not sure
8 why, but he explains that that contribution, you add those up to determine
9 the presence of a body. So, each body part which can be matched has some
10 kind of weighted contribution. You sum those up and you make the
11 determination which is shown in the bottom.

12 JUDGE SMITH: Okay.

13 JUDGE EASTHOM: But, so, what my colleague is getting at, I
14 think, and if you're saying that equation is a sum of weights for each of the
15 body parts, then what you're saying in Element 1, if I understand you right,
16 is that any image -- an image in Element 1(e) of the claim is one of the body
17 parts, a picture of one of the body parts?

18 MR. BAKER: The components.

19 JUDGE EASTHOM: Or components.

20 MR. BAKER: So, again, you're determining that the probability that
21 the object is in an image by -- I'll read the Claim language to make sure I get
22 it right.

23 JUDGE EASTHOM: He was asking why you have multiple
24 probabilities and your answer was well, I'm looking at the sum of these
25 body components.

26 MR. BAKER: Per image.

1 JUDGE EASTHOM: Per image, right.

2 MR. BAKER: Yes.

3 JUDGE EASTHOM: Oh, that's per image?

4 MR. BAKER: Yes.

5 JUDGE EASTHOM: Okay, so you could do Claim 1 with just like
6 we talked about before in one frame, but you could also do it, according to
7 Zhao, with two successive frames?

8 MR. BAKER: Yes, I think they talk later in their rate examples
9 about walking and how you can use that motion information to infer where
10 the body part should be and to incorporate that into the model.

11 JUDGE SMITH: Okay, so Equation 3.17 is without the motion
12 information?

13 MR. BAKER: Correct.

14 JUDGE SMITH: Okay.

15 MR. BAKER: Your Honors, let's turn to Slide 48, please. So,
16 Patent Owner disputes whether Zhao teaches or renders obvious Dependent
17 Claims 4 and 8, which we saw is detecting the object in a current image
18 according to measurements of the object as a collection of components
19 determined from a prior image and a later image relative to the current
20 image. I think it's fair to say there's little or no dispute that Zhao teaches
21 object detection and a current image based on measurements from a previous
22 frame, the dispute is whether it was well known to a POSITA to take
23 measurements and extrapolate from a latter image frame as well. Go to
24 Slide 50, please.

1 As evidenced by Dr. Bajaj's testimony in Exhibit 1011, it was well
2 known to extrapolate based on measurements from adjacent frames. Can we
3 go to Slide 51, please?

4 Dr. Bajaj explains in his supplemental declaration, Exhibit 1052, that
5 measurements from the current frame $t=0$ and future frames Δt and $2\Delta t$
6 Δt can be used to establish temporal consistency along a walking
7 sequence. You can use, the current frame is $t=0$ and you can use
8 information from Δt and $2\Delta t$ to make the calculation of where or to
9 detect the object based on the measurements from future images. Can we go
10 to Slide 52, please?

11 Notably, the '980 inventors, they had a prior paper called Attractive
12 People and that's Exhibit 1015. There, they use measurements from prior
13 and later frames or, I should say, they characterize that the use of
14 measurements from prior and later frames would be straightforward. Again,
15 this was something that was within the knowledge of a POSITA that you
16 could use information from an earlier and a latter frame to detect an image in
17 a current frame. Can you go to Slide 53, please?

18 Turning to Claim 8, that's directed to the joint probability
19 distribution for the spatiotemporal model with N components. Can we go to
20 Slide 54?

21 Patent Owner acknowledges in its Patent Owner Response at pages
22 39 and 40 that Zhao teaches the probability distributions of three model
23 matrices a , s and u , that stands for aspect ratios, relative sizes and positions
24 of the body model of Zhao. But PO disputes, however, that Zhao teaches the
25 temporal compatibility of the object state between frames I and J which is
26 that first product in Claim 8. Petitioner disagrees as we previously explained

1 with reference to Slide 42, Zhao's graphical model includes a whole body
2 and major body parts which are connected.

3 We also explained that Zhao's body model incorporates temporal
4 elements. With that information and with that type of graphical model -- did
5 we lose Judge McKone?

6 JUDGE SMITH: Oh, yeah, we're off the record now.

7 (Recess)

8 MR. BAKER: Welcome back, Judge McKone.

9 JUDGE McKONE: Thank you. Sorry about the interruption.

10 MR. BAKER: No problem, Your Honor. Can we go to Slide 55,
11 please? Zhao discloses a graphical model that has an object node and nodes
12 for the components. Dr. Bajaj teaches that in light of that, if you go to Slide
13 55, which I think we're on, Dr. Bajaj explains in Paragraph 231 of his first
14 declaration, in Paragraph 82 of his second declaration that the '980 joint
15 probability distribution represents a typical factorized probability
16 distribution for graphical model G of an object O, such as the model used by
17 Zhao. So, a POSITA would have understood that the joint probability
18 distribution of Zhao would be representable in the form recited by Claim E.

19 Your Honors, we do want to point out an error on the citations here.
20 It's in Exhibit 1052 at the bottom, Paragraphs 121 and 122, that should be
21 Paragraphs 81 and 82.

22 JUDGE SMITH: Okay.

23 MR. BAKER: In Exhibit 1052.

24 JUDGE SMITH: Okay.

1 MR. BAKER: Your Honors, unless you have any questions on
2 Ground 1, which is Zhao alone under 103, I'd like to turn our attention to
3 Ground 2, which is Zhao in combination with Steffens.

4 JUDGE SMITH: Okay.

5 MR. BAKER: So, that's Slide 58, please. The primary issue related
6 to Ground 2 from PO's perspective is that Zhao teaches away from Steffens'
7 use of wavelet jets for object detection and Steffens' similarity measure in
8 Zhao's probabilistic similarity measures are incompatible. PO is incorrect in
9 both cases. Slide 63, please.

10 Any criticism that Zhao had for wavelet detection in his background
11 does not rise to the level of teaching away. It's explained by Dr. Bajaj in his
12 supplemental declaration, Exhibit 1052, a POSITA would have known the
13 benefit of the wavelet approach and why such approach would work
14 specifically in recognizing facial features. Your Honors, importantly both
15 Zhao and Steffens use a coarse-to-fine approach to find their respective
16 objects and, Your Honors, a POSITA would have been motivated to use a
17 Bayesian similarity measure as in Steffens, as taught by Zhao, to conduct its
18 object detection. As you can see in this passage here, Zhao expressly
19 teaches that its probabilistic Bayesian similarity measure is robust to partial
20 occlusion among other things. Can we go to Slide 70, please?

21 Patent Owner's contention that Element 109(e), I'm sorry, 1(e) is not
22 rendered obvious by Ozer in view of Zhao is based on a flawed and
23 impermissibly narrow claim construction which we've already discussed.
24 So, we do want to turn our attention to Claim 4, which is on the screen. We
25 want to explain in particular why Ozer's activity classification encompasses

1 object tracking over multiple frames as recited in Claim 4. Can we go to
2 Slide 71, please?

3 In his discussion of classifying over multiple frames, Ozer teaches at
4 column 7, lines 33 to 45, that it checks the direction of movements of object
5 parts for a number of frames. PO argues that any use of probabilistic Hidden
6 Markov models, however, is for classifying an activity, not for detecting the
7 object as discussed in this passage.

8 If we go to Slide 72, Dr. Bajaj disagrees. He explains that Ozer's
9 activity classification encompasses objects motion tracking over multiple
10 frames to classify or discriminate between various motion trajectories for the
11 object. Ozer uses probabilistic Hidden Markov models for its inference of
12 the motion of the object itself. Can we go to Slide 75, please?

13 Importantly, according to Dr. Bajaj, Ozer explains at Column 7, lines
14 25 to 31, that, quote, unquote, matched nodes, are tracked by using ellipse
15 parameters for the consecutive frames. Your Honors, as we've explained, to
16 the extent that neither Zhao nor Ozer expressly teaches uses measurements
17 from later frames to determine whether or not an object is in a current frame
18 that would have been obvious to do so in light of POSITA knowledge. So,
19 Your Honors, unless you have any questions with regards to Grounds 1
20 through 3 or claim construction, I would like to turn over the remainder of
21 our time to my colleague, Yan-Xin Li.

22 JUDGE SMITH: Just real quick on claim construction. The claim
23 says that Element 1(e), I don't have it in front of me, but it's each image and
24 in Figure 5 in the specification, it says the image and Patent Owner is saying
25 that Figure 5 is a typographical error. Why would Figure 5 be the
26 typographical error?

1 MR. BAKER: It's not clear to me, Your Honors. They didn't point
2 out this typographical error during prosecution. They didn't request leave
3 here to file a Certificate of Correction. There's no evidence that it's a
4 typographical error. I think it has to be treated as intentional and it's
5 consistent with how a POSITA would have understood Claim 1 to begin
6 with. If anything, we think the description of Figure 5 is inaccurate or
7 unclear at best.

8 JUDGE SMITH: You think Figure 5 is clear, but the written
9 description --

10 (Simultaneous speaking.)

11 JUDGE SMITH: -- of it is.

12 MR. BAKER: Yes, Your Honor.

13 JUDGE SMITH: Okay, understand, all right, thank you.

14 MR. BAKER: Thank you.

15 MS. LI: Good afternoon, Your Honors. May I start on Slide 77,
16 please? I'm here to talk about Ground 4, which is an obviousness argument
17 with respect to TLP. One of the main issues with respect to Ground 4 is that
18 Patent Owner alleges that we have not demonstrated that TLP is prior art.
19 We disagree with that. In our petition and with the first declaration of Dr.
20 Bajaj, who we have to note was actually a participant at CVPR 2004, where
21 TLP was also presented as a poster. In fact, Dr. Bajaj's poster was presented
22 at the same session with the authors of TLP, the first of whom is Mr. Leonid
23 Sigal, who was also a named inventor to this patent.

24 Dr. Bajaj testified concerning the paper submission process with
25 respect to CVPR, which he personally participated in and acknowledged that
26 through that process, his paper and other conference papers, would have

1 been publicly made available and disseminated by or before April 9th, 2004,
2 which was the deadline for the final manuscript submission. Additionally,
3 Petitioners have requested, and the Board approved, obtaining additional
4 supplemental evidence which was entered into the record. If I could go to
5 Slide 78, please.

6 Patent Owner makes an argument that the additional supplemental
7 information is a new theory. We disagree with that and I think the Board
8 actually ruled on that specific issue when it allowed and granted the ability
9 for Petitioners to submit this additional supplemental information which was
10 Exhibits 1049 and Exhibits 1050. In our papers, and I think as the Board
11 found, we were not offering a new theory, we were seeking to provide
12 additional supplemental information based on some of the discussion and the
13 institution decision that it had not been made clear whether or not TLP was
14 publicly available.

15 This additional supplemental information was helping to further
16 inform and show that TLP was available at least as of April 9th, 2004. I
17 believe in the Board's decision, there was a comment by showing this
18 additional supplemental evidence in the form of Dr. Hall-Ellis' declaration,
19 it was informing that TLP author, Michael Black, had posted and made
20 available TLP as early as potentially January 2004, which was before the
21 May 27th, 2004, priority date that Patent Owner claims that the '980 patent
22 is entitled to.

23 JUDGE SMITH: What ever happened with the deposition? Were
24 you able to take a deposition of Michael Black?

25 MS. LI: We were not. We did serve subpoenas to him and other
26 TLP authors as well as the '980 inventors. We were not able to get any

1 information or obtain a deposition from Mr. Black. Our understanding is
2 that he was also abroad and had not responded to our subpoena request.

3 JUDGE SMITH: Okay.

4 MS. LI: If we can go to Slide 79, please. Just a brief overview of
5 the timeline. According to CVPR 2004, the paper submission process,
6 November 19th is when the first full paper submission was due. Then, on
7 March 2nd, which is not shown on this slide, but on March 2nd is when
8 there is a notification to the authors. On January 31st, 2004, which is the
9 absolute latest, Dr. Hall-Ellis provided a declaration that indicated that Mr.
10 Black had posted TLP on ResearchGate. ResearchGate was a platform that
11 was made available later. Based on her research with all the other papers
12 that Mr. Black had submitted, he accurately dated the public availability of
13 all of his papers when he posted all his papers onto ResearchGate.

14 Then, March 2 is when there was a notification to authors, whether
15 or not their paper was actually submitted for CVPR and then April 9th,
16 2004, is the deadline for the final manuscript submission. These dates are all
17 occurring before the May 27th, 2004, priority date that Patent Owner claims
18 the '980 patent is entitled to. Can you --

19 JUDGE SMITH: Could you, just real quickly, are you saying the
20 fact that the April 9th, 2004, the fact that the manuscript was submitted and
21 made publicly available, is that part of your argument?

22 MS. LI: We're saying that when the final subscription was, I'm
23 sorry. April 9th was when the final manuscript was submitted by the
24 authors, who were invited and told that they were going to get their papers
25 presented at CVPR and at that point, based on Dr. Bajaj's personal
26 declaration about what he did, when you had to submit your final

1 manuscript, that's also when all of these authors would make things
2 available on their own personal websites where their names would be
3 identified as part of the participants in CVPR in terms of the schedule.

4 JUDGE SMITH: So, the April 9th date is based on Dr. Bajaj's
5 testimony that typically on that date, the authors would publish it on their
6 own website?

7 MS. LI: That's right, Your Honor, because by that point, the paper
8 would be either fully finalized or near finalized to the point that any
9 additional changes would be cosmetic or formatting in order to make it print
10 or PDF presentable, but there wouldn't be any changes in the content and by
11 that point, because authors would have known that they were accepted, they
12 would have wanted and did post their papers on their own university
13 research websites. Their names would have been announced as part of the
14 CVPR 2004 lineup.

15 JUDGE SMITH: And then, on January 31st, the publishing to the
16 website -- the way I understand it is, we just have a website that lists
17 Michael Black as a person who uploaded it on this date, but we don't have
18 any independent corroboration of that?

19 MS. LI: We were not able to obtain a subpoena or get that
20 information from Mr. Black.

21 JUDGE SMITH: Okay.

22 MS. LI: So, as a backstop to this, Dr. Hall-Ellis, who is a research
23 librarian and is savvy in terms of researching papers with cataloguing, with
24 librarian sciences, she looked at this ResearchGate post, then she
25 investigated all of Mr. Black's additional research posts because as, I think,
26 the declaration of Dr. Hall-Ellis states, ResearchGate was a platform that

1 was not made available until 2008, which we understand is obviously
2 several years after the priority date of 2004, but authors were able to submit
3 and post their papers that were dated earlier than 2008 and all of these
4 authors, including Mr. Black, would then indicate, when was this paper that
5 I'm uploading now, available and Mr. Black, who is an author for TLP,
6 indicated that TLP was made available, according to him, in January 2004.

7 JUDGE SMITH: Right, okay, got it.

8 MS. LI: And so what Dr. Hall-Ellis did was corroborate his conduct
9 and his behavior by looking at all of his other papers that may have been
10 submitted, in reality, before 2008, before ResearchGate was made available,
11 and then cross referenced. Well, did each paper that Mr. Black upload that
12 was before 2008 and indicated that posting date of 2003 or 2004 or 2005, let
13 me cross reference that with other journals to see if what date Mr. Black
14 indicated was actually accurate based on --

15 JUDGE SMITH: Right.

16 MS. LI: Other references like journal articles or magazines. She had
17 found and stated in her declaration that his behavior and his conduct was
18 accurate in terms of the date that he listed was accurate to what a third
19 alternative source, like a journal article, actually did list as a publication date
20 of one of Mr. Black's articles.

21 JUDGE SMITH: Okay.

22 JUDGE McKONE: Is it the only one?

23 MS. LI: I'm sorry, sir?

24 JUDGE McKONE: You said it was only one instance where Ms.
25 Hall-Ellis found that a later article referenced whether Mr. Black's article's
26 dates coincided? Only one instance?

1 MS. LI: I believe in Dr. Hall-Ellis' declaration, she indicated that
2 there were about 20, I can check and confirm on rebuttal, but I believe in her
3 declaration around, I think, Paragraphs 44 or 45, she had indicated there
4 were about 29 other papers that were kind of similar to TLP, where they
5 were actually publicly available in the 2003 to 2005 time frame. They were
6 uploaded by Mr. Black to ResearchGate 2008 or later, but he dated
7 accurately the date of the public availability of all of those other articles that
8 he wrote.

9 JUDGE McKONE: And what do you mean by public availability?
10 Another article cites it or is it a kind of -- or anything else behind that?

11 MS. LI: So I think this is me interpreting Dr. Hall-Ellis' declaration
12 and conversations that we had with her when she submitted the declaration,
13 but for example, if Mr. Black published an article in 2004 to Science and
14 Nature and then he uploaded it himself to ResearchGate maybe in 2010, he
15 would have dated that upload himself to say, oh, I published in 2004 and so
16 then what Dr. Hall-Ellis did was try to find this article in Nature and
17 Sciences, confirm that it was published by Mr. Black in Nature and Sciences
18 in the year 2004, verified that with the date that Mr. Black listed on
19 ResearchGate and confirmed that those months lined up or those dates lined
20 up accurately.

21 JUDGE McKONE: And by dates, do you mean month, day, year or
22 --

23 MS. LI: So, I don't believe --

24 JUDGE McKONE: Just like 2004, I mean 2004 is 365 days and
25 some of those days would help you, some of them would not.

26 MS. LI: Of course.

1 JUDGE McKONE: I mean does the article cite, you know, this
2 article was available on such and such a day?

3 MS. LI: I do not believe that it went to the specificity of the day, but
4 I think it did go to the granularity of the month and the year.

5 JUDGE SMITH: Can you --

6 JUDGE McKONE: But she was unable to find anything about this
7 particular article, is that correct?

8 MS. LI: I think --

9 JUDGE McKONE: Other than it was uploaded sometime after
10 2008?

11 MS. LI: I can confirm on rebuttal, but I do not believe she found an
12 explicit indication that TLP otherwise was available as Mr. Black had
13 indicated in January of 2004, but her position in her declaration was that
14 based on what he did for the other 29 articles, it was consistent behavior in
15 terms of what he listed as the availability date on ResearchGate versus cross
16 verifying that with a separate source, like maybe the actual journal or
17 magazine that the article was actually made available.

18 JUDGE SMITH: Yeah, I think we understand your position on this.
19 Can you -- you have a few minutes left, can you talk to the filing date of the
20 provisional -- is the patent entitled to the benefit of the filing date? If you
21 know.

22 MS. LI: In our reply, we made a comment in response to a new
23 claim construction that the Patent Owner put forth in the Patent Owner
24 Response. Based on that claim construction, that the Patent Owner offered
25 in their response, in our reply we indicated that our understanding of
26 Elements (d) and (e), in terms of plain and ordinary meaning, we didn't not

1 explicitly contest the priority date of May 27, 2004, but understanding Patent
2 Owner's response, I'm sorry, understanding Patent Owner's construction in
3 their response, we replied in our reply indicating that given the new
4 information that Patent Owner put forth as to the meaning of Element 1(d)
5 and 1(e), it did not seem that the provisional application supported --

6 JUDGE SMITH: And if we go with Patent Owner's construction on
7 Element 1(b) and 1(d) and then we agree with you that it's not supported in
8 the provisional, does TLP have it under Patent Owner's construction?

9 MS. LI: I'm sorry, does TLP?

10 JUDGE SMITH: Does TLP teach Elements -- does TLP teach
11 Claim 1 under Patent Owner's construction?

12 MS. LI: We believe it does still.

13 JUDGE SMITH: Okay.

14 MS. LI: I think in my additional time, I'll just make two quick
15 comments. Patent Owner raises a Federal Circuit case *SRI* and tries to
16 analogize this situation with *SRI*. We think *SRI* is distinguishable for
17 reasons that are -- the article of interest in *SRI* called, Live Traffic Paper,
18 was posted with specific FTP in which you would have needed to be
19 provided that file path or that URL in order to actually access the
20 documents. Our understanding, based on Dr. Bajaj's testimony and his
21 declaration, was that was not the case for authors who knew that they were
22 going to get their papers submitted for CVPR. They would have actually
23 made these articles, these final manuscripts publicly available on their own
24 research websites or their own university websites. So, we think there are
25 factual distinctions there between *SRI* versus this case.

26 JUDGE SMITH: And I think --

1 JUDGE McKONE: We don't know, we're assuming that they made
2 this available, we don't what form, you know, whether it was FTP or HTTP,
3 we just don't have any evidence on that point, correct?

4 MS. LI: That's correct, sir.

5 JUDGE SMITH: And then on the point about TLP teaches the claim
6 under Patent Owner's instruction, is that laid out in the reply?

7 MS. LI: I can confirm on our rebuttal, but I would believe that we
8 would have addressed it.

9 JUDGE SMITH: Okay, all right. Thank you.

10 MS. LI: And then I think one other last point in my 14 seconds, is I
11 think the one other resounding issue for Ground 4 that Patent Owner argues
12 that TLP does not disclose is that they argue that TLP does not disclose an
13 object that is separate from the components and for that, I think, Mr. Baker
14 has already addressed our position in terms of just because you have a
15 collection of components, it doesn't mean that you don't actually also have
16 an understanding of where the object is.

17 JUDGE SMITH: Okay, thank you.

18 MS. LI: Thank you.

19 JUDGE SMITH: You want 50 minutes, right, Patent Owner?

20 MR. CARDENAS-NAVIA: Fifty minutes, yes.

21 JUDGE SMITH: Okay.

22 MR. CARDENAS-NAVIA: Great, we've just got to get our
23 technology set up here.

24 JUDGE SMITH: No problem.

25 MR. CARDENAS-NAVIA: I'm ready. May it please the court.
26 I'm going to be spending a lot of my time talking about claim construction

1 because the claim construction issues in this case actually are dispositive and
2 they really go to the heart of the invention.

3 There's a dispute about spatiotemporal and limitation 1(a) and then
4 there's dispute about the meaning of limitation 1(e). They both boil down to
5 the same thing, which is what's the invention and do the claims capture it.
6 In our view, the invention is very clear in the patent. It's a spatiotemporal
7 model and it's not any kind of spatiotemporal model, it's one very specific
8 kind, which is that in determining whether or not you have an object in any
9 given image you need to take into account the probability that that object is
10 in nearby images.

11 One thing I wanted to clarify is that there is kind of this foundational
12 dispute of does Claim 1 require detecting an object based on probabilities in
13 a single frame or in multiple frames, this kind of does include the $w=1$
14 scenario or not. But I think the nuance that's actually critical is that under
15 Petitioner's construction, the claims actually only cover the $w=1$ scenario
16 because the way they interpret it, if you could go to Slide 21, the way they
17 interpret limitation 1(e) is that the probabilities are always for a single
18 image, so 1(e) is just detecting an object in a single image. So, Claim 1
19 under their interpretation, it doesn't cover this scenario of detecting an
20 object in an image based on probabilities in multiple images. It just doesn't,
21 that would have to be something extra added to the claim. That's really the
22 heart of our thing is, does it include the invention plus $w=1$? Their
23 construction covers just $w=1$.

24 JUDGE EASTHOM: I thought they said they covered multiple
25 frames.

1 MR. CARDENAS-NAVIA: It doesn't and I'll walk through it in
2 detail.

3 JUDGE EASTHOM: Okay.

4 MR. CARDENAS-NAVIA: But the way you would cover it is just
5 because you would do it over and over again, but again, what would Claim
6 1, limitation 1(e) require under their construction? Just detecting an object
7 in a single image based on analysis of that single image, not taking into
8 account anything from other images.

9 JUDGE EASTHOM: All right, but I thought it was broad enough to
10 cover both of the -- I thought they were arguing -- for example, Claim 3,
11 definitely requires multiple frames, right?

12 MR. CARDENAS-NAVIA: Well, it's one of those things that the
13 claim doesn't require doing that, it's just a purely -- at that point, it's a
14 purely spatial model. There's no temporal component. If --

15 JUDGE EASTHOM: For Claim 3 or?

16 MR. CARDENAS-NAVIA: Claim 1.

17 JUDGE EASTHOM: Well, Claim 3 requires temporal, right?

18 MR. CARDENAS-NAVIA: That's right and that's how Claim 3
19 limits Claim 1 because Claim 1 applies a temporal window to any number of
20 images. Claim 3 specifically limits it to three. It's the w=3, well, at least
21 three. You've got to be analyzing at least three images in Claim 3, that's
22 how it limits Claim 1, not by adding a spatiotemporal component. Do you
23 have another question or should I continue?

24 JUDGE EASTHOM: No, you can continue.

25 MR. CARDENAS-NAVIA: Could you put up Slide 8? On Slide 8
26 is Figure 2A from the patent. It shows the spatiotemporal model, right? The

1 green box is around the model within a single image and for now, let's
2 ignore those kind of dashed lines at the top from the red circle extending
3 outwards. If we ignore that, then what's in that green box is just a spatial
4 model. It's got two major components. It's got the blue circles, those are
5 the probabilities or the nodes for the components that make up an object and
6 then it's got the red circle, which is a separate node or analysis or probability
7 for the object itself. That is a bottom-up approach. You start with the
8 components, you find the probability that you have a component in a given
9 image and then you do on top of that a second analysis of okay, given all
10 these component probabilities, 40 percent left hand, 60 percent right hand,
11 80 percent head, 20 percent legs, you calculate, okay, what's the object
12 probability and it's a distinct separate analysis.

13 That's what the inventors started with and they say right here, on
14 Slide 9, they expanded that spatial model into the temporal domain. They
15 said to integrate temporal constraints, the spatial graphical models are
16 extended over time to an arbitrary linked temporal window. So now, we're
17 extending outwards and it's those dotted lines at the top just between the
18 object nodes. So it's not just the model is expanding temporally, it's
19 expanding with temporal constraints, specifically between the object nodes
20 and that is the invention, starting with the spatial model, expanding to a
21 spatiotemporal model in just this specific kind of way. The '980 patent
22 doesn't say, hey, spatiotemporal models, you know, it's great to start with
23 the spatial model and expand it over time generally and, you know, here's
24 some preferred ways to do it. It says, you start with the spatial model and
25 we make it temporal, we add temporal constraints by doing this one thing

1 and that's the only way it's ever talked about. It does this over and over and
2 over again.

3 JUDGE SMITH: I guess, you know one thing that concerns me, you
4 keep talking about the invention and you keep pointing to the figures from
5 the specification in the written description and you keep saying that's the
6 invention and this is how the written description discusses the invention.
7 The invention, what the Federal Circuit says, is the claim. The claim is the
8 invention, so the figures are not the invention. The description is not the
9 invention. The claim is the invention. So, when you point to these figures
10 and the written description and you say that's the invention, you know,
11 that's the conclusion and we're not there yet. The claim is the invention so I
12 guess I'm troubled by your calling the written description and the figures the
13 invention.

14 MR. CARDENAS-NAVIA: So, Phillips v. AWH lays out the
15 standard for claim construction and, of course, we're always interpreting the
16 claims from the perspective of the POSITA in view of the specification and
17 the other available intrinsic evidence, so it's not that the claims exist by their
18 own, although actually I'm going to get to the claims and the plain meaning
19 of the claims supports our construction. There's actually -- it's only if you
20 accept the Petitioner's argument that you can swap in a collection of
21 components for object that the plain meaning of the claim does not support
22 construction. Otherwise, the plain meaning is a spatiotemporal model.

23 JUDGE SMITH: But when you point to the specification and the
24 figures and you say we read these claims in light of the specifications that
25 that's as a literal statement that's true, but the Federal Circuit went on to say
26 we don't read into embodiments from the specification into the claim. So,

1 you know, the claims certainly are broad enough to cover the disclosed
2 embodiment, but that doesn't mean they're limited to the disclosed
3 embodiments. I guess I'm looking for something more than other than this
4 is what the specification says, therefore, that's the invention.

5 JUDGE McKONE: Is your point here that this description which
6 describes measuring something at three points in time would be an example
7 of the temporal model? In other words, you're doing things at multiple
8 points in time rather than multiple points in space?

9 MR. CARDENAS-NAVIA: The point is that the spatiotemporal
10 model is across multiple images in time. The claim unambiguously says a
11 spatiotemporal model, so if you get to limitation 1(e) and you interpret it as
12 not being a spatiotemporal model as doing only the analysis with a single
13 image, the claim itself is self-contradictory. You've now read out
14 spatiotemporal from the claim even though it's directly in there, so that's
15 what is --

16 JUDGE SMITH: But it's not read out in the sense that it's including
17 the motion information from the previous frames within that probability
18 analysis, so that's the temp -- you keep saying it's one image, therefore,
19 there's no temporal. There is a temporal part, it comes from the motion
20 information.

21 MR. CARDENAS-NAVIA: Are you talking about a reference or are
22 you talking about the '980 patent?

23 JUDGE SMITH: I'm talking --

24 MR. CARDENAS-NAVIA: Oh, sorry, go ahead.

25 JUDGE SMITH: I'm talking about the scope of Claim 1.

1 MR. CARDENAS-NAVIA: The '980 patent mentions nothing
2 about motion vectors or motion information and that's part of my point is
3 that we're only ever talking about one type of temporal and the Federal
4 Circuit case law, there are a lot of cases like this, when a Patentee uses a
5 claim term throughout the entire patent specification in a manner consistent
6 with only a single meaning, he has defined that term by implication. That
7 lexicography doesn't have to be explicit, it can just be by the Patentee telling
8 you over and over again this is what my invention is, this is what
9 spatiotemporal is as I have used the term in the patent, but if I can go back to
10 Claim 21 --

11 JUDGE SMITH: But they haven't told us that over and over again.
12 They've told us over and over again with the additional disclosure of a w-
13 framed windowed smoothing algorithm is used when w is an odd integer
14 greater than or equal to 1, so I mean you keep saying they only disclosed it
15 this way. They didn't only disclose it that way.

16 MR. CARDENAS-NAVIA: Well, that's actually what I was -- if
17 you can go back to -- actually, can you pull up -- well, let me go back to, I
18 think it was, Slide 8. What the patent is talking about here, it says to
19 integrate temporal constraints, the spatial graphical models are extended
20 over time. So, right here what the patent is saying is that if you're just in a
21 green box and ignoring those purple lines, you've got a spatial model and
22 what makes it temporal is extending those lines across between the object
23 nodes, taking into account object probabilities from your frame. That's what
24 the specification is saying right here. It's not saying that spatiotemporal
25 model is just what's in that green box and the patent says that exact same

1 thing again, when it talks about what the analysis of experiments, let me find
2 that.

3 Let's go to Slide 17. So now here it says, while it is possible to
4 possible to perform inference over the spatiotemporal model, the bind for the
5 entire image sequence, so it's talking about all the images in an entire video.

6 JUDGE SMITH: Is it Slide 17?

7 MR. CARDENAS-NAVIA: Slide 17, thank you. But it cautions
8 that maybe you don't want to analyze object probabilities do it
9 spatiotemporally for every single image in the video. So then it talks about a
10 w-frame windowed and then here you go, w greater than or equal to 1 but
11 then it looks like, let's look at what it says at the end. It say, note that with
12 w=1, the algorithm resembles single frame component-based fusion. That's
13 different than the spatiotemporal model. If you look at the provisional
14 application, it has this exact same sentence and it actually has a cite to a
15 previous publication by the inventors. They're basically saying that's
16 essentially sort of what we've done before, now we're doing the
17 spatiotemporal model and that differentiation --

18 JUDGE SMITH: That's not what it says. That's not what it says. I
19 mean that's an inference that you're making based on -- but what it literally
20 says, it literally says in that first sentence in that paragraph, it says, while it
21 is possible to perform inference over the spatiotemporal model defined for
22 the entire image sequence, there are many applications for which this is not
23 an option due to the lengthy off-line processing needed. Then, at the very
24 next sentence, a w-framed window smoothing algorithm is used where w is
25 an odd integer greater than or equal to 1. It doesn't say, by the way, where
26 it's 1 it's not part of this invention. I mean it's including it in the sentence.

1 MR. CARDENAS-NAVIA: It's including it in a sentence
2 describing a mathematical model that applies and then at the end it's
3 specifically stating, by the way, that $w=1$ scenario, that's a single frame
4 component-based fusion --

5 JUDGE SMITH: It says it resembles it, it doesn't say it's not part of
6 the spatiotemporal model.

7 (Simultaneous speaking.)

8 MR. CARDENAS-NAVIA: So, then --

9 JUDGE SMITH: -- For the entire image sequence.

10 MR. CARDENAS-NAVIA: So, then let's go to Slide 29. I disagree
11 with that interpretation, but I think --

12 (Simultaneous speaking.)

13 JUDGE SMITH: Well, I mean it's not --

14 (Simultaneous speaking.)

15 MR. CARDENAS-NAVIA: Some of the other passages --

16 (Simultaneous speaking.)

17 JUDGE SMITH: An interpretation, it's what it literally says. It says
18 it resembles a single frame component-based fusion, period. It doesn't say,
19 it's not part of the invention.

20 MR. CARDENAS-NAVIA: It's talking about being a single frame
21 analysis, which again there's no temporal domain to that type of analysis.
22 It's not --

23 (Simultaneous speaking.)

24 JUDGE SMITH: According to you.

25 MR. CARDENAS-NAVIA: Spatiotemporal.

1 JUDGE SMITH: According to you, not according to what the patent
2 literally says. The patent doesn't say it's not --

3 MR. CARDENAS-NAVIA: The patent says it over and over again.
4 I'm going to move to this next section --

5 JUDGE SMITH: Okay.

6 MR. CARDENAS-NAVIA: So, here we're talking about --

7 JUDGE SMITH: This is? Can you identify the slides that you're
8 on, please?

9 MR. CARDENAS-NAVIA: My apologies, Slide 29.

10 JUDGE SMITH: Okay.

11 MR. CARDENAS-NAVIA: So, this is further down in the '980
12 patent and it says, a 3-frame spatiotemporal object model was used and was
13 shifted in a tracking centric wave over time. Then two sentences later, for
14 comparison a simple fusion scheme was implemented that averages the best
15 detection result from each of the four components to produce an estimate for
16 the vehicle position and scale independently at every frame. So, it's
17 contrasting the invention, the spatiotemporal model, with the simple fusion
18 scheme, which it, again, specifically notes and does its analysis
19 independently at every frame. Then, it even goes on here, it talks about the
20 performance of the simple fusion model being poor and then it says, in
21 contrast the spatiotemporal object model consistently combines the evidence
22 for accurate estimates throughout the sequence. So, here, it's specifically
23 contrasting a single, independently at every frame model, with the
24 spatiotemporal object model. Of course, this just makes sense in the broader
25 context too.

1 Patentees are always comparing their invention to what they're
2 improving, and here the Patentee says over and over what we're improving
3 over is a spatial model, we're making it temporal, we're extending it in the
4 time domain in this one specific way by taking into account object
5 probabilities in nearby images. And I do want to get to the claims because I
6 think this is all -- I think I did it a little backwards because this all just
7 confirms the plain meaning of the claims, rather than trying to alter any
8 meaning of the claims. Could you go to Slide 21?

9 So here, it's a computer implemented method for object detection.
10 The first step is to provide a spatiotemporal model so, again, we're not
11 dealing with the purely spatial model, it's got to be spatiotemporal, for an
12 object to be detected and then we provide a video comprising of plurality of
13 images including the object. So now, we've defined a plurality of images,
14 two or more, and then Steps C and D are analyses that we perform on each
15 image, it says that at the end of each image. First, we measure the object as
16 a collection of components, that's the first part of the bottom-up analysis,
17 where we say, all right, what are the probabilities for all the components?
18 You know, probability of an arm, probability of a leg, probability of a head.
19 Then, necessarily, we've got the next step of determining a probability that
20 the object is in each image, that's the note at the top that's saying, okay, let's
21 use our component probabilities. Let's determine the probability that we've
22 got a person. And then the last little notation, 1(e), it's an object detection
23 step in any image, so it can be one of any of those plurality of images and
24 you detect the object, an actual thumbs up/thumbs down, do we have an
25 object?

1 Upon comparing the probabilities plural for each image to a
2 threshold for detecting the object. If we look at limitation 1(d), it's
3 determining a probability that the object is in each image, so we've got one
4 probability for each image. The only way we have multiple probabilities is
5 if we've got -- is because we've got multiple images that we have
6 determined probabilities. So 1(e), plain language, it's telling you that final
7 step of the spatiotemporal model is to say yes or not the image is in the
8 object by taking into account comparison of the probabilities in some of
9 these other images of the plurality to a threshold, or actually each image, so
10 every image in the plurality compares the object probability to a threshold,
11 that's how you detect the object in any of the images.

12 JUDGE SMITH: You mentioned before, we look at the claims in
13 light of specifications and Figure 5 doesn't say probabilities for each image,
14 it says probabilities for the image. I understand in your briefing you said
15 that Figure 5 has a typographical error. Is there any evidence in the record
16 to show that there's a typographical error in Figure 5 or in any other part of
17 the patent?

18 MR. CARDENAS-NAVIA: There is.

19 JUDGE SMITH: Okay.

20 MR. CARDENAS-NAVIA: So one, this language in limitation -- or
21 in all of Claim 1, the way it's presented here --

22 JUDGE SMITH: I mean that -- yeah.

23 MR. CARDENAS-NAVIA: It appears that exact language appears
24 in the specification four times.

25 (Simultaneous speaking.)

1 JUDGE SMITH: I don't need an attorney argument, I need actual
2 evidence, either from the inventor's filing a Certificate of Correction or
3 some type of objective evidence other than you just saying it's a
4 typographical error.

5 MR. CARDENAS-NAVIA: Well, I was trying to lay out the
6 evidence, which is that, again, that language that doesn't use the image, but
7 uses the probabilities for each image, which is what's in limitation 1(d), that
8 same language is in the specification four times. So, this one example,
9 they're pointing to in Figure 5, is the outlier. Four other times in the spec,
10 plus in the claims, it recites the limitation this way, it's only in Figure 5 that
11 they say --

12 JUDGE SMITH: But that doesn't mean it's a typo.

13 MR. CARDENAS-NAVIA: I mean it's -- you know, the alternative
14 is that there's a typo five other times.

15 JUDGE SMITH: No, the alternative is that the two statements are
16 consistent with each other. The probabilities -- the probabilities for the
17 image and the probabilities for each image mean the same thing. I mean, the
18 inventor when he filed the application, he signed a declaration under penalty
19 of perjury saying it's accurate and I mean you're telling us this is not
20 accurate just based on you noticed the image in Figure 5 is not the same as
21 each image in the claim, that means the figure is wrong, but I mean why
22 would we go with that, given that?

23 MR. CARDENAS-NAVIA: The inventor is not violating any oath
24 because their document has a typo in it.

25 JUDGE SMITH: No, I'm not saying he's violated an oath, I'm
26 saying he's fulfilled his oath. He signed a document saying that Figure 5 is

1 correct. He signed that, there's evidence on the record from him saying it's
2 correct and now you're telling us it's incorrect because it's different than
3 what the claim says. Why couldn't both be correct? Why couldn't --

4 MR. CARDENAS-NAVIA: The --

5 JUDGE SMITH: The figure be correct and the plain is correct and
6 they're both consistent with each other.

7 MR. CARDENAS-NAVIA: So, the way Petitioners have interpreted
8 Figure 5 is as different than what's in limitation 1(e) of 21, of Claim 9 and,
9 you know, four other times in the specification. Again, because that's their
10 conflating objects with components argument. They read the probabilities
11 and they read it as the component probabilities for each image and that's
12 how they transform limitation 1(e) into a single image analysis because now
13 you're just detecting the object in any image, any one of the pluralities,
14 based on comparing the probabilities within a single image because you're
15 talking about probabilities for components to a threshold.

16 So now, the detection object is purely the step of I'm going to take
17 my component probabilities, I'm going to compare them to a threshold and
18 based on that, I determine whether there's an object or not. That's how they
19 read limitation 1(e), that's how they transform it into a purely spatial
20 analysis.

21 JUDGE SMITH: Why wasn't a Certificate of Correction filed in this
22 patent?

23 MR. CARDENAS-NAVIA: Probably because no one ever noticed it
24 was a typo.

25 JUDGE SMITH: I mean you noticed it, why didn't you file?

1 MR. CARDENAS-NAVIA: I'm not aware of any obligation we
2 have to file a notice of a typo in a figure.

3 JUDGE SMITH: Well, this goes to the core of your claim
4 construction or are you not saying that the disclosure in the specifications is
5 incorrect?

6 MR. CARDENAS-NAVIA: I think it's abundantly clear from the
7 rest of the disclosures and the specification, what Claim 1(e) captures and to
8 your earlier point, what governs is the language of the claim, so it would be
9 one thing to try to rewrite a claim in view of what's in the spec. It's another
10 to rewrite a claim in view of one out of five examples in a spec, and now
11 we're in a very different world because now we're not talking about reading
12 a preferred embodiment into the claim, we're talking about trying to read all
13 the preferred embodiments out of the claim, because that's what Petitioners
14 are doing by turning 1(e) into a spatial, a purely spatial, model.

15 I don't think there's any --

16 JUDGE EASTHOM: Let's say we agree with your claim
17 construction and that's a natural reading of the claim, how do you answer
18 Petitioner's other arguments that the prior art teaches it anyway?

19 MR. CARDENAS-NAVIA: Yeah, okay, let me turn to that. I'll
20 start with the Zhao and I'll just say that I actually don't think Petitioners
21 argue that Zhao does meet Claim 1 under our full construction, but I don't --
22 I think Zhao doesn't teach it either way. And I'll actually leave this up.

23 So Zhao, at a high level, what Zhao does, is it starts with, you know,
24 your image and it identifies contours. So, you know, it comes up with some
25 kind of loose shape and it thinks maybe it's a person, so it tries to draw lines
26 across the contour to identify body parts. Then, it says, okay --

1 JUDGE McKONE: Sorry to interrupt, what did you leave up? What
2 slide?

3 MR. CARDENAS-NAVIA: Slide 20, which shows Claim 1 of the
4 '980 patent.

5 So once, you know, Zhao tries to identify these body parts, you
6 know, it then, you know, tries to say okay, have we detected, you know, an
7 arm and a leg and you know, that's what it tries to do. Then the RCR
8 portion of it is -- well actually, I skipped a step, which is once it's detected
9 those -- the body parts or maybe it doesn't detect some of them, it makes a
10 determination of okay, is this contour probably a person? What it can do is
11 with the RCR algorithm, it can go back and say all right, well, given that,
12 you know, I think it's a person, let me now try to improve the model. Let
13 me try to, you know, estimate the body parts a little bit differently and draw
14 them a little differently and see if I can detect more body parts.

15 As part of that, here's where the alleged temporal component comes
16 in, it says well, in trying to predict, you know, the orientation of these limbs,
17 we can take in motion information to come from previous frames. And they
18 say it's a, I think they say it's an angular -- it's an angular motion, so, you
19 know, 3 degrees per second, or something like that. And so, you know, then
20 the model does that, it takes that into account and then it makes another, you
21 know, detection of do we have a person or not.

22 And so again, if we look to limitation 1(e), it says detecting the
23 object in any image upon comparing the probabilities or each image to a
24 threshold for detecting the object. And so what Petitioners would need to
25 allege, is that the, you know, 3 degrees per second, as an example, is the
26 probabilities for each image that are compared to a threshold.

1 JUDGE SMITH: Well, I mean that's not what we said in our
2 decision to institute. I mean in our decision to institute I thought it was
3 clear, maybe you can tell me if it wasn't clear, but we were saying these
4 motion vectors come from previous images where the object was detected by
5 comparing the object to a -- by comparing the probability for the object to a
6 threshold and then from that the motion information is generated. It's not
7 the motion information by itself, it's the fact that the motion information is
8 the result of comparing to probability for the previous image to a threshold
9 and then from that determining the motion information, so why does this
10 claim step narrower than that?

11 MR. CARDENAS-NAVIA: So there's a -- I hear you. Let me --
12 (Simultaneous speaking.)

13 JUDGE SMITH: Do you understand what we said in the decision to
14 institute --

15 MR. CARDENAS-NAVIA: I think so, and let me try to kind of
16 rephrase it and talk through it a little bit. I think the, you know, the
17 inference is that, you know, the motion vector in some way, and I think this
18 is a problem for the theory is that Zhao says almost nothing about the motion
19 vector. How it's calculated or where it comes from, or even really how it's
20 used other than vaguely, but in some way, the motion vector is related to the
21 computation of an object probability in an earlier image. That, in turn, then,
22 you know, gets used in the object detection in a subsequent image and that's,
23 even assuming that's true, that does not meet the claim language.

24 I don't think the plain language, certainly not under our construction,
25 because what you really have is you're, at best, you know detecting the
26 object based on the motion vector, which is something that based on

1 comparing the probabilities for each image to a threshold. So you've added a
2 full step of removal. It's based on something that's based on something else.
3 And I think that's best case because of the attenuated relationship between
4 the computation of the motion vector and the detection of an object in a prior
5 image.

6 And so I -- we construe the term upon is based on and our
7 understanding is again fully consistent with all the evidence and the plain
8 language --

9 JUDGE SMITH: Yeah, I saw that argument, I didn't really
10 understand the point you were making by saying a line is the same based on
11 -- I still don't see how that gets you beyond what Zhao is teaching by
12 comparing the probability that an object is in a first image to a threshold,
13 recognizing that yeah, the object meets the threshold and then from that,
14 determining the motion vector and using that motion vector in the
15 subsequent image. And again, comparing the probability for that subsequent
16 image too. I don't see how that gets you beyond Zhao, by replacing upon
17 with based on.

18 MR. CARDENAS-NAVIA: It's Zhao the motion vectors at best, is
19 the object probabilities in adjacent images or sorry, motion vector is based
20 on the object probabilities and then the step, further step is based on those
21 motion vectors and so it's, again, it's two degrees removed from what is
22 actually be used. Our --

23 JUDGE SMITH: Well, let's start with first, I mean, you criticize the
24 Petitioner a lot for rewriting the claim, why are you rewriting upon to mean
25 based on? What was all that?

1 MR. CARDENAS-NAVIA: We're not. You know, a lot of words
2 have multiple plain meanings, multiple dictionary meanings that's partly
3 why we do plain language --

4 (Simultaneous speaking.)

5 JUDGE SMITH: But why wouldn't you just use the word upon?
6 Why do you need to use based on instead of upon?

7 MR. CARDENAS-NAVIA: Because it removes any doubt that the
8 step of detecting the object requires as an input to that analysis, the
9 probabilities, or, sorry, the step of comparing the probabilities for each
10 image to a threshold.

11 JUDGE SMITH: So based on removes that doubt?

12 MR. CARDENAS-NAVIA: Say that again?

13 JUDGE SMITH: Using the word based on comparing instead of
14 upon comparing removes that doubt?

15 MR. CARDENAS-NAVIA: Exactly. It's a logical connection --
16 (Simultaneous speaking.)

17 JUDGE SMITH: So, I'm saying --
18 (Simultaneous speaking.)

19 MR. CARDENAS-NAVIA: Between the two.

20 JUDGE SMITH: Saying upon comparing the probabilities there's
21 doubt as to what it means?

22 MR. CARDENAS-NAVIA: I think upon could be an ambiguous
23 word. It could literally mean on top of, I don't think anyone would argue
24 that, you know, that second step balances on top of the other. We just
25 wanted to make clear that upon always means a logical connection and the
26 logical connection we're talking about is that the detecting step of the object

1 in any image is based on the probabilities for each image to a threshold for
2 detecting the object. It's based on that. It's not something -- no one has
3 even floated what else it could mean.

4 JUDGE SMITH: Can you just point us to in your briefs where you
5 distinguish using the motion vectors that would determine by comparing
6 probabilities of the previous image to a threshold and then using the
7 subsequent motion vector in the current frame, where you argue that's not
8 enough to meet the claim limitations? Where is that in there? Do you have
9 slides that speak to that?

10 MR. CARDENAS-NAVIA: I believe we do have some slides. Get
11 me to the Zhao slides and I can get you a citation to the brief so --

12 (Simultaneous speaking.)

13 JUDGE EASTHOM: So, in a nutshell, are you saying that Zhao
14 compares probabilities for these motion vectors, but not for the whole
15 image? Or maybe I have that wrong.

16 MR. CARDENAS-NAVIA: Zhao doesn't rely on probabilities of
17 objects. It doesn't, in deciding, okay, I've got this contour in this image, is it
18 a person or not? It doesn't take into account probabilities that that contour is
19 a person in nearby frames. The argument that's made is that somehow it
20 indirectly does because it uses motion vectors from the previous frames, but
21 at the very literal level, a motion vector is not an object probability in an
22 adjacent frame and if you try to make it one, you're suddenly relying on a
23 very attenuated logical connection that our construction and I think upon
24 excludes, but based on, excludes as well. It's got to be more direct than that.
25 You've got to actually be using it. That's what the patent talks about and at
26 some point, it gets absurd.

1 JUDGE EASTHOM: So, I mean I guess when you go to 1(e) and I
2 think that's a fair place to stay for a little while, but just, it says detecting
3 object in an image upon comparing the probabilities for each image and I
4 guess the way I understand Petitioner's showing, well, your characterization
5 of it is they're really only comparing the probabilities for motion vectors at
6 most, but not for each image. Is that your argument?

7 MR. CARDENAS-NAVIA: They're -- So I actually don't --that's
8 why I don't think the Petitioners are actually arguing that this limitation is
9 met under the plain meaning and under our construction, because I think
10 they just point to Zhao and say do some motion vectors and they say that's
11 spatiotemporal. The spatiotemporal encompasses any kind of use of
12 information from other nearby images. So, that's why I don't understand
13 them to even argue this. I think if you were to make an argument, it would
14 be the argument the Board made in its institution decision and that's what
15 I've been addressing. I don't understand Petitioners who have made that
16 argument.

17 JUDGE EASTHOM: Okay. Thank you.

18 JUDGE SMITH: I guess, you know, to your point, I'm not sure you
19 understand what we said in our decision to institute. I'm just going to read it
20 to you. This is from pages 27 to 28 of our decision to institute, that last
21 paragraph, like the middle of it. Zhao discloses that motion information of
22 limbs of an object, such as a person walking in a parking lot move from
23 other frames can be used to predict the orientations of limbs in a current
24 frame. Thus, before comparing the current image to a threshold for
25 detecting the object, Zhao has compared other images to a threshold and

1 uses the resulting information when comparing the current image to a
2 threshold.

3 On this record, we are sufficiently persuaded that Zhao teaches
4 detecting the object or the person walking in a plurality of frames by
5 comparing the probabilities of the current image in other images to a
6 threshold. That's what we said in the petition. Your response is that the
7 motion vector is not a probability. I mean that's not what we said and I
8 guess I'm asking you to address what we said in the decision to institute.

9 MR. CARDENAS-NAVIA: I thought I have been addressing it, not
10 by saying it's just a, you know, this immediate argument, it's not a
11 probability, but by saying that to the extent probabilities from previous
12 images are taken into account, you know. it's in a hyperattenuated way,
13 that's not sufficient to meet the construction to the extent that a motion
14 vector can be --

15 JUDGE SMITH: Okay.

16 MR. CARDENAS-NAVIA: A proxy for --

17 (Simultaneous speaking.)

18 JUDGE SMITH: And this is the slide that shows where you address
19 this in your briefing. Is that right?

20 MR. CARDENAS-NAVIA: I can get you the precise cite where we
21 do that.

22 JUDGE SMITH: Okay.

23 MR. CARDENAS-NAVIA: I don't have that on hand.

24 JUDGE SMITH: That's fine.

1 MR. CARDENAS-NAVIA: I'm running a little bit low on time so,
2 if there's any urgent questions about Zhao I'll address it, if not, I think I
3 probably need to turn briefly to TLP. So, could you put up Slide 92?

4 So on TLP's prior art status, in our view, nothing has changed from
5 pre-institution. There was some discovery, Petitioners did get some
6 discovery and they got some emails and some things like that. You know,
7 we had asked them to get it from them, we cited it in our brief, it supports
8 that exactly what we thought the situation was pre-institution is still the
9 situation. TLP was submitted for peer review, I mean under Federal Circuit

10 Law, *SRI International* is a leading case, you know, that's not
11 sufficient. Again, there is some additional evidence that corroborates that it
12 was a standard process.

13 I'll just note this, you know, the provisional application did identify
14 TLP, I don't read into that anything more than the inventors were doing their
15 best to identify what could potentially be prior art. And, you know there's --
16 again, there's a Federal Circuit case, I'm on Slide 95, that just the fact that
17 you've identified a reference in a patent application doesn't make it prior art.
18 I'm not sure that argument has been made by the Petitioners.

19 I did want to talk a little bit about the Hall-Ellis declaration because I
20 think that was the other evidence that's new that the Board hadn't previously
21 considered. And this was surprising to me, you know, but I asked Dr. Hall-
22 Ellis is there a theory that TLP was published on the ResearchGate in
23 January 2004 based on that date being there and she said, yes, that is her
24 theory. That wasn't correct. She later admitted that it wasn't on there prior
25 to 2008 because ResearchGate didn't exist until 2008 and there was a
26 sentence in her declaration that ResearchGate didn't exist until 2008.

1 The other argument she made was based on, you know, this -- well,
2 I'll just quickly note, she confirmed that TLP is not catalogued or indexed
3 anywhere prior to the critical date. She also did this ResearchGate analysis
4 so this is all post 2008, much later, but she looked at publications by the
5 authors from around the 2004 time period and she said, okay, here's this date
6 on ResearchGate and it's not described as a publication date. That's an
7 inference that has been made by Petitioners, it's just a date. She compared
8 that date to dates when the reference on ResearchGate had been formally
9 published in some journal and what she said in her declaration was well, the
10 time gap for, what's it called, for TLP is, I believe, three months and, you
11 know, that's the largest gap, but they're all very close to the actual
12 publication date, so, you know, I infer from that that TLP was probably
13 published somewhere there, you know, right around January 2004.

14 There's a lot of problems with that. One is that that in her own
15 exhibits to her own declaration don't support that. There were time
16 variances between the date on ResearchGate and the actual publication date
17 in some formal publication of anywhere from one month to 11 months. So, I
18 believe there were something like 10 different examples in her exhibits
19 where the time difference between the ResearchGate date and the actual
20 publication date was more than three months.

21 So, again, there was something in her declaration that was just flat
22 out contradicted by other parts of her declaration and in view of that, she did
23 admit at her deposition, you know, that well, I guess, this ResearchGate,
24 who knows if it's actually reliable. You know, the inventors are busy people,
25 I don't know how careful they are about checking the date and she
26 acknowledged that. We cite that in our brief. We have it on some of our

1 slides as well. Here we go, so to say the date is accurate or it is close or it is
2 not close, I think that is asking a lot from the authors. I would never take
3 these ResearchGate dates solely on face value, never. How carefully we
4 transcribe this, meaning how careful inventors are in putting dates into
5 ResearchGate, I think varies from person to person. So, this ResearchGate
6 theory it doesn't support any earlier publication of TLP.

7 There's also the question of whether the '980 patent is entitled to a
8 priority date of the provisional priority date. Can you go to Slide 85? What
9 I will say is -- can you pull up the provisional application? So petitioners
10 only contested that the '980 is entitled to its provisional priority date in the
11 reply and they only did so with attorney argument. They basically said, you
12 know, it is very conclusory but, you know, we provided detailed expert
13 testimony. They didn't respond to it. We had detailed expert testimony in
14 our response. They didn't respond. We responded again in sur-reply and
15 they basically made two arguments. One, they said Figure 5 isn't in the
16 exact language. Figure 5 isn't in the provisional application and that's not
17 relevant because we're focused on the claims. And they also said, you know,
18 we don't think the provisional discloses limitations 1(d) and 1(e) based on
19 your construction.

20 And so if you can turn to page 6. So, in the middle paragraph where
21 it starts the framework presented.

22 JUDGE EASTHOM: Page 6? Oh, there's not a slide, I'm sorry.

23 MR. CARDENAS-NAVIA: Exhibit 1003.

24 JUDGE EASTHOM: Oh, thank you.

25 MR. CARDENAS-NAVIA: Page 6. Thank you for getting me to
26 clarify. In the middle of this page here, it says the framework presented here

1 can be viewed as having five distinct components. (i) the graphical model.
2 (ii) an inference algorithm that provides ability to infer a state of each node
3 in a graph and that earlier defines nodes as component nodes and object
4 nodes. (iii) a local evidence distribution or image likelihood that's your
5 object probability proposal process for some or all nodes in the graphical
6 model and a set of spatial and/or temporal constraints corresponding to the
7 edges in a graph. So, that's referencing in Figure 2 where you've got the
8 spatial model which has spatial constraints between the nodes and then at the
9 top you've got the temporal edges or constraints between the object nodes.

10 And so this sentence here ties it altogether and then if we go to the
11 next page, page 7 of Exhibit 1003, this is exactly like what's in Figure 2 in
12 the patent. The difference which is actually quite nice is that part A and part
13 B show purely the spatial model, and then parts C and D show that spatial
14 model expanded to correlate and again, we've got the nodes just at the object
15 node, because we're taking into account object probabilities. And if you
16 scroll down, the description in Figure 2 says, and I'll focus on the second
17 sentence, spatiotemporal models are obtained by replicating the spatial
18 model along the temporal domain to a w-length window and then connecting
19 the second layer nodes across time. So, you know, again, that's telling us
20 that connection of the nodes across time, the object nodes are critical to the
21 invention. But this is, I mean, this is the disclosure of what's in 1(d) and
22 1(e) and the final thing I'll show is on page 10 of Exhibit 1003.

23 Something Petitioners, you know, flagged as a potential deficiency, could
24 you scroll back up to the top, is there's no disclosure of a threshold, but
25 that's exactly what's described right there.

26 JUDGE SMITH: Where?

1 MR. CARDENAS-NAVIA: The second sentence of that first
2 paragraph, it is customary to consider object present if and then there's an
3 equation. We convert this confidence rating into a likelihood function by
4 first normalizing the and then there's some more math, that to consider
5 object present of HK greater than equal to, what's after that is the threshold.
6 We're saying if our calculation is greater than that threshold, the object is
7 present.

8 JUDGE SMITH: Why does this mean comparing probabilities from
9 multiple images? Where are the multiple images in this equation?

10 MR. CARDENAS-NAVIA: So this part is not focused on the
11 multiple images. This part is focused on the thresholds. This is how do you
12 detect an object for any given object node in an image and that's why I
13 started with, well, I just showed you the spatiotemporal model because that
14 process of comparing the probability of a threshold is performed at each
15 object node and then those edges are what connects the result of that
16 comparison of the objects to the object probability to a threshold. So, it all
17 works together. And the first thing I showed was the framework kind of
18 tying all those things together.

19 JUDGE SMITH: I guess, yes, the claim, well, let me just look again
20 at this. The claim says, let me see, the claim says detecting the object in any
21 image upon comparing the probabilities for each image to a threshold for
22 detecting an object. So, that's what the claim says. What you're showing us
23 here is this equation that is comparing the probability of one image to a
24 threshold on page 10 and then on page 7, you have that diagram that's
25 similar to that diagram -- how do you get to, I mean I see an equation that
26 shows detecting an object by comparing the probability for one image to a

1 threshold and then I see this figure that shows the spatiotemporal model,
2 how do you get to detecting the object by comparing probabilities of
3 multiple images to a threshold? Where's the comparison of multiple
4 images?

5 MR. CARDENAS-NAVIA: If you could go back to page 7 of
6 Exhibit 1003, it is this -- that dotted line from the object nodes in each image
7 that expand into the temporal domain --

8 JUDGE SMITH: That means compare the probability of multiple
9 images to a threshold?

10 MR. CARDENAS-NAVIA: So it --

11 JUDGE SMITH: The three dots mean that? What means compare
12 the probability of each image?

13 MR. CARDENAS-NAVIA: What you're doing is within each
14 image comparing the probability of the image to a threshold, but what you're
15 doing is then once you've done that in any given image, you're taking into
16 account the result of all those comparisons. That's what the claim says
17 expressly and so that's why with those connection nodes at the top, those are
18 all dependency lines. And so it's -- we're saying take that calculation and
19 that's an input. For each of them, it's an input based on, you know, the
20 output of that analysis from the nearby images.

21 JUDGE SMITH: It's an input to what?

22 MR. CARDENAS-NAVIA: It's an input to the ultimate object
23 detection step on top of that.

24 JUDGE SMITH: Where is that in this document?

25 MR. CARDENAS-NAVIA: Again, it's just the result of if you add
26 the threshold which we know we're doing for each object node to this,

1 which says we're taking into account that calculation for each object node.
2 Those are the dependencies.

3 JUDGE SMITH: Okay.

4 MR. CARDENAS-NAVIA: And I don't have a lot of time. Again, I
5 understand there are limits for TLP to be purely based on objects or
6 collection of components and objects aren't separately analyzed because if
7 you look at TLP, what it does is while it has this component node, the nodes
8 represent, I think, the position and angle of a limb and that's all they do.
9 They tie them together. They tie these nodes, these component nodes
10 together, but there is no overall object detection step because what they're
11 concerned with is essentially when you've got someone walking, losing
12 track of part of a limb, essentially losing the track, and so if you look at what
13 they estimate, they don't estimate the accuracy of overall object detection
14 like they do in the experiments in the '980 patent. What they estimate is
15 how far off are our estimates of the position and angle of each limb
16 compared with reality. Because that's their metric, they're entirely focused
17 on components, on limbs, not on the overall object. And I've got five
18 seconds.

19 JUDGE SMITH: If you want a minute to finish up, do you have
20 something more you wanted to say?

21 MR. CARDENAS-NAVIA: I think I'll wait --

22 JUDGE SMITH: Okay.

23 MR. CARDENAS-NAVIA: For rebuttal. Thank you.

24 JUDGE SMITH: All right, fair enough. Fair enough.

25 JUDGE EASTHOM: Can I just ask a quick question? I was just
26 looking on that same exhibit page 10 and it talks about a section 2.5, to form

1 a proposal distribution for component, we run corresponding AdaBoost
2 detector, I think your friend said something about AdaBoost, but it looks like
3 you're comparing thresholds here for components. Is that right?

4 MR. CARDENAS-NAVIA: So, the nodes are sometimes
5 distinguished and sometimes similar math happens to them, so the AdaBoost
6 applies to components because it's the bottom-up approach. It applies to
7 both of them, components and objects.

8 JUDGE EASTHOM: Okay.

9 MR. CARDENAS-NAVIA: Because first you do that analysis with
10 the components and those are all the dependencies between them in Figure 2
11 and then you do it for the object. So, it's done for both of them. Their view
12 is that it's only done for the components, but it does it for nodes. It does it
13 for both of them, for components and objects.

14 JUDGE EASTHOM: Okay, so you're saying your disclosed process
15 adds up all the probabilities for each component that I can find and then it
16 calculates the probability for each image based on the sum of those
17 components or something?

18 MR. CARDENAS-NAVIA: It has a -- there's some complex math
19 on the precise computation that's done and there's a number of
20 embodiments, but that's it and that's part of why you can't conflate objects
21 with components, because once you've got objects -- or, sorry, component
22 probabilities that doesn't automatically give you an object probability.
23 You've got to do something with those component probabilities to get an
24 object probability to then, you know, detect an object as it's done in the
25 patent here. That's another reason why their conflation of objects and

1 collection of components just doesn't work, in addition to it, you know,
2 again, ignores many of the embodiments in the '980 patent.

3 JUDGE EASTHOM: All right, thank you.

4 MR. CARDENAS-NAVIA: Thank you, Your Honor.

5 JUDGE SMITH: And then, I'm sorry, just real quick before you sit
6 down. The explanation that you gave about why the provisional -- why the
7 patent is entitled the benefit of the priority provision, is that the same as your
8 experts' testimony in Exhibit 2007, I think it's Paragraphs 32 and 33?
9 Maybe you can address this in your sur-reply, but I think what you're citing
10 looks like the same thing that he's citing to. Maybe just keep that in mind.

11 MR. CARDENAS-NAVIA: I'll address that in rebuttal.

12 JUDGE SMITH: Yeah, okay.

13 MR. BRIT: One second, I'm sorry.

14 JUDGE SMITH: Okay.

15 MR. BAKER: Thank you for your patience and understanding.

16 JUDGE SMITH: No problem.

17 MR. BAKER: It is now evening. First, I don't need the slides. I do
18 want to respond, Your Honors, to Patent Owner's argument that under
19 Petitioner's construction Claim 1 is limited to $w=1$ and that's just not
20 correct. As we tried to explain before, Claim 1 stands alone as a method for
21 object detection. Smoothing is an additional process that you can apply to
22 that object detection. So, you can look at additional windows, make
23 measurements in those objects and then communicate that to the current
24 frame where you're trying to detect the object.

25 So, Claim 4 recites in the "'980, detecting the object in the current
26 image according to measurements of the object as a collection of

1 components determined from a prior image. That's what Zhao does, right?
2 So, although you're making a detection of the object in this single image,
3 you're allowed to take measurements from prior or latter images to make
4 that calculation, so Claim 1 is broad enough as a method of object detection
5 to cover both single frame object detection, but you can also add on top of
6 that, smoothing.

7 JUDGE SMITH: Could you just real quickly speak to -- and I know
8 there's a big argument over whether the claims cover a single image or not,
9 but could you just quickly speak to in our decision to institute, we said it,
10 you know, doesn't really matter because Zhao when it detects an object in an
11 image, it determines the probability for it and compares that probability to a
12 threshold.

13 MR. BAKER: Yes.

14 JUDGE SMITH: From that, it determines the motion vector and
15 then repeats the process for the next frame, so in that sense before
16 comparing the current image to a threshold for detecting the object, Zhao's
17 compared other images to a threshold and uses the resulting information
18 when comparing the current image to a threshold, therefore, it teaches the --
19 Claim 1(e) detecting the object upon comparing the probabilities for each
20 image take it to a threshold. I guess I have two questions, one, do you agree
21 what we said in the decision to institute and two, if you do, what do you
22 make of Patent Owner's argument that our analysis is relying on the motion
23 vectors that were detected as a result of comparing probability to a threshold
24 is too far attenuated to meet the claim?

1 MR. BAKER: For the first part, yes, we do agree with the analysis
2 that you provided in the institution decision. If you may, Your Honor, can
3 you repeat the second part of your question?

4 JUDGE SMITH: So --
5 (Simultaneous speaking.)

6 JUDGE McKONE: How about before you do, if we decide that we
7 want to continue with that theory in the final written decision, is there any
8 evidence that we would support, back that up? For example, is there any
9 expert testimony that we can point to because Patent Owner now has
10 challenged the sufficiency of that theory.

11 MR. BAKER: Yes. Dr. Bajaj gives detailed discussions with
12 reference to the testing that's conducted by Zhao, both on a video of a
13 person walking and a video of the two skaters and how that motion
14 information is used within the model to detect the objects within a single
15 frame. How the -- Zhao's algorithm is used in that scenario to use the
16 probabilities of the multiple body parts to detect those objects. That is
17 explained precisely by Dr. Bajaj.

18 JUDGE EASTHOM: But another frame, in other frames too, right?
19 Is that --

20 MR. BAKER: Oh yeah. That's what the whole skating thing is.

21 JUDGE EASTHOM: Okay.

22 MR. BAKER: You know, skaters into multiple objects, it's even
23 more complex. You're tracking multiple moving objects over multiple
24 frames and using that motion information to incorporate in the model to
25 make those determinations.

1 JUDGE EASTHOM: And what about your friend's argument that
2 well, that's just too attenuated. You're looking at probabilities for motion
3 vectors. I don't know if that's what --

4 (Simultaneous speaking.)

5 JUDGE SMITH: Do you understand the attenuation? So, I think
6 what --

7 MR. BAKER: I'm not sure I understand it.

8 (Simultaneous speaking.)

9 JUDGE SMITH: If I could summarize it briefly, you have this
10 object and this image goes through a process where it calculates a
11 probability that the object is an image. It compares it to a threshold,
12 determines the object is an image. From that, determines motion vectors for
13 components of the image and then uses those motion vectors to predict --

14 MR. BAKER: Where it'll be in the next frame?

15 JUDGE SMITH: Where it'll be in the next frame and then repeats
16 the process of calculating probability compared to a threshold. The fact that
17 the motion vectors themselves, even though the result of a process that
18 involved comparing the probability to a threshold is too attenuated from
19 comparing the probability to threshold to actually meet the claim limitation
20 of comparing the probabilities to a threshold.

21 MR. BAKER: Well, the motion information assists Zhao in
22 determining well, this is where we think the model should be built, so based
23 on the object moving at this rate or based on what I've determined where the
24 object will be, I built a model for one frame and I can predict where to build
25 that model in the next frame based on that motion information. Every time I

1 use that model to determine the likelihood that the object is in the image,
2 that's probabilistic using the Bayesian similarity measures.

3 JUDGE SMITH: Okay.

4 MR. BAKER: So, I'm not sure I understand quite where the
5 attenuation occurs from Patent Owner's perspective.

6 JUDGE SMITH: Okay and then just real quickly, I mean, Patent
7 Owner wants us to read upon to mean based on. Do you have any thoughts
8 about that? Does it matter?

9 MR. BAKER: I think it has its ordinary meaning.

10 JUDGE SMITH: Yeah.

11 MR. BAKER: I think upon connotes time.

12 JUDGE SMITH: Okay.

13 MR. BAKER: And you know, you do A then you do B.

14 JUDGE SMITH: Okay.

15 MR. BAKER: So, we think that's clear on its face. We would
16 briefly turn your attention to column four.

17 JUDGE EASTHOM: I mean, well, I still have a question about
18 Element 1(e) because it does seem that your friends are providing a pretty
19 fair reading of the claim notwithstanding the w=1 if it looks like they were
20 distinguishing that in the spec if we agree with them on that, but it does say,
21 you know, 1(b) first says providing a video comprising of plurality of
22 images including the object.

23 And before, when I asked you this, I was trying to figure out if you were
24 saying each image was one of the components, but you didn't really say and
25 so I wasn't sure what your answer was there. Maybe next time, maybe you
26 can fill me in. And then, on Step 1(d), it says determining a probability that

1 the object is in each image, so it looks like we have multiple images here
2 and this seems to be multiple frames based on their disclosure. Then in 1(e),
3 it says detecting the object in any image upon comparing the probabilities
4 for each image, and this is getting back to my question before about it seems
5 to be you're comparing probabilities for components of an image.

6 MR. BAKER: For each image, we are comparing the probabilities
7 for components which represent an object against a threshold to determine
8 the probability that that object is in the image and that's done for each image
9 of the video.

10 JUDGE EASTHOM: Okay.

11 MR. BAKER: If I could direct you briefly to column four, lines 46-48 of the
12 '980. There, you're going to find a discussion of the '980 Figures 2A and
13 2B and Patent Owners have been referring to this figure over and over again,
14 but I think it's worth noting in that description that it says, an object at a
15 current time is denoted as $O_{subscript T}$ with an earlier model, and
16 remember the claim requires a spatiotemporal model, denoted as O with an
17 earlier subscript in a later model. So, for each frame, they're referring to a
18 model, and they use that model to make a determination whether or not the
19 object is in the frame, even in the '980, we're discussing a model. There's --
20 this spatiotemporal model changes configuration and time. That's what this
21 connotes. We have a model at one time, it has a certain configuration. The
22 next frame, the model has moved, it has a different configuration and you're
23 always trying to match that to the image. You can then again use smoothing
24 on top of that to disambiguate when you have concerns because a part of the
25 body is blocked.

1 The description is clear that even for the NVP, which we discussed,
2 that's applicable on an image-by-image basis, we have the $w=1$ discussion to
3 the extent that there's any disparagement of $w=1$, there's case law which we
4 cite in our slides, which says that that is not sufficient. We talk about the
5 clarity of the specification, if the Patent Owners wanted to be limited to
6 multiframe, they could have said w is an odd integer, greater than or equal to
7 3, that would have been a clear disclosure that they intended to have multi-
8 image analysis for all their object detection. That's not what's disclosed
9 here, so we think it's pretty clear. Dr. Bajaj has clear testimony explaining
10 why. We cite that in the record. We wish for you to consider all of that
11 testimony as a whole.

12 We could also, in the brief time we have left, want to talk about TLP
13 and the adverse inference, which was mentioned in Paper 25. That was in
14 our motion requesting a subpoena. You indicated there that it's possible that
15 the Board wouldn't draw an adverse inference if there was no assistance by
16 the inventors. We think that, you know, we did pursue the subpoenas, but
17 we received no assistance from the Patent Owner. Those inventors had an
18 obligation under their assignment to assist, but no assistance was provided.

19 The last thing I would say about TLP, TLP, on its face, identifies,
20 I'm sorry, the provisional identifies TLP on its face, discusses it as being
21 foundational, identifies it as a reference and then you filed a provisional. I
22 think it's inconsistent to now say, like it's not a publication. It's a reference,
23 we're building on it, but it's not a publication. I just don't think that holds
24 water and unless the panel has any questions, I'll --

25 JUDGE EASTHOM: How do you respond to their argument that, you
26 know, the blurb about it just because it's on an IDS doesn't mean --

1 MR. BAKER: There's a big difference between listing a reference
2 in an IDS, as a former prosecutor I understand this, you encourage Patent
3 Applicants to disclose anything that they think is material without the risk of
4 it being interpreted as being an admission that it's prior art. That's in the
5 context of an IDS.

6 JUDGE EASTHOM: Oh, I see, this is disclosure --
7 (Simultaneous speaking.)

8 MR. BAKER: Yeah, totally different to listed in your provisional as
9 a reference described as foundational, but then to turn around and say, but
10 you know what, it's not a prior art reference. There's a big difference there.

11 JUDGE EASTHOM: Okay.

12 JUDGE SMITH: I know you're way over time, I'll give Patent
13 Owners some extra time if you need it, but just real quickly before you sit
14 down, I just want to make sure I understand your point about column four,
15 lines 45 to 47, are you saying that the patent itself is determining these
16 probabilities for each image comparing them to a threshold and then the
17 previous and next images are used for smoothing? Is that what you're
18 saying?

19 MR. BAKER: Yes, so even in the '980, their spatiotemporal model,
20 it's a graphical model, for each frame it's a model and with that model, you
21 can use what's called an NBP within a single frame to make inferences
22 about what the arm is relative to the shoulder.

23 JUDGE SMITH: Okay.

24 MR. BAKER: Then, if you want to use additional frames, you can
25 use smoothing with w greater than or equal to 3 and in that scenario, under
26 the '980, a node from a prior frame or a latter frame can send a message to

1 the node in the current frame and say, hey, this is where I am now, this is
2 where I used to be, use that as part of your analysis, but Claim 1 is not so
3 limited. Claim 1 reads on a single frame where NBP is applicable, where
4 messaging is available --

5 JUDGE SMITH: NBP, can you -- what's that mean?

6 MR. BAKER: Non-parametric belief propagation.

7 JUDGE SMITH: Okay.

8 MR. BAKER: There's discussion from it, from PaMPas and
9 Sudderth and it's kind of a basis for what this technology is based on.

10 JUDGE SMITH: Okay, all right, thank you.

11 MR. BAKER: Thank you, Your Honors.

12 JUDGE SMITH: Okay. He went a little over time, so I'll give you a
13 few extra minutes if you need it.

14 MR. CARDENAS-NAVIA: Thank you, Your Honor. There was a
15 question about does our expert analyze the portions of the provisional that
16 I've been discussing and he does --

17 JUDGE SMITH: Well, he does. I just wanted to ask you about what
18 he said and whatever.

19 MR. CARDENAS-NAVIA: About?

20 JUDGE SMITH: Yeah, I just had some questions about what he
21 said. Do you have his testimony? No?

22 MR. CARDENAS-NAVIA: Can you put up Slide 88, we've got
23 some of it.

24 JUDGE SMITH: Okay.

25 (Simultaneous speaking.)

26 MR. CARDENAS-NAVIA: -- it might be first portion --

1 (Simultaneous speaking.)

2 JUDGE SMITH: All right we'll go with what you have.

3 MR. CARDENAS-NAVIA: It's the portion where, there it goes,
4 you've got the formula HK, or he's citing that portion of the provisional,
5 Exhibit 1003, where you've got the HK greater than half sigma and I'll just
6 point out that portion of the provisional said, it is customary to consider
7 object presence, so right there, we know we're talking about object
8 probability to a threshold.

9 JUDGE SMITH: Which slide are you on?

10 MR. CARDENAS-NAVIA: Oh, sorry, that's a good question for
11 this small text, it starts four lines from the bottom, halfway through that
12 sentence.

13 JUDGE SMITH: Okay, I see it. Right, so again, this is a single
14 image. I guess what I'm struggling with is where does it compare
15 probabilities for multiple images to determine whether the object is in a
16 single image? His testimony, where does his testimony say that?

17 MR. CARDENAS-NAVIA: I think it's, let me see here, I think it's
18 in the context of limitation, let me see here. Can we go to the next slide?

19 JUDGE SMITH: I don't want to take up too much time on this. If
20 you can't find it --

21 (Simultaneous speaking.)

22 JUDGE SMITH: -- that's fine. I'll look for it afterwards in the
23 papers, that's fine. I don't mean to take up any time with this.

24 MR. CARDENAS-NAVIA: Sorry about that --

25 (Simultaneous speaking.)

26 MR. CARDENAS-NAVIA: I know we cited --

1 JUDGE SMITH: That's okay.

2 MR. CARDENAS-NAVIA: All this --

3 JUDGE SMITH: I understand. I actually looked at his testimony. I
4 struggled with understanding it and I was hoping you could clear it up for
5 me, but that's okay. We can move on now.

6 MR. CARDENAS-NAVIA: Okay and those pages are 6, 7 and 10
7 from Exhibit 1003, those are cited in our response on pages 8 and 9 of our
8 response where we've got the chart, so it's all there because it has to -- some
9 of it is cited in the context of 1(a) because of its spatiotemporal model is part
10 of that.

11 You also asked in Zhao where did we address the Zhao arguments?

12 JUDGE SMITH: Yes.

13 MR. CARDENAS-NAVIA: We addressed Zhao in our sur-reply on
14 pages 27 through 28.

15 JUDGE SMITH: Okay.

16 MR. CARDENAS-NAVIA: We do focus on the more literal
17 argument of Zhao, you know the claim is about comparing object
18 probabilities to a threshold, you know we point out motion vector is not
19 about an object. It's not a probability. It's determinative and it is not
20 compared to a threshold. That's all true, and I think it's part of why we
21 focused on that is because this motion vector is a bit of a red herring because
22 if you're comparing an object probability from other images then that's
23 actually what you need if you're mapping into the limitation in 1(e) and the
24 motion vector is just sort of the means through which, you know it's, some
25 tangential connection, so that's why we've focused on that. Again, we've

1 never understood Petitioners to be making that argument, so that's also part
2 of why we didn't address it in great detail in the sur-reply. Well, yeah --

3 JUDGE SMITH: I got it.

4 MR. CARDENAS-NAVIA: I've never seen it made in their sur-
5 reply or that logic laid out or Zhao's disclosure supporting that laid out.

6 I want to talk a little bit about upon. Just now, counsel for
7 Petitioners said that upon connotes time. They've never said that before.
8 They've said plain meaning without explaining what plain meaning was. I
9 think upon can connote afterwards, and we agree with that, that what
10 happens after upon happens afterwards it's just that upon also its plain
11 meaning connotes a logical connection, you know, upon arriving at the
12 courthouse go talk to the judge, right? You talk to the judge, you know,
13 what happened before there's a logical connection between those two.
14 They're not unrelated. It's not a pure time connection.

15 There's always a logical connection and here in the context of this
16 patent, that logical connection, as it's the only logical connection that's
17 disclosed in the patents, is based on this object probabilities and the adjacent
18 images. So that's why our construction, we view it as the plain meaning
19 construction. It's consistent with how upon is used. It's after, but there's
20 also a logical connection.

21 And, I've covered most of what I wanted to cover.

22 (Simultaneous speaking.)

23 JUDGE SMITH: Okay. Let me just ask you to the point of claim
24 differentiation, to the extent that Claim 4 explicitly says determining the
25 probability comprises detecting the object in a current image as a collection
26 of components determined from a prior image and a later image. So, Claim

1 4 is actually bringing in the multiple image component of this comparison.
2 Given that, the independent claim is presumed to exclude or to not have
3 what's in the dependent claim. What do we make of that argument?

4 MR. CARDENAS-NAVIA: Sure, and in our view they fit quite
5 nicely together. Claim 1 covers the broadest disclosure of the
6 spatiotemporal window, which is its -- you know, could be the entire image
7 sequence of your video, it could be every single image. Claim 4 could be
8 the entire image sequence. It could also just be any two images. You could
9 look one image backwards in time. You could look one image forwards in
10 time. What Claim 4 says is it limits the claim by saying you have to look at
11 least the preceding image and the image that come after.

12 JUDGE SMITH: Okay.

13 MR. CARDENAS-NAVIA: So, in that sense, it's more narrow.

14 JUDGE SMITH: Okay. I don't have anything else.

15 JUDGE EASTHOM: I think your friend said in column four, line
16 45, you refer to a time as an earlier model. Is that, you refer to one frame as
17 an earlier model it seems like.

18 MR. CARDENAS-NAVIA: So, it's column four, line 45?

19 JUDGE EASTHOM: Right, it says, as seen in Figures 2A and 2B,
20 an object at a current time has been noted as OF with an earlier model
21 denotated as OT in a later model. So, I guess those models, I thought their
22 point was you're talking about a model for a single time constraint? A
23 single time I mean.

24 MR. CARDENAS-NAVIA: Yes, so each, I think that's the box we
25 drew around each component of Figure 2A and 2B, that that's referring to
26 there is a spatial model for each of those image frames and it's just that

1 there's an overall temporal model made by building up off of those spatial
2 models.

3 JUDGE EASTHOM: Okay that's what I thought you might say.
4 What is a spatial graphical model? Is that your preferred embodiment?

5 MR. CARDENAS-NAVIA: It's not something we've dived into
6 because everything, all the references are graphical in this case, so I don't
7 think there's a dispute over whether it needs to be graphical or not, whether
8 it could encompass more than graphical models.

9 JUDGE EASTHOM: I thought you had a claim construction in the
10 District Court we were talking about earlier, where you said --

11 MR. CARDENAS-NAVIA: I'm glad you mentioned that because
12 actually that is something I wanted to address. (Laughter.) So we were
13 surprised when Petitioner said that we had raised that claim construction in
14 the District Court. I mean there was no claim construction in the District
15 Court. All there was was a motion to dismiss briefing under 101 and what I
16 understand them to have been pointing to in their cite, was a sentence from
17 our you've got to have a summary of the argument in your briefs in
18 Delaware and we said, you know, a spatiotemporal model is as kind of
19 general background, then they took that as an implicit construction. We
20 didn't -- we certainly didn't intend to offer that as a formal construction.
21 The one-to-one briefing that turned out was that we didn't make an *Aatrix* or
22 *Berkheimer* argument, you know, you can't decide the one issue because
23 there are these issues of claim construction to be decided and the Board
24 ultimately ruled without basing it on some claim construction arguments. So
25 we didn't -- we certainly don't think we're changing our position or that
26 that's some position we previously took that we've moving away from now.

1 JUDGE EASTHOM: Okay. I don't have any other questions.

2 JUDGE SMITH: I just have one, Petitioner brought up the point that
3 the authors and the inventors didn't make themselves available for
4 testimony. They suggested that we draw an inference from that. What do
5 you think about that?

6 MR. CARDENAS-NAVIA: I mean some of the inventors did
7 cooperate. I mean, we're not in control of the inventors. We reached out.
8 They're aware of that. We updated them on our efforts to reach out and
9 collect discovery from the inventors. It ultimately didn't go anywhere.
10 Under those circumstances, I don't believe that any kind of inference is
11 warranted. We in no way interfered. We did our -- we tried to get discovery
12 from them and the discovery that was obtained confirmed the understanding
13 of that beforehand.

14 JUDGE SMITH: And one final question from me. The Petitioner
15 said that the provisional references, the TLP reference, given the fact that the
16 provisional itself was referencing the TLP reference, what can we draw from
17 that? The conclusion that it's publicly available.

18 MR. CARDENAS-NAVIA: Mr. Eklem will correct me if I get it
19 wrong, but my understanding is that the publication that referenced -- that
20 was in the provisional that referenced TLP was published after the date of
21 the provisional. So I --

22 JUDGE SMITH: Oh, is that right?

23 MR. CARDENAS-NAVIA: Yeah, because the provisional
24 essentially looks like a --

25 JUDGE SMITH: The provisional referenced a document that was
26 published after the provisional?

1 MR. CARDENAS-NAVIA: Yes.

2 JUDGE SMITH: How can the provisional reference --

3 (Simultaneous speaking.)

4 MR. CARDENAS-NAVIA: Actually, let's just hear it from the
5 horse's mouth over here.

6 MR. EKLEM: Your Honors, Phil Eklem for the Patent Owner.
7 We're talking about the 1003, so we're talking about a reference to TLP
8 that's in the provisional application which was filed in May, I think it was
9 May 27th, 2004. The reference is to, this is on page 12 of Exhibit 1003, it's
10 the second reference cited, I'm sorry, hold on, that's not right. It is --

11 JUDGE EASTHOM: So, you all amended it, is that what you're
12 saying?

13 MR. EKLEM: No, I just need to find which, there's quite a few
14 here, oh yes, it's TLP, I'm sorry, I was looking for the title of the patent. It's
15 the second reference cited. It says, the inventor's name is Tracking Luculent
16 People, CVPR 2004. That's the CVPR Conference and so all the evidence
17 in the record indicates and there's no dispute that the conference happened
18 in July. June-July, I believe it was, I could be slightly mistaken, but in any
19 event June-July, I think were the dates of the conference. It says here CVPR
20 2004 that's the conference, the conference happened --

21 JUDGE SMITH: So, how would they know about a paper that
22 wouldn't be published until after it was filed, after the decision was filed?

23 MR. EKLEM: Because there's at least one overlapping author, so
24 one of the authors of TLP is a co-inventor.

25 JUDGE SMITH: This is Mr. Black?

26 MR. EKLEM: No, it's Mr. --

1 JUDGE SMITH: Segal?

2 MR. EKLEM: Segal, so he would have known about it. He had a
3 duty to disclose and I think what you can infer is out of abundance of
4 caution, he listed this article that -- and again this provisional is itself an
5 article, so they were working towards later publishing this thing at some
6 point in time, but in any event, it's prospective. They knew that this paper
7 by this time is going to be published in CVPR. They put it on there and so
8 it's completely consistent with the idea that the dates they've listed is the
9 date of the conference. The conference happened after the provisional was
10 filed on May 27th, 2004, so it's not an indication that the paper was
11 published beforehand. It's entirely consistent with the factual record of a
12 later conference.

13 JUDGE SMITH: Okay. Thank you.

14 MR. EKLEM: Certainly.

15 JUDGE SMITH: I don't have anything else. Do you have anything?

16 JUDGE EASTHOM: No.

17 JUDGE SMITH: Do you have anything?

18 JUDGE McKONE: Nothing else from me. Thank you.

19 MR. CARDENAS-NAVIA: Thank you, Your Honors.

20 JUDGE SMITH: Thank you. We're off the record.

21 (Whereupon, the proceedings at 6:15 p.m. were concluded.)

IPR2023-00924
Patent 7,436,980 B2

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