UNITED STATES PATENT AND TRADEMARK OFFICE

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BEFORE THE PATENT TRIAL AND APPEAL BOARD

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ARASHI VISION (US) LLC (D/B/A INSTA360)

Petitioner,

v.

GOPRO, INC.

Patent Owner.

_____

CASE NO. IPR2024-01052

US PATENT NO. 11,336,832 BI

_____

DEPOSITION OF

DR. AGGELOS KATSAGGELOS

August 22, 2025

10:30 a.m CST

Taken via Zoom by agreement

Diana G. Rodriguez, RPR, Certified Shorthand Reporter

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I N D E X

WITNESSES

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EXHIBITS

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(Witness sworn)

DR. AGGELOS KATSAGGELOS,

called as a witness herein, having been first duly sworn, was examined and testified as follows:

EXAMINATION

BY MR. SCHMIDT:

Q Good morning, Doctor.

A Good morning.

MR. SCHMIDT: Before we begin in the Exhibit Share, I marked the first two exhibits to the deposition.

(Exhibit 1 and Exhibit 2 marked for identification)

BY MR. SCHMIDT:

Q Can you just refresh your browser window and confirm that you can see those exhibits.

A Yes, I can see Exhibit 1 and Exhibit 2.

Q For the record, Exhibit 1 is a copy of the '832 patent. Do you see that?

A Yes, I do.

Q You understand that's what this proceeding is pertaining to?

A Yes, I do.

Q And Exhibit 2 is the second declaration that you've submitted in regards to the '832 patent.

Do you see that?

A Yes, I do.

Q And does Exhibit 2 look to be a true and accurate copy of the second declaration you submitted in this matter?

A I just opened it and I see my signature at the last page, yes.

Q Thank you.

Where are you testifying from today, Doctor?

A I'm in my office at Northwestern University in Evanston, Illinois.

Q Is there anyone else in the room with you?

A No.

Q And do you have any hard copy documents in front of you or notes?

A Not notes but I brought some hard copy documents with me.

Q Can you identify the hard copy documents that you have available to you.

A Yeah. One is my supplemental declaration, the second one is my original declaration. The exhibit number for the first one is Exhibit 1019, the second is Exhibit 1002. And then I brought a copy of the '832 patent hard copy. And then I also brought a dossier

here that has a number of additional information as shown here on this table.

Q Like an index?

A Yeah.

Q And can you identify all of the documents that are in a binder that you have other than what you've already mentioned.

A Sure. Petition for Inter Partes Review, Exhibit 1004 Thomason, Exhibit 1005 Pacurariu, Exhibit 1006 Watanabe, Exhibit 1007 Voss, Exhibit 1008 Derbanne, Patent Owner's Response, Exhibit 2021 Foroosh declaration, and Petitioner Reply to Patent Owner's Response, so nine documents.

Q Are all of the documents in the binder that you have available to you unannotated?

A Yes, they are.

Q Other than what you've mentioned do you have any other notes or documents in front of you?

A No, I don't.

Q Other than the browser that you're using to access the Zoom session do you have any other electronic documents or applications open on your computer?

A No. I closed all of the applications before I joined.

Q And since we're appearing remotely I would ask that you don't refer to any extrinsic material whether electronic or hard copy during the deposition. Is that fair?

A Sure. But I can use the ones I showed here?

Q You can use the ones in the hard copy that you have in front of you but just understand that what I mark in the ExhibitShare is going to be the official record of the deposition.

A Okay.

Q Okay. We're going to start with what I've marked as Exhibit 2, which is your second declaration, and I'd like you to turn to paragraph 7.

A So for this, just to make sure, I can utilize the hard copy I have, is that correct?

Q That's correct. There shouldn't be any discrepancy, but if there is, what's in the ExhibitShare will control.

A Okay. So I'm sorry. What page did you say?

Q Paragraph 7, page 3?

A I'm there.

Q In paragraph 7 you note that the Board construed the determining a viewing window limitation

of claim 1. Do you see that?

A Yes, I do.

Q And you agree with that construction?

A So the Board construed determining a viewing window for the visual content as a function of progress through the progress length as requiring determining a viewing window for different times of the video, and I agree with the Board's construction.

Q Now, Doctor, you also understand that the Board said in its reasoning that if a viewing window were determined only once and this single determination were applied to every frame of an entire video, this would not meet the claim limitation. Do you understand that?

MS. LI: Objection, form.

BY THE WITNESS:

A I would need to see exactly the Board's construction decision regarding that.

BY MR. SCHMIDT:

Q Did you read the Board's construction decision?

A I did look at it, yes.

Q And when you were applying the Board's construction did you account for the fact that the Board said that if a viewing window were determined

only once and the single determinations were applied to every frame of an entire video this would not meet the claim?

MS. LI: Same objection.

BY THE WITNESS:

A Yeah, I reviewed the Board's decision but I will need to look over it again to see exactly what the wording there is.

BY MR. SCHMIDT:

Q So you're not sure whether the Board said that a single measurement and correction would be inconsistent with the claim?

MS. LI: Objection, form.

BY THE WITNESS:

A As I mentioned, I looked at a lot of documents including the Board's decision and I'd like to just look at it now again to make sure what the exact wording is.

BY MR. SCHMIDT:

Q Well, this is my opportunity to get your testimony so let me understand whether you agree or disagree with the following: As a person of ordinary skill in the art familiar with this claim limitation do you agree that if a viewing window were determined only once and this single determinations were applied to

every frame of an entire video the claim limitation would not be satisfied.

MS. LI: Same objection.

BY THE WITNESS:

A Yeah, this is something I did not entertain in my supplemental declaration here so to give you an answer I'd have to see what the words are in the decision regarding this topic.

BY MR. SCHMIDT:

Q I'm not asking you anything about the Board's decision at this point. I want to know whether you agree or disagree as a person of ordinary skill in the art familiar with the claim limitation with the following: If a viewing window were determined only once and the single determination were applied to every frame of an entire video this would not meet the claim. Do you agree or disagree?

MS. LI: Objection, form.

BY THE WITNESS:

A Well, the way I read the Board decision here is that this construction is requiring determining a viewing window for different times of the video so this construction does not address one way or another what you are describing here.

BY MR. SCHMIDT:

Q So are you agreeing with what I described or disagreeing with it?

MS. LI: Same objection.

BY THE WITNESS:

A It's something that I didn't offer an opinion in my declaration.

BY MR. SCHMIDT:

Q Are you able to say sitting here today as a person of ordinary skill in the art whether or not the claim can be satisfied with a single determination of the viewing window that's applied to every frame of the video?

MS. LI: Objection, form.

BY THE WITNESS:

A As I already mentioned, I haven't considered this in my declaration and I just follow the construction here that the Board provided.

BY MR. SCHMIDT:

Q One more time so I have your testimony clear. As a person of ordinary skill in the art are you willing to testify sitting here today whether or not the claim can be satisfied with a single determination of the viewing window that's applied to every frame? Yes, no, or you can't say?

MS. LI: Objection, form.

BY THE WITNESS:

A Going with the Board construction all we need is to determine a viewing window for different times of the video. It does not, this construction, address your question and it's something I have not considered in my declaration.

BY MR. SCHMIDT:

Q Let's turn to the '832 patent which is Exhibit 1 to the deposition.

A Okay.

Q I would like to direct you to claim 1, please.

A Okay. I'm there.

Q Claim 1 appears in column 28 and at line 44 the determine a viewing window limitation appears. Do you see that?

A Yes, I do.

Q If you skip down to line 48, do you see where the claim reads (reading):

"The viewing window defining extents of the visual content to be included within horizon-leveled visual content" --

And it goes on from there. Do you see that?

A Yes, I do.

Q Now, Doctor, you agree that if a system is not configured to horizon level everything that is included within the viewing window that it would not meet this claim limitation, correct?

MS. LI: Objection, form.

BY THE WITNESS:

A What the limitation reads is that the viewing window defining extents of the visual content to be included within horizon-leveled visual content, so the viewing window is part of the horizon-leveled visual content. That's how the limitation reads.

BY MR. SCHMIDT:

Q But you agree, Doctor, that whatever appears within the viewing window at a particular moment in time has to be horizon-leveled, right?

MS. LI: Same objection.

BY THE WITNESS:

A Again, the viewing window is part of the horizon-leveled visual content is included within that so that's what the limitation reads here.

BY MR. SCHMIDT:

Q You said that the viewing window is part of the horizon-leveled visual content, correct?

MS. LI: Objection, form.

BY THE WITNESS:

A The limitation of viewing window to be included within horizon-leveled content so the horizon-leveled visual content includes the viewing window. It can be larger but it cannot be smaller, it has to include it.

BY MR. SCHMIDT:

Q Right. And just to clarify, the horizon-leveled visual content must include the visual content that is defined by the viewing window. Do you agree?

MS. LI: Same objection.

BY THE WITNESS:

A Yes. The viewing window is included within the horizon-leveled visual content.

BY MR. SCHMIDT:

Q And I presume you agree that if a system was not able to horizon-level all of the visual content in the viewing window then that system would not meet this claim limitation.

MS. LI: Objection, form.

BY THE WITNESS:

A Again, what I read in the claim is the viewing window and this becomes part of the horizon-leveled visual content is included in this.

BY MR. SCHMIDT:

Q And I think you said before it could include more but it can't include less, right?

MS. LI: Objection, form.

BY THE WITNESS:

A The idea of including is if A is included in B, yeah, it means that A needs to be found in B but B might be larger than A.

BY MR. SCHMIDT:

Q And if a system were configured in a way that did not allow the visual content defined by the viewing window to be horizon-leveled then that system configuration would not meet the claim limitation, agreed?

MS. LI: Objection, form.

BY THE WITNESS:

A I don't understand the hypothetical. It's not something that I considered as such. I'm just reading the limitation here that the viewing window is part of the horizon-leveled visual content, that's what the limitation requires.

BY MR. SCHMIDT:

Q It's a pretty simple question. If you had a system that cropped visual content and did not include everything that was in the viewing window in

the horizon-leveled visual content, then that system configuration would not meet the claim, right?

MS. LI: Same objection.

BY THE WITNESS:

A Yeah, I interpret the including, as I mentioned before, that again if A is included in B then A is found in B but B can be larger.

BY MR. SCHMIDT:

Q And you understand that the viewing window defines the visual content for horizon leveling over the course of the progress through the progress length, correct?

MS. LI: Objection, form.

BY THE WITNESS:

A The viewing window defining extents of the visual content to be included within horizontal-leveled visual content as the function of progress through the progress length. Yeah, that's what the limitation reads.

BY MR. SCHMIDT:

Q Let's turn back to your declaration and I want to direct you to paragraph 20.

A I'm there.

Q In paragraph 20 you write (reading):

"Importantly, to effectively

perform horizon leveling, a POSITA would understand that it makes sense to first perform horizon leveling and then add distortion to fix any imperfect horizon leveling."

Do you see that?

A Yes, I do.

Q And your opinion is that that's how a POSITA would have understood what makes sense as of the priority date of the '832 patent?

MS. LI: Objection, form.

BY THE WITNESS:

A Yes, as I explain in paragraph 20 (reading):

"A POSITA would understand it makes sense to first perform horizon leveling and then add distortion to fix any imperfect horizon leveling. This ensures more accurate control of the effect of distortion, i.e., to reduce the impact of the off-axis horizon in the imperfectly horizon-leveled image. It makes no sense to correct imperfect horizon leveling before horizon leveling is even performed. Doing so

may lead to under correction or over correction because the issue to be corrected has not even materialized."

BY MR. SCHMIDT:

Q And my question, Doctor, is this is how you believe a POSITA would have viewed things as of the time that the '832 patent was filed, correct?

MS. LI: Same objection.

BY THE WITNESS:

A I explained this is the reasonable steps to follow and a POSITA would understand that this is what makes sense to perform.

BY MR. SCHMIDT:

Q But I'm trying to understand the time frame. Is this how a POSITA would view things as of the priority date of the '832 patent or is this how a POSITA would view things at some other time?

A This is a logical sequence that can be followed at that priority date or before that and after that. It's just based on some very basic understanding of the process involved.

Q So this is your opinion about how a POSITA would have viewed things as of the time of the '832 priority date, do I understand that?

A This, again, being a reasonable approach

to effectively perform horizon leveling in this particular case that's how a POSITA would understand it at the priority date of the patent and, again, before that and after that.

Q And is it your opinion that it would not have made sense to a POSITA at the time of the '832 patent to use the existing distortion in an image frame to mask an imperfect horizon?

MS. LI: Objection, form.

BY THE WITNESS:

A The imperfect horizon is the result of the horizon-leveling and one wants to correct somehow the imperfection of the horizon-leveling process by adding distortion. The distortion masks this imperfect horizon-leveling. So without seeing the result of the horizon-leveling step it would be not accurate or effective to a distortion in the beginning and then horizon-level because the horizon-leveling process will alter the distortion as well.

BY MR. SCHMIDT:

Q Focus on my question, please. At the time of the '832 patent it is your opinion that it would not have made sense to a POSITA to use the existing distortion in an image frame to mask an imperfect horizon, correct?

MS. LI: Same objection.

BY THE WITNESS:

A As I explained and I explain in paragraph 20, in order to effectively perform this horizon-leveling and masking with distortion it would be preferable, it would be the steps to follow that I describe in paragraph 20.

BY MR. SCHMIDT:

Q And a POSITA as of the time of the '832 patent would have no motivation to use the existing distortion in an image frame to mask an imperfect horizon in your opinion, correct?

MS. LI: Objection, form.

BY THE WITNESS:

A The situation you're describing is not very detailed. Are you saying that when does the process of horizon-leveling take place, that's an important step here, so I outlined here the steps that make sense in 20 and I find a bit vague your question in that respect.

BY MR. SCHMIDT:

Q Let me try to ask it one more time to try to address the vagueness. Is it your opinion that a POSITA at the time of the '832 patent priority date would be unmotivated to use the existing distortion in

an image frame to mask an imperfect horizon-leveling?

MS. LI: Same objection.

BY THE WITNESS:

A If by what you mean in your question is that the existing distortion would be there while the horizon-leveling process is taking place, then as I already mentioned the horizon-leveling process will alter the distortion and it's not clear how much distortion you need to have in order to do this masking so the reasonable, again, path to do this effectively, that's with the margin here, is to follow the steps that are in paragraph 20 of my declaration and that's what a POSITA would think is the effective way to follow.

BY MR. SCHMIDT:

Q So there would be no motivation to use the distortion from the image preleveling to mask the imperfect horizon-leveling as of the time of the '832 patent. Agreed?

MS. LI: Objection, form.

BY THE WITNESS:

A My answer is that the POSITA would like to follow the most effective path. There are other alternative paths but when it comes to the most effective path this is the one I'm describing in

paragraph 20.

BY MR. SCHMIDT:

Q But in paragraph 20 you say it makes no sense to correct imperfect horizon-leveling before horizon-leveling is performed, right?

A Yes, I use this wording there to point to the fact that, as I explained there, that you change the distortion through the process of horizon-leveling and there is no knowledge of how much distortion is to be added to have the effect of masking the errors in the horizon-leveling and so on, so it's the reasonable thing to do what I'm describing here, the effective and looking for the most effective solution that's what the POSITA would follow.

Q And because it makes no sense to correct an imperfect horizon-leveling with the preleveling distortion, a person of ordinary skill in the art as of the time this patent was filed would have no motivation to pursue that approach. Do you agree?

MS. LI: Same objection, form.

BY THE WITNESS:

A I'm not saying it in my statement here, in my declaration, I'm not saying it does not make sense, I'm saying it makes sense, which is different. It's the reasonable thing to do. Again, there are always

alternative solutions in any solution but some are more effective making sense than others, that's the argument I'm making here, so this process I'm describing, that's the one that makes sense. I'm not saying that anything else doesn't make sense and so on.

BY MR. SCHMIDT:

Q That's exactly what you say in the second to last sentence of paragraph 20. You say it makes no sense to correct imperfect horizon-leveling before horizon-leveling is even performed, right?

MS. LI: Objection, form.

BY MR. SCHMIDT:

Q Those are the words you wrote in your declaration, right, Doctor?

A Yes, yes, I see that, but for the reasons I explained that before knowing what's the result of the horizon-leveling and, you know, we don't know how accurate it's going to be, we don't know how much of an imperfection is going to be there so without seeing this we don't know how much distortion to add, and on top of that as I also explained, the distortion is modified, is processed through the process of horizon-leveling.

Q Now, as of the time of the '832 patent a POSITA would not be motivated to pursue an approach

that makes no sense, right?

MS. LI: Objection, form.

BY THE WITNESS:

A In paragraph 20 I'm presenting this in the form of what's the reasonable path, what's the most effective path in doing horizon-leveling. If somebody wants to try something else, that's fine, but that will not be as effective as following the steps I'm outlining here.

BY MR. SCHMIDT:

Q But in your opinion, a person of ordinary skill in the art would not be motivated to pursue an approach that makes no sense. Can we agree on that?

MS. LI: Same objection.

BY THE WITNESS:

A I look at it in terms of what's a probable path to take. Again, I'm outlining something that it makes sense and the POSITA would want to do to follow the most effective path. If the POSITA wants to experiment with other paths that's, of course, fine as well.

BY MR. SCHMIDT:

Q Do you stand by the second to last sentence of paragraph 20 you write in your declaration or do you retract it?

A I stand by it.

Q Okay. Turn to claim 1 of the '832, patent, please.

A Okay.

Q Strike that.

Can you turn to claim 7. It appears in column 29.

A Okay.

Q Doctor, you understand that claim 7 requires the viewing window to change size as a function of progress through the progress length, correct?

MS. LI: Objection, form.

BY THE WITNESS:

A I read in claim 7 it says the determination of a view will further include the determination of a size of the viewing window as a function of progress through the progress length. It does not spell out whether this size has to change through the function of progress or it could be the same as long as it's determined.

BY MR. SCHMIDT:

Q But you agree that the system has to have the capability to change the size of the viewing window from frame-to-frame over the course of the progress

length, correct?

MS. LI: Same objection, form.

BY THE WITNESS:

A Again, the claim talks about determination of a size of the viewing window over time so it does not decide one way or another whether it has to change or whether it has to be constant. As long as the size is determined it could be the same, it could change in other words.

BY MR. SCHMIDT:

Q Do you agree that the claim requires the capability for changing the size of the viewing window as a function of progress through the progress length?

MS. LI: Same objection, form.

BY MR. SCHMIDT:

Q Let me withdraw the question and reask it more cleanly.

Doctor, do you agree that claim 7 of the '832 patent requires the capability for changing the size of the viewing window as a function of progress through the capture duration?

MS. LI: Same objection, form.

BY THE WITNESS:

A A system that does not change the size of over time of the viewing window would meet this

limitation. A system that changes the size of the viewing window over time would meet this limitation but I don't see a requirement by this claim that the size has to change.

BY MR. SCHMIDT:

Q That wasn't my question. My question is do you agree that claim 7 of the '832 patent requires the capability for changing the size of the viewing window as a function of progress through the progress length?

MS. LI: Same objection, form.

BY THE WITNESS:

A I don't see the requires part in the claim. It could change or it could be the same but the requires part I don't see it in the claim language.

BY MR. SCHMIDT:

Q I'm asking your understanding so you wouldn't see required in the claim language. My question is do you understand claim 7 to require the capability for changing the size of the viewing window as a function of progress through the progress length?

MS. LI: Same objection, form.

BY THE WITNESS:

A As I mentioned, the prior art that determines the size of the window to be the same over

time meets this limitation but I write that changes the size of the window over time also meets this limitation.

BY MR. SCHMIDT:

Q But the prior art has to make a determination at different moments of time. Do you agree with that?

MS. LI: Objection, form.

BY THE WITNESS:

A Yeah, if it includes the determination of a size. I see that in the claim language that determination of the size of the viewing window is part of the claim language.

BY MR. SCHMIDT:

Q And the prior art reference that only determined the size of the viewing window one time and then applied that one time size across all of the frames of the video would not meet claim 7, correct?

MS. LI: Same objection.

BY THE WITNESS:

A Determining that the size of the viewing window is the same over time meets this limitation.

BY MR. SCHMIDT:

Q My question was different. My question is if the prior art determined the size of the viewing

window only once and then applied that constant size across the entire video without any further determination, that would not meet this claim. Agreed?

MS. LI: Same objection.

BY THE WITNESS:

A Are you referring to a specific prior art? We need to look at that to be able to answer your question.

BY MR. SCHMIDT:

Q No. I'm asking about your understanding of the claim as a person of ordinary skill in the art who studied this patent and has applied this claim language to various references.

MS. LI: Same objection, form.

BY MR. SCHMIDT:

Q Do you have the question in mind, Doctor, or do you need me to reask?

A Can you please reask it.

Q If the prior art determined the size of the viewing window only once and then applied that constant size across the entire video, that would not meet the requirements of claim 7, correct?

MS. LI: Same objection, form.

BY THE WITNESS:

A Well, it certainly says determine the size

of the viewing window is a function of progress so saying that the size of the viewing window is the same at time T1, time T2, time T3 meets the limitation.

BY MR. SCHMIDT:

Q But in the example you just described for me, there is a determination at each one of those times, T1, T2, T3, correct?

MS. LI: Objection, form.

BY THE WITNESS:

A The determination can be that the size applies to all times. That's a determination as well.

BY MR. SCHMIDT:

Q Sure. So getting back to my question, a reference that only determined the size of the viewing window one time and applied that size across all frames of the video would not meet what the claim requires. Agreed?

MS. LI: Same objection, form.

BY THE WITNESS:

A Again, we have to look at the specifics of the prior art you're hypothesizing here but prior art that would say here is the size of the window and this size applies at all times would meet the limitation because I determined the same size at each time instance.

BY MR. SCHMIDT:

Q So your opinion is that a piece of prior art that determined the size of the viewing window and then applied that constant size across the entire video would meet claim 7?

MS. LI: Again, same objection, form.

BY THE WITNESS:

A Well, the determination part is that the size applies to all times so this is the determination of the size of the window so if there's a statement like this that here is the size that I determined that applies at all times it seems to satisfy the limitation.

BY MR. SCHMIDT:

Q Now, in the situation where the viewing window does change size as a function of progress through the progress length, is it your opinion that the changing in size simulates zoom for the resulting content?

MS. LI: Objection, form.

BY THE WITNESS:

A So you're referring to another claim now?

BY MR. SCHMIDT:

Q No, I'm referring to a hypothetical. The hypothetical is a piece of prior art that does change

size of the viewing window as a function of progress through the progress length, my question is is it your opinion in that hypothetical the changing in size of the viewing window is simulating a zoom for the resulting content?

MS. LI: Same objection, form.

BY THE WITNESS:

A There's a claim that addresses what you are asking me in this hypothetical. That's claim 8.

BY MR. SCHMIDT:

Q Are you able to answer the question?

A Are you asking me to address claim 8 now?

Q No. I'm asking you if you were confronted with a prior art reference that had the ability to change size of the viewing window as a function of progress through the progress length, would it be your opinion that the mere changing of the size of the viewing window results in a simulated zoom?

MS. LI: Same objection, form.

BY THE WITNESS:

A Your question is a bit abstract for me and hypothetical. To be able to answer it I would like to see the claim language of the patent to see to give you an answer.

BY MR. SCHMIDT:

Q Let me try to ask it more clearly. Is it your opinion that the mere changing of size of the viewing window simulates changes in zoom?

MS. LI: Same objection, form.

BY THE WITNESS:

A My answer is I have not considered this in the abstract. I have considered the zoom simulation process in terms of the claims in the '832 patent so if we want to refer to specific claims I will be able to answer your question.

BY MR. SCHMIDT:

Q Do you see claim 8 recites simulate changes in zoom for the visual content?

A Yes, I do.

Q What does it mean to simulate changes in zoom for the visual content?

MS. LI: Objection, form.

BY THE WITNESS:

A Well, the word simulate means to do or make something that looks real but is not real and in the specification the word is used to refer to the concept that zoom is not achieved by receiving a user input, like using a zoom button or dial to change the zoom levels or change the position of the lens but instead is achieved automatically due to the rotation

of the camera.
BY MR. SCHMIDT:
Q So in your opinion any rotation of the camera is going to result in a simulated change in zoom for the visual content?
MS. LI: Objection, form.
BY THE WITNESS:
A Claim 8 is not met by simply changing the size of the viewing window.
BY MR. SCHMIDT:
Q What additionally has to be present beyond changing the size of the viewing window for claim 8 to be met?
MS. LI: Objection, form.
BY THE WITNESS:
A For example, the viewing window can be resized and therefore making objects look smaller or larger by simulating the effect of the Zoom.
BY MR. SCHMIDT:
Q But you just said in your prior response that claim 8 is not met by simply changing the size of the viewing window, right?
A I don't refer to changing the size of the viewing window, I'm referring to there is something, up something or down something the content of the -- the

visual content of the viewing window.

Q Let me ask a clear question so I can understand your testimony.

Do you agree that claim 8 is not met by simply changing the size of the viewing window?

MS. LI: Objection, form.

BY THE WITNESS:

A By simply changing the size of the viewing window over time may not simulate the zoom effect but by adding an additional step of resizing the viewing window can simulate the zoom effect.

BY MR. SCHMIDT:

Q Do you have the '832 patent in front of you?

A Yes, I do.

Q Can you turn to column 18, please.

A Okay.

Q I want to direct your attention to line 33, column 18. Column 18, line 33, the first full sentence reads (reading):

"Using the zoom values of the zoom curve may result in pronounced (e.g rapid, jittery) changes in zoom/viewing window size within the horizon-leveled visual content."

Do you see that?

A Yes, I do.

Q Do you understand the problem that's being described here?

MS. LI: Objection, form.

BY THE WITNESS:

A So this is a reference to Figure 6A, B, C, so using the zoom values of the zoom curve will result in pronounced changes in zoom/viewing window size within the horizon-leveled visual content. So it's dressing large rapid jittery changes in the zoom/viewing window size.

BY MR. SCHMIDT:

Q And the patent states that rapid changes in the zoom viewing window size will result in rapid and jittery changes in the appearance of the horizon-leveled visual content. Agreed?

MS. LI: Objection, form.

BY THE WITNESS:

A So pronounced changes in zoom/viewing window size, yeah, I read this sentence here.

BY MR. SCHMIDT:

Q Let me ask the question again so I have your clear testimony.

What the patent is identifying here is

a problem with rapid changes in viewing window size which results in a jittery appearance of the horizon-leveled visual content, correct?

MS. LI: Same objection.

BY THE WITNESS:

A The patent here gives an example of some things that might happen. I mean, whether it's a problem is or is not it makes a statement that, yeah, if the changes in zoom are fast, rapid, then yeah, you have rapid changes of the viewing window. It's one statement, it doesn't necessarily say it's a problem. It's one observation, a kind of semi-obvious observation, I guess.

BY MR. SCHMIDT:

Q Was this recognized as a problem in the art at the time the '832 patent was filed?

MS. LI: Same objection.

BY THE WITNESS:

A Well, it depends on the application that a camera is used and then these are qualitative statements what is rapid, what is not rapid, and for some applications it might be acceptable, some others not, it's a qualitative statement, but also we have to look at what the '832 patent is teaching. It's teaching horizon-leveling and we have to look at the

claims to see if the claims require any -- there's language to address this issue and required of something to be done about this.

So I treat this as, again, a straightforward observation that if you have fast changes of the zoom factor it gives you this rapid changes in the size of the viewing window. Now, whether this is acceptable in a specific application or objectionable is a function also of how fast something changes.

BY MR. SCHMIDT:

Q Let me ask -- were you done with your answer?

A Yes.

Q Have you heard the term pumping in this context?

A I'm not sure.

Q You're not familiar with GoPro referring to this phenomena as a pumping effect?

MS. LI: Objection, form.

BY THE WITNESS:

A I might have seen it in some of the documents. I don't recall the definition right now.

BY MR. SCHMIDT:

Q In your opinion as a person of ordinary

skill in the art at the time this patent was filed was the pumping effect a recognized problem in the field?

MS. LI: Objection, form.

BY THE WITNESS:

A Can you share the definition of pumping?

BY MR. SCHMIDT:

Q The definition of pumping you can assume is at column 18 lines 33 through 34 which we've been discussing.

With that definition, as a person of ordinary skill in the art at the time this patent was filed was the pumping effect a recognized problem in the field?

MS. LI: Same objection, form.

BY THE WITNESS:

A And my answer has been as to whether there's a problem or not depends on quantifying this element. This is a very qualitative statement here that just states some, again, it's a straightforward I would say statement but, more importantly, I just give me opinion about this litigation based on what the claims are described in the patent claims so if there's a claim that talks about pumping we can address that.

MS. LI: Counsel, can we take a quick break? We've been going for over an hour now.

MR. SCHMIDT: Yeah, let me finish this line of questioning and then we'll take a break.

BY MR. SCHMIDT:

Q Are you able to say whether or not the pumping phenomena was a recognized problem in the field at the time the '832 patent was filed?

MS. LI: Same objection, form.

BY THE WITNESS:

A This is not a question I addressed in my declaration. It was not part of any of the claims that I analyzed in the '832 patent and I haven't expressed an opinion regarding that.

MR. SCHMIDT: Okay. Let's take a break.

(Brief recess taken)

BY MR. SCHMIDT:

Q Welcome back, Doctor.

A Thank you.

Q Did you have any conversations with anybody during the break?

A No.

MR. SCHMIDT: I want to now turn to the Voss reference and during the break I put that in the ExhibitShare so can you refresh your browser, please.

(Exhibit 3 marked for identification.)

THE WITNESS: I see Voss.

BY MR. SCHMIDT:

Q Can you confirm for me that what I've entered as Exhibit 3 is a true and accurate version of the Voss reference that you analyzed as part of your opinions?

A Yes, this seems to be the case.

Q And if you want to refer to your declaration, you describe the operation of the Voss reference at paragraph 85 in the context of Figure 2. Do you see that?

A I'm sorry. You said which paragraph?

Q 85.

A Yes, I'm there.

Q And do you see Figure 2 right above paragraph 85?

A Yes, I do.

Q Doctor, do you have an understanding of how what's shown in Figure 2 results in the what you say is the horizon-leveled visual content of Voss?

MS. LI: Objection, form.

BY THE WITNESS:

A So in describing Figure 2 Voss states that this inset rectangle 225 that is in blue there is transformed to compensate for rotation in the 220, 230, 240 frames by essentially rotating in the inverse of

the device's own rotation.

BY MR. SCHMIDT:

Q And do you see the pictures of the inset rectangle that you've shaded in blue in Figure 2 above paragraph 85?

A Yes, I see the figure.

Q That inset rectangle is not rotating at all as the device rotates, right?

MS. LI: Objection, form.

BY THE WITNESS:

A So the inset rectangle is rotating in the inverse of the device's own rotation so if the device rotates to the left or counterclockwise, this rotates clockwise and so on.

BY MR. SCHMIDT:

Q But that's not what Figure 2 is showing, is it, Doctor?

MS. LI: Objection, form.

BY THE WITNESS:

A I don't understand the question. I described what I see in Figure 2 that in 220 we see the device has turned something like 15 degrees counterclockwise to the vertical there and this blue rectangle that rotated -15 degrees the other direction to be leveled as we see there.

BY MR. SCHMIDT:

Q Let me ask you this. Comparing what you see in 220 to 230, can you agree that the device has rotated by a greater angle in 230 than it's rotated in 220?

A That's correct.

Q But the inset rectangle has not changed in rotation between 220 and 230, correct?

MS. LI: Objection, form.

BY THE WITNESS:

A The inset rectangle has counter rotated by the same amount so it rotated in the inverse of the device's own rotation.

BY MR. SCHMIDT:

Q You're going to have to help me out with that because when I look at 220 to 230 I see a blue rectangle in exactly same orientation so tell me what I'm missing, Doctor.

MS. LI: Same objection.

BY THE WITNESS:

A You can think of the blue rectangle rotating with the camera and then we counter rotate to bring it to the rotation that is shown there.

BY MR. SCHMIDT:

Q So your testimony is the way that Voss

works is that when the device rotates from 220 to 230 the blue rectangle rotates with the device and then rotates back to the orientation that's shown in the figure, that's your testimony?

MS. LI: Objection, form.

BY THE WITNESS:

A So what we see in Figure 2 is that the device rotates, we have three depictions there, three different angles, and this inset blue rectangle is, as I mentioned, rotating and rotating back is just in the form of understanding this, but this rectangle is the maximally inscribed rectangle inside the red rectangle but here again rotated in the inverse of the device's own rotation.

BY MR. SCHMIDT:

Q But as the device rotates from 220 to 230 to 240, the blue rectangle doesn't rotate at all, isn't that right, Doctor?

MS. LI: Objection, form.

BY THE WITNESS:

A The blue rectangle we have rotated it back so that it's in that position. It's like you can visualize it as a rectangle that turned with the camera and now we turn this back to the vertical position of the camera.

BY MR. SCHMIDT:

Q I'm still not sure I understand. How does the inset rectangle rotate in the inverse of the device's own rotation between picture 220 and 230 in Figure 2?

MS. LI: Same objection, form.

BY THE WITNESS:

A We could have drawn this blue rectangle in the 210 picture, right, we draw a rectangle there and you can visualize that the rectangle turns with the camera in 220 but then we turn it back so that it's in the position it is right now and again it maximally fits into the red rectangle there.

BY MR. SCHMIDT:

Q What is this intervening step of rotating back to the original rotation? Where do you see that described in Voss or in the figures?

MS. LI: Objection, form.

BY THE WITNESS:

A Well, in paragraph 85 in my declaration I read there from Voss that part that the inset rectangle 225 is transformed to compensate for rotation by essentially rotating in the inverse of the device's own rotation.

BY MR. SCHMIDT:

Q But we don't see that in Figure 2 and you say that's because the rectangle is rotated back to the original orientation. Do I have that right?

A Figure 2 is in the final position after rotating in the inverse of the device's own rotation.

Q So where do you see in Voss a description of the blue rectangle being rotated back after what's described by you in paragraph 85?

MS. LI: Objection, form.

BY THE WITNESS:

A It's easy to may or may not be a schematic, I have to look at Voss displaying this, but it's described so one can visualize that this blue rectangle turns with the camera and then we turn it back to the position we see here in Figure 2.

BY MR. SCHMIDT:

Q And in Figure 2 what are the extents defined by the viewing window in your opinion?

MS. LI: Objection, form.

BY THE WITNESS:

A Can you repeat your question, please.

BY MR. SCHMIDT:

Q What are the extents defined by the viewing window in Figure 2 of Voss?

MS. LI: Objection, form.

BY MR. SCHMIDT:

Q Let me withdraw, let me ask a clear question.

What are the extents of the visual content defined by the viewing window in Figure 2 of Voss?

A So as I state in paragraph 94 of my declaration, Voss states that the transformed inner rectangle to 25 is inscribed optimally inside the maximum available bounds of the overall sensor minus the padding.

Q So are you saying the extents of the visual content defined by the viewing window in Figure 2 is the region of the blue shaded box?

A I just described how the blue box, the size of the blue box is determined as a function of the rotation that the camera is undergoing is the maximum available bounds of the overall sensor and as it is clear from the drawings it's the maximum rectangle that can fit inside the red rectangle.

Q But you understand that the extents of the visual content defined by the viewing window is part of the claim language of the '832 patent, correct?

A Which claim are you --

Q Claim 1.

MS. LI: Objection, form.

BY MR. SCHMIDT:

Q We talked about this earlier, Doctor. The claim 1 reads the viewing window defining extents of the visual content to be included within horizon-leveled visual content. You remember that, right?

A Yes, I do.

Q And you opined in this matter that Voss satisfies claim 1, correct?

A You pointed me to a specific paragraph in my declaration. I'm trying to see what is there, what we're discussing there. Again, can you repeat your question, please.

Q Is it your opinion that Voss satisfies claim 1 of the '832 patent?

A Well, in my declaration with ground 3 is that claim 1 is obvious over Voss and Derbanne.

Q So do I understand from that testimony you do not believe Voss satisfies claim 1 of the '832 patent?

MS. LI: Objection, form.

BY THE WITNESS:

A My reply was that in this ground the combination of Voss and Derbanne satisfies claim 1. So

we have to go through all the limitations to see where we might need Derbanne.

BY MR. SCHMIDT:

Q Very clear question, Doctor. In your opinion does Voss satisfy claim 1 of the '832 patent? Yes, no, or can you not say?

MS. LI: Same objection, form.

BY THE WITNESS:

A What I have in my declaration is combination of Voss and Derbanne satisfy claim 1 and we would need to look into each and every limitation to see where Derbanne may or may not be needed.

BY MR. SCHMIDT:

Q Let me make sure I understand your opinion. What in your mind is Voss missing with respect to claim 1 of the '832 patent?

MS. LI: Objection, form.

BY THE WITNESS:

A As described in paragraph 92 of my declaration (reading):

> "The proposed combination draws from Derbanne's disclosure on how a viewing window is used to generate content. Specifically, the proposed combination involves punching out (as

taught by Derbanne) the visual content defined by Voss' inset rectangle and generating visual content accordingly. Because Voss and Derbanne are both related to rotating visual content in video data to compensate for motion of the image capture device, a POSITA would be motivated to look to Derbanne to incorporate teachings related to the mechanism of punchout and content generation for generating horizon-leveled content in Voss."

BY MR. SCHMIDT:

Q So in your opinion, Voss by itself does not disclose the determination of a window based on rotation of the image capture device and a punch out of the content from that window?

MS. LI: Objection, form.

BY THE WITNESS:

A Yeah, I have to look at my initial declaration but here is just some of the reasons for this combination to further strengthen the teachings that relate to the mechanism of punch out and content generation for generating horizon-leveled content in Voss.

BY MR. SCHMIDT:

Q I need to know, Doctor, what reference you're relying on for what parts of the claim, so can you clearly articulate for me what you're relying on Voss for and what you're relying on Derbanne for?

MS. LI: Same objection, form.

BY THE WITNESS:

A I need to go to my original declaration to be able to answer your question.

BY MR. SCHMIDT:

Q You have your original declaration in front of you, correct, sir?

A I do.

Q Take the time you need because I would like to understand what reference you're relying on for what parts of the claim with respect to this combination.

A It's a long process but it's all spelled out in my initial declaration so I'm looking at different limitations there and where the combination is utilized to strengthen the arguments here so there are multiple paragraphs in my initial declaration that address the Voss Derbanne combination.

Q Now, that you've had the opportunity to review your original declaration, is it your opinion,

sir, that there is anything missing from Voss with respect to the '832 patent claim 1?

MS. LI: Objection, form.

BY THE WITNESS:

A I have not really reviewed the declaration. It's 30 pages, 30-plus pages cover claim 1 so I need to read all of this 30-plus pages to be able to answer your question.

BY MR. SCHMIDT:

Q read the whole thing if you have to but I need to understand -- you've said that this claim is invalid and I need to understand whether or not you think everything in the claim is in Voss or whether you think something is missing. Can you answer that question?

MS. LI: Same objection.

BY THE WITNESS:

A It will take me about an hour to read 30 pages. I'm a slow reader.

BY MR. SCHMIDT:

Q How long will it take you?

A One hour.

Q Okay. Go ahead. Do you want to go off the record?

MS. LI: Why are we going off the record?

MR. SCHMIDT: We'll stay on the record, Lily. That's fine.

MS. LI: If that's what you want, Counsel, then let's stay on the record.

MR. SCHMIDT: Sure.

BY MR. SCHMIDT:

Q And the question, Doctor, which we'll wait one hour for an answer for is can you tell me whether it's your opinion that Voss discloses everything in claim 1 or is there something missing, and if something is missing what is it. I'll wait one hour for my answer.

MS. LI: Same objection, form.

THE WITNESS: So I'll start reading, right?

MR. SCHMIDT: Yeah. Tell me when you're ready.

THE WITNESS: Okay. Yeah, about an hour I'll be ready.

(Witness reading as indicated)

BY THE WITNESS:

A I had a quick look here, I didn't read absolutely everything, but there are multiple places in my initial declaration for which the Voss Derbanne combination is used and it's not that something is missing necessarily from Voss but the combination makes the disclosure stronger. We use some of Derbanne's

teachings of how to capture, store, and maintain this data, so it is not that something is necessarily missing from Voss but is to just further strengthen some of the arguments we're making.

BY MR. SCHMIDT:

Q So your opinion is that everything in claim 1 is disclosed in Voss?

A My opinion is that the Voss Derbanne combination is used in my declarations in showing that the combination discloses everything in claim 1.

Q Doctor, is it your opinion that everything in claim 1 is disclosed by Voss?

A As I mentioned that arguments are being strengthened by the combination but I cannot point to something that is completely missing from Voss.

Q Doctor, is it your opinion that everything in claim 1 is disclosed by Voss?

MS. LI: Objection, form.

BY THE WITNESS:

A I answered the question as best as I could that we utilize, I utilize in my declaration the combination in showing that the combination discloses everything in claim 1.

BY MR. SCHMIDT:

Q One more time, very clear question, and if

you don't answer I'm going to tell the Board you refused to answer.

Is it your opinion that everything in claim 1 is disclosed in Voss? Yes, no, or can you not say?

MS. LI: Objection, argumentative.

BY THE WITNESS:

A I can go over all of the arguments that I'm making here in my initial declaration why the combination is needed and these arguments, again, are to strengthen the disclosures of Voss.

BY MR. SCHMIDT:

Q But in your expert opinion everything you need for claim 1 is already present in Voss. Fair?

MS. LI: Same objection.

BY THE WITNESS:

A As I mentioned with an example, just an example not like in limitation one 1(b)3 would utilize the Voss Derbanne combination to obtain a system that better describes how the data, the capture data, the rotational position information is captured, stored, and maintained, so Derbanne is more explicit regarding this term so that's the reason the combination is used to strengthen some of the arguments we're making based on Voss.

BY MR. SCHMIDT:

Q So if I understand your testimony, Derbanne discloses it a little bit more clearly but a POSITA would already recognize everything they needed to know for limitation! 1(b)3 in Voss, correct?

MS. LI: Objection, form.

BY THE WITNESS:

A With respect to 1(b)3 Voss discloses the limitation but the Derbanne combination provides additional information as an example, that's just an example I gave of how to, again, store and -- capture, store, and maintain this data for the video and rotation information.

BY MR. SCHMIDT:

Q And is it safe for me to assume that your testimony would be the same for every limitation of all of the claims in your declaration, that is, that Derbanne may provide a stronger disclosure but everything you need to understand the claim limitations is already in Voss. Is that fair for me to infer from your testimony?

MS. LI: Objection, form.

BY THE WITNESS:

A Yeah, I don't want to just give a one sentence answer of 30-plus pages here of the

description of how Voss and Derbanne are utilized but, yeah, my answer is that their combination strengthens the arguments that have to do with Voss and Derbanne disclosed claim 1.

BY MR. SCHMIDT:

Q And in your opinion Voss discloses everything a POSITA would need to know about claim 7 and 8 as well?

MS. LI: Objection, form.

BY THE WITNESS:

A The answer is the same as before but Voss and Derbanne are used in a combination to strengthen the disclosures of Voss, the teachings of Voss, it's not that something specifically is missing in Voss.

MR. SCHMIDT: Understood. Since you've been referring to your initial declaration I marked it as an exhibit to this deposition. Can you just refresh your ExhibitShare and confirm for me that what I've marked as Exhibit 4 is the original declaration you submitted in this proceeding.

(Exhibit 4 marked for identification.)

BY THE WITNESS:

A Yeah, I see my signature page and the cover page seems to be my original declaration.

BY MR. SCHMIDT:

Q Good. So we have a good record.

Can you turn to paragraph 86 of your second declaration.

A Yes, I'm there.

Q In paragraph 86 in the third sentence you say (reading):

"Voss does not require the inset rectangle to change aspect ratios."

Do you see that?

A Yes, I do.

Q So you agree that the inset rectangle which you claim is the viewing window of claim 1 does not change aspect ratios in Voss?

MS. LI: Objection, form. Are we looking at the original or supplemental?

BY THE WITNESS:

A I'm sorry. Which of the two figures you're looking at?

BY MR. SCHMIDT:

Q My question was with respect to the third sentence in paragraph 86. You write (reading):

"Voss does not require the inset rectangle to change aspect ratios."

Do you see that?

A Yes, I do.

Q Is it your opinion that the inset rectangle in Voss does not change aspect ratio as the device rotates?

MS. LI: Objection, form.

BY THE WITNESS:

A This is one example here Figure 2 of the teachings of Voss so in this example the blue inset rectangle, it's more like a square looking, rectangle it seems that the aspect ratio is fixed but in another example, another discussion, Voss discusses changing of the aspect ratios.

BY MR. SCHMIDT:

Q So in your opinion Voss is disclosing alternative embodiments?

MS. LI: Objection, form.

BY THE WITNESS:

A As I state in 86, in paragraph 86 (reading):

> "Voss' discussion of aspect ratios is also not with reference to the inset rectangle in Figure 2. Instead, it is provided in a separate paragraph and belongs to a separate example."

So if we look at Voss there at 10:13 we can look at that.

BY MR. SCHMIDT:

Q My question for you, Doctor, is is it your opinion that's what's shown in Figure 2 of Voss, is that a different embodiment from what's described at page 10, line 13?

MS. LI: Objection, form.

BY THE WITNESS:

A Can I look at Voss?

Q Sure. For the record, Voss is marked as Exhibit 3 to the deposition.

A Yeah, in paragraph 10:13 Voss describes the situation where for portrait orientation the aspect ratio is 1:1 while the optimal aspect ratio selected for landscape orientation was wide, 16:9, and therefore the inscribed rectangle would interpolate optimally between 1:1 and 16:9 as it is rotated from one orientation to another.

Q Just so I understand, you interpret that as a separate embodiment from what's shown in Figure 2?

MS. LI: Objection, form.

BY THE WITNESS:

A Figure 2 is one example of what Voss teaches and another example is just the one I read there where the aspect ratio is different in the vertical and horizon and in between this interpolated

version of the aspect ratio.

BY MR. SCHMIDT:

Q Which embodiment of Voss are you relying on for your invalidity opinions in this matter?

MS. LI: Objection, form.

BY THE WITNESS:

A Both embodiments are relevant for invalidity. If a change in aspect ratio is required, that's disclosed by Voss. If the aspect ratio being fixed is required, that's also disclosed by Voss.

BY MR. SCHMIDT:

Q But just to be clear, you're relying on both embodiments for purposes of your invalidity opinion about with respect to Voss?

MS. LI: Objection, form.

BY THE WITNESS:

A We have to look at all of the limitations to see what different embodiments might be needed.

BY MR. SCHMIDT:

Q Are you able to tell me without taking an hour to read your declaration whether or not you're relying on both embodiments or whether you're relying on one particular embodiment with respect to Voss?

MS. LI: Objection, argumentative.

BY THE WITNESS:

A Well, the embodiments are there and if both are needed they can be made useful or if only one is needed but Voss discloses fixed aspect ratio as well as change in aspect ratio of the viewing window.

BY MR. SCHMIDT:

Q And that's the methodology you applied in forming your opinions in this matter?

A What methodology --

MS. LI: Objection, form.

BY THE WITNESS:

A What methodology are you referring to?

BY MR. SCHMIDT:

Q The methodology that you could pick between different embodiments in formulating an invalidity opinion with respect to a reference.

MS. LI: Objection, form.

BY THE WITNESS:

A I don't disclose any methodology I follow or not, it's just pointing to the fact that both embodiments are disclosed by Voss.

BY MR. SCHMIDT:

Q Let me ask you this. Do you believe a changing aspect ratio is necessary by the asserted claims of the '832 patent?

MS. LI: Objection, form.

BY THE WITNESS:

A Can you point which specific claims?

BY MR. SCHMIDT:

Q Let's take claim 7, for example. Do you think claim 7 requires a change in aspect ratio or the capability to change aspect ratio of the viewing window?

MS. LI: Same objection.

BY THE WITNESS:

A Claim 7 requires that determination of a viewing window further includes determination of the size of the viewing window and continues, so looking at Figure 2 in Voss that we were looking earlier, the size of the viewing window changes in this example between 225, 230, 240, although the aspect ratio remains the same so without changing the aspect ratio the Voss seems to meet this limitation because it decides changes.

BY MR. SCHMIDT:

Q Let me ask you a clarifying question. Your opinion that Voss discloses changing the size of the viewing window is based on the figures that you see in Figure 2?

MS. LI: Objection, form.

BY THE WITNESS:

A Yeah, this one embodiment of Voss and as I mentioned earlier the size of the viewing window is determined as to being the maximally inscribed blue rectangle inside the red rectangle.

Q Do you want to take a break or are you okay to keep going?

A I would like a break but are we going to have also lunch break at some point?

Q If you want to take a lunch break we could take a lunch break or we can take a short break and do lunch the next session. Tell me what you want to do.

A Okay. It's almost 1 o'clock here so taking a lunch break would be fine for me.

Q How long do you need?

A 20 minutes.

MR. SCHMIDT: That's fine.

MS. LI: You can have 30 minutes for lunch.

THE WITNESS: Okay. Is 30 minutes okay?

MR. SCHMIDT: That's fine.

THE WITNESS: Be back in 30 minutes then.

(Lunch recess taken)

BY MR. SCHMIDT:

Q Welcome back, Doctor. During the lunch break did you have any conversations with anyone?

A No.

Q As a person of ordinary skill in the art in the field do you agree that there's a difference between electronic image stabilization and horizon-leveling?

MS. LI: Objection, form.

BY THE WITNESS:

A We would need to look at the specific way the terms are utilized in prior art but I would say that in general both video stabilization and horizon-leveling they try to correct for what is introduced by the motion of the camera and correct the effects of the motion so they share the same source of the problem and the approaches by and large for image stabilization and horizon-leveling are very similar approaches and video stabilization might include horizon-leveling as part of the stabilization process.

BY MR. SCHMIDT:

Q Would you agree that in a stabilization approach the considerations involved in correcting motion are different than the considerations involved for horizon-leveling. Is that fair?

MS. LI: Same objection, form.

BY THE WITNESS:

A As I mentioned, the same source of the problem you might say and the same approaches in

addressing them which is to kind of undoing the effects of the motion and as you already mentioned horizon-leveling might be taking place in video stabilization.

BY MR. SCHMIDT:

Q That wasn't my question. My question was would you agree that there are different considerations between the two approaches with respect to how motion is corrected?

MS. LI: Same objection.

BY THE WITNESS:

A As I mentioned, the source of the problem is the same but the solution approach as Dr. Foroosh also agreed were compensating translations and rotations so it's the same approaches we use for both of these objectives.

BY MR. SCHMIDT:

Q So in your expert opinion there are no differences in the considerations for correcting motion. Is that what you're saying?

MS. LI: Objection, form.

BY MR. SCHMIDT:

Q I'm just trying to understand if you agree that there are differences in the considerations, Doctor. Can you answer that question?

MS. LI: Same objection.

BY THE WITNESS:

A I didn't state it that way. I stated that the source of the problem you might say is the same and then the approaches we're using for addressing these are the same.

BY MR. SCHMIDT:

Q But, Doctor, wouldn't you agree that in a horizon-leveling system you're correcting motion using different criteria than that applied for an image stabilization approach. Wouldn't you agree with that?

MS. LI: Same objection, form.

BY THE WITNESS:

A In both cases you are compensating for motion of the image capture device so both approaches share this same foundation and this compensation is done through undoing translations, rotations, and so on, so there's considerably more similarity than differences between the two approaches and more than that there is overlap in the sense that by doing stabilization I may be doing also horizon-leveling.

BY MR. SCHMIDT:

Q What are the differences between the two approaches?

MS. LI: Objection, form.

BY THE WITNESS:

A They're both compensating for the motion of the image capture device. In one case it's just I want to do horizon-leveling, in the other case I want to have a more smooth trajectory of the motion by again compensating for some of the motion of the imagine capture device.

BY MR. SCHMIDT:

Q In an image stabilization approach the horizon won't necessarily stay level, agreed?

MS. LI: Objection, form.

BY THE WITNESS:

A I would have to look at the particular way that image stabilization is done and horizon-leveling is done and so on but by and large I want to compensate for this motion of the capture device and if this results in tilting the horizon then stabilization will also perform horizon-leveling.

BY MR. SCHMIDT:

Q Your testimony is that in a pure image stabilization approach the horizon will be leveled?

MS. LI: Objection, form.

BY THE WITNESS:

A I said that it may be leveled. Horizon-leveling may be taking place through image

stabilization.

BY MR. SCHMIDT:

Q Incidentally, right? In general an image stabilization approach is going to let the horizon change in a smooth way. Would you agree with that?

MS. LI: Objection, form.

BY THE WITNESS:

A We have to see how image stabilization is defined and the differences or how exactly it's implemented but the main point is that although the objective, overall objective might differ at some level and resolving the same type of problem caused again by the motion of the image capture device using the same tools which is compensating for translation and rotation so the fact that in one case one might be more interested in a level horizon, the other case might be more interested in the smooth trajectory, it becomes a very secondary aspect of the whole program.

BY MR. SCHMIDT:

Q But if you're, for example, determining a viewing window, the viewing window would be determined differently if you're looking to level the horizon as opposed to smooth the trajectory, correct?

MS. LI: Objection, form.

BY THE WITNESS:

A The step is of determining the viewing window by taking the rotation in general of the camera into account so that step is identical and, again, the difference is considerably secondary when the objective is a level horizon and you put that on top, in the other case you put a smooth trajectory on top and a level horizon might be happening as well, but it's the same type of problem and approach one follows.

BY MR. SCHMIDT:

Q Focus on my question, please. The question is if you determine a viewing window in a pure stabilization system, that viewing window is not going to be the same as a viewing window that you determine in a pure horizon-leveling system for the same video, correct?

MS. LI: Same objection, form.

BY THE WITNESS:

A It may or may not be the same but I'm using the same tools, the same approach in addressing these two problems.

BY MR. SCHMIDT:

Q But the viewing window might potentially be different, fair?

A Might be different, yes, or maybe the same, yeah.

(Exhibit 5 marked for identification.)

BY MR. SCHMIDT:

Q During the break I marked the next exhibit which is Exhibit 5 to the deposition. It's Exhibit 1004 the Thomason reference. Can you just open that up in the ExhibitShare and confirm for me that Exhibit 5 is the Thomason reference that you analyzed in this case.

A Yes, it is.

Q And I believe you analyzed Thomason at page 23 of your second declaration, Exhibit 2. You can refer to that if you need to. I'm sorry. I think I had the wrong citations. Let me correct what I said.

I believe you analyzed the Thomason reference beginning at page 15 of your second declaration so you could refer to that if you need to. Do you see on page 15 of your second declaration in the heading you write the Thomason-Pacurariu system teaches horizon-leveling multiple frames in a video. Do you see that?

A I do.

Q Similar question to what we talked about before, is it your opinion that Thomason alone discloses horizon-leveling multiple frames in a video?

A So as I describe in paragraph 37, 38, 39,

40, it stops there, but Thomason teaches horizon-leveling multiple frames in a video.

Q And your theory is that horizon-leveling multiple frames in a video is disclosed by Thomason alone, correct?

MS. LI: Objection, form.

BY THE WITNESS:

A Thomason discloses horizon-leveling multiple frames in a video.

BY MR. SCHMIDT:

Q And in your opinion there's no reason for a person of ordinary skill in the art to have to turn to Pacurariu to surmise that feature?

MS. LI: Objection, form.

BY THE WITNESS:

A As I explain in later paragraphs there are elements of Pacurariu so, for example, in paragraph 57 I state there that (reading):

> "In other words, to the extent Thomason does not explicitly teach storing frame-specific rotation data as metadata and when to retrieve it in the frame-by-frame analysis, Pacurariu teaches that rotational data can be saved for each individual video frame

as metadata and retrieved in an iterative, frame-by-frame analysis as shown in Figure 7."

So this is one example where the teaches of Pacurariu can just be combined with Thomason to further make the point.

BY MR. SCHMIDT:

Q But it's your opinion that Thomason does explicitly teach storing frame specific rotation data as metadata and when to retrieve it in the frame-by-frame analysis, correct?

MS. LI: Objection, form.

BY THE WITNESS:

A Well, as I read here to the extent Thomason does not explicitly teach that, then Pacurariu teaches it.

BY MR. SCHMIDT:

Q I understand. But my question is what is your opinion. Is it your opinion that Thomason discloses it or is it your opinion that you have to turn to Pacurariu for that feature?

MS. LI: Same objection.

BY THE WITNESS:

A I have to go through Thomason now to see exactly what is mentioned there but in some cases some

disclosure may not be explicit and in such a case, like this is an example, then Pacurariu is utilized because it does an explicit statement of this.

BY MR. SCHMIDT:

Q Are you able to tell me sitting here today whether you believe Thomason explicitly discloses every limitation of the challenge claims or are there limitations that are not explicitly disclosed by Thomason?

MS. LI: Objection, form.

BY THE WITNESS:

A We went through the same exercise for the other pair, Voss and Derbanne, and it's all in the original declaration for which cases Pacurariu might be needed so I'll have to do the same thing, go through claim by claim and see for which of them Pacurariu is combined with Thomason.

BY MR. SCHMIDT:

Q I mean, the problem, Doctor, is that you cite to both but you never clearly say what your actual opinion is. So if you want to take the time to go through your initial declaration, that's fine, but what I would like to understand at the deposition here today is do you believe that Thomason is enough to practice the challenge claims to a person of ordinary skill in

the art or is it necessary to turn to Pacurariu. Do you have an opinion on that?

MS. LI: Objection, argumentative.

BY THE WITNESS:

A I used in both declarations the combination for cases possibly that something is not explicitly stated and therefore Pacurariu in this case would be used to strengthen Thomason.

BY MR. SCHMIDT:

Q Let me ask you a very specific question. Is it your opinion that Thomason alone explicitly discloses storing frame specific rotation data in a frame-by-frame analysis?

A There is, for example, in paragraph 32 of Thomason (reading):

> "A playback device 20 is provided that can accept memory 12 and process the recorded image data 8 and rotation angle in replay processor 22."

So this is one case where the recorded image data and the associated rotation end goal is stored in memory and they can be used to further display -- I'm sorry -- the replay processor 22. So this seems to be one example where it is taking place in Thomason but again the idea is that Pacurariu is

more explicit in teaching this storing frame specific rotation data as metadata and doing the retrieval and so on so that's the thinking in doing the combination.

Q Let me make sure I understand your testimony. Your testimony is that as a person of ordinary skill in the art you believe that the sentence you read from paragraph 32 of Thomason explicitly discloses storing frame specific rotation data in a frame-by-frame analysis?

MS. LI: Objection, form.

BY THE WITNESS:

A I didn't use the word explicitly myself but the whole presentation in Thomason is that this is one frame, the image data 8 is one frame of the video sequence and that this frame has associated rotation angle data and this can be, as I read here, it can accept memory 12 and process the recorded image data 8 and rotation angle in the replay processor. So to the extent, as I mentioned in the second declaration, to the extent that Thomason does not explicitly teach this storing frame specific rotation, then Pacurariu does an explicit presentation of that.

BY MR. SCHMIDT:

Q And you agree that what's described in paragraph 32 of Thomason is just one frame?

MS. LI: Objection, form.

BY THE WITNESS:

A Thomason in multiple locations refers to this one frame as being part of the video sequence so just showing how to horizon-level one frame at a time is showing how to horizon-level the whole video sequence and similarly storing information and so on. That's how things are presented in Thomason.

BY MR. SCHMIDT:

Q But I'm asking you specifically about the one sentence in paragraph 32, you agree that that is describing a correction to a single frame. Correct, sir?

MS. LI: Same objection.

BY THE WITNESS:

A Thomason describes a video as a sequence of data 8 and it's understood that referring to one image data 8 is the example of one frame, what happened with one frame, and then this one frame is just one frame of a video so therefore what is depicted as happening in one frame happens for the whole video.

BY MR. SCHMIDT:

Q So just so I'm clear, you agree that the first sentence in paragraph 32 is describing what happens to one frame, correct?

MS. LI: Same objection, form.

BY THE WITNESS:

A As I already said, this one frame is a frame of a video of a sequence of items so it's just commonly done maybe I show how one frame is processed and then it's understood that if this one frame is -- it's explicitly stated in Thomason that this frame is just this image data 8 is one frame of a video sequence so...

BY MR. SCHMIDT:

Q I promise I'm going to ask you about that, that's going to be my next line of questions. I just want to establish one simple point. You agree that what's described in the first sentence of paragraph 32 of Thomason is a correction to a single frame. Fair?

MS. LI: Objection, form. Same objection.

BY THE WITNESS:

A I brought up 32. Our whole discussion started whether Thomason discloses storing image and motion data and whether we need Pacurariu or not for that and I pointed to this as just an example, there might be multiple other places where such a thing is disclosed, so the image data 8 is one frame of a video, that's how it's presented in Thomason, and therefore using the television set, for example, as is mentioned

later it's understood that the mention is for one frame but this one frame being part of the video, this is what happens for the whole video.

BY MR. SCHMIDT:

Q One more time, very clear question. Do you agree that what's described in the first sentence of paragraph 32 is describing a correction to a single frame?

MS. LI: Same objection.

BY THE WITNESS:

A And my answer is that throughout Thomason the reference to image data 8 being one frame of a video is understood that this same option, be it horizon-leveling, be it storage, be it something else is applying to the whole video.

MR. SCHMIDT: Objection, nonresponsive, move to strike.

BY MR. SCHMIDT:

Q Is the first sentence of paragraph 32 describing a correction to a single frame, yes or no?

MS. LI: Same objection, asked and answered multiple times.

BY THE WITNESS:

A As I said, it says image data 8 but this is the approach for the whole patent that this being

one frame of a video it's understood by a POSITA that this applies to the video.

BY MR. SCHMIDT:

Q Okay. Thank you for your answer.

Where in Thomason does -- you said this multiple times -- where in Thomason does it describe that image data 8 is part of a video? Can you point me to that.

A So one case is in 27 I believe where Thomason states that a sequence of items of image data 8 representing sequential frames of a moving image.

Q Anything else?

Were you still trying to answer the question, Doctor?

A I'm sorry?

Q I thought you were looking at the reference.

A No, no. I was waiting for you to be honest. I thought I gave you my answer got into this paragraph that states -- I'm sorry. I was waiting for you.

Q So you pointed me to paragraph 27 and then I asked you, "Anything else?"

A I didn't hear that.

Q I'm sorry.

A Sorry. I didn't I didn't hear that.

Anything else? What do you mean?

Q In Thomason that discloses that image data 8 comprises a video.

MS. LI: Objection, form.

BY THE WITNESS:

A Well, the title of Thomason disclosure is "Image Rotation Correction for Video or Photographic Equipment" so it's clear from the title that Thomason is talking about a video.

BY MR. SCHMIDT:

Q And turning back to paragraph 27, is it your testimony that image data 8 is a video or image data 8 is just part of a video in that description?

A Image data 8 is one frame of the video.

Q Understood. Thank you.

If you turn to Figure 3 in Thomason, I just want to make sure I understand your understanding of Figure 3. The change from Figure 3a to Figure 3b is the result of the angle -- strike that.

The change from Figure 3a to 3b is the result of the camera being tilted by some angle, correct?

A Yes. Figure 3b shows the image taken with a camera angle at an angle of about 10 degrees to the

vertical.

Q And then Figure 3c shows the correction to that angle, correct?

MS. LI: Objection, form.

BY THE WITNESS:

A So Figure 3c is the image with a rotation correction applied using the camera item data angle that was acquired.

BY MR. SCHMIDT:

Q And is it your opinion that the dashed line in Figure 3c is the viewing window?

MS. LI: Objection, form.

BY THE WITNESS:

A The dotted frame in 3c is the frame in 3b after this rotation correction is taking place and then in forming the viewing window, which is figure 3d, we look at the overlap between the solid and the dotted frames in 3c by eliminating any blank spaces there.

BY MR. SCHMIDT:

Q I can't understand if you agreed with my question. Is the dashed line the viewing window of 3c?

MS. LI: Objection, form. Same objection.

BY THE WITNESS:

A The viewing window is what is shown in 3d.

BY MR. SCHMIDT:

Q So, no, the dashed line is not the viewing window in 3c, is that your testimony?

A Dashed line you're referring to the dashed rectangle, right, in 3c?

Q Yes.

A I used as I mentioned the dashed rectangle and the solid rectangle to extract Figure 3d which is the viewing window.

Q Just so I have a clear answer to your question, it's your opinion the dashed rectangle in Figure 3c is not the viewing window, fair?

MS. LI: Objection, form.

BY THE WITNESS:

A The viewing window is included in the dashed rectangle.

BY MR. SCHMIDT:

Q I understand that but all I'm trying to clarify is you're not claiming that the dashed rectangle in Figure 3c is a representation of the viewing window of the '832 patent, fair?

MS. LI: Same objection.

BY THE WITNESS:

A I don't know what representation means but, as I mentioned, the viewing window is 3d which is part of the dotted window in 3c.

BY MR. SCHMIDT:

Q What is the dashed box in Figure 3c?

MS. LI: Same objection.

BY THE WITNESS:

A The dashed box is the box of 3b rotated to correct the rotation of the camera.

BY MR. SCHMIDT:

Q And what is the solid box in Figure 3c?

A It's the original frame, the frame of the camera.

Q And your testimony is that Figure 3d is the viewing window?

MS. LI: Objection, form.

BY THE WITNESS:

A Yes. Figure 3d is the viewing window in Thomason.

BY MR. SCHMIDT:

Q Is Figure 3d showing a zoomed in version of Figure 3c in your opinion?

MS. LI: Objection, form.

BY THE WITNESS:

A The objects in image 3d seem to have the same dimensions as the objects in 3c, for example, but if 3d is resized to 3e where 3e is the original frame size, then 3e is a zoomed version of the original

scene.

BY MR. SCHMIDT:

Q So in your opinion what's shown in Figure 3d is not a zoomed version of what's shown in Figure 3c?

A It is not zoomed if this is to interpret as the size of objects changing not just changing the frame there. What is zoomed in version is 3e again because the objects in 3e are larger than in the rest of the frames of images.

Q I need a clear answer to my question. Your testimony is that Figure 3d is not a zoomed in version of Figure 3c, is that correct?

MS. LI: Objection, form.

BY THE WITNESS:

A As I state here in my original declaration, if the camera is tilted the scene in the viewing window, for example, figures 3d and 3e would appear to be more zoomed in than if the camera is not tilted.

BY MR. SCHMIDT:

Q Where are you reading from?

A I'm reading from my original declaration paragraph 124.

Q So as you state in paragraph 124 of your

original declaration, Figure 3d is a more zoomed in version of the scene as compared to when the camera is not tilted, correct?

MS. LI: Objection, form.

BY THE WITNESS:

A That's what I'm saying in 124 but I'm also making the point that taking 3d and scaling it, resizing it to the size of 3a, that would give us 3e, and that's where one can see that the objects are now larger as in a zoomed in fashion.

MS. LI: Counsel, we've been going over an hour. Can we take a quick break?

MR. SCHMIDT: Yeah, let's take a break.

THE WITNESS: Thank you.

MR. SCHMIDT: Ten minutes?

(Brief recess taken)

BY MR. SCHMIDT:

Q Doctor, can you turn to your original declaration, Exhibit 4 to the deposition Exhibit 1002 in this proceeding.

A Okay.

Q Turn to paragraph 118 of your original declaration.

A I'm there.

MS. LI: Let me just lodge an objection outside

of scope.

MR. SCHMIDT: Are you contending that the scope of the deposition is limited to the supplemental declaration?

MS. LI: Yeah, to the supplemental declaration.

MR. SCHMIDT: Then why did you print it out and give it to the witness for purposes of the deposition?

MS. LI: Well, just in case, but that doesn't make you entitled to ask questions outside of scope. To the extent there is stuff in the original declaration that is also part of the supplemental declaration, that's fine.

MR. SCHMIDT: Okay. Your objection is noted.

BY MR. SCHMIDT:

Q Doctor, beginning at paragraph 118 of Exhibit 4 to the deposition you provide your opinions regarding claim 7 of the '832 patent, is that correct?

A This sounds right.

Q And in paragraph 118 through 122 you rely on Thomason for the additional limitations of claim 7, correct?

MS. LI: Objection, outside scope.

BY THE WITNESS:

A From what I can see here paragraph 118, 19, 20, 21, 22, I haven't read them word by word, I see

mentions of Thomason primarily.

BY MR. SCHMIDT:

Q Exclusively, right, Doctor?

MS. LI: Objection, form, outside the scope.

BY THE WITNESS:

A From my quick reading here of this paragraph I refer to claim 7 I could see Thomason, however, the ground one is that regarding your question in these paragraphs I see Thomason mentioned.

BY MR. SCHMIDT:

Q I mean, when you submitted this original declaration it was your opinion that the additional limitations of claim 7 were disclosed by Thomason and a person of ordinary skill in the art would have no reason to consult any other reference, correct?

MS. LI: Objection, form, outside scope.

BY THE WITNESS:

A Can you repeat your question, please.

BY MR. SCHMIDT:

Q Sure. I might try to simplify it. When you submitted this original declaration it was your opinion that Thomason itself disclosed the additional limitations of claim 7, correct?

MS. LI: Objection, outside scope.

BY THE WITNESS:

A So in the paragraphs that pertain to claim 5, in paragraph 122 we also make mention we reference to X.A.3.h and X.A.3.h is the 1(d)(i) and 1(d)(i) had to do with determining a viewing window we mention there Pacurariu as well so it's not accurate that only Thomason is mentioned in describing claim 7.

BY MR. SCHMIDT:

Q Do you believe a person of ordinary skill in the art needs to look to Pacurariu to satisfy the additional limitations of claim 7 or is Thomason enough?

MS. LI: Objection, form.

BY THE WITNESS:

A It's a similar answer that I gave earlier that we utilized the combination of Thomason and Pacurariu to strengthen our description of Thomason is not necessarily that something is missing from Thomason but certain aspects are also described explicitly by Pacurariu.

BY MR. SCHMIDT:

Q And does Pacurariu strengthen the disclosure for the additional limitations of claim 7?

MS. LI: Objection, form.

BY THE WITNESS:

A There are many paragraphs from paragraph

82 to 92 it seems like where we discuss Pacurariu in view of Thomason and Pacurariu makes an explicit description there through Figure 7, for example, how each and every frame of a video sequence is processed until you reach the end of the sequence, and although as we discussed earlier that is disclosed by Thomason as well, it's a more explicit description in Pacurariu.

BY MR. SCHMIDT:

Q My question is with respect to the additional limitations of claim 7, is there anything in Pacurariu that strengthens what's already in Thomason?

MS. LI: Again, I'm just going to lodge a standing objection based on outside the scope, and also objection, form.

BY THE WITNESS:

A Yeah, Pacurariu is used with respect to claim 7, Pacurariu is referenced in paragraph 122 when we talk about the viewing window determine there's a function of progress through the progress length and this is maybe an example where Pacurariu is very explicit in this determination.

BY MR. SCHMIDT:

Q Is there anything in your opinion in Pacurariu that strengthens the disclosure of changing the viewing window size?

MS. LI: Same objection.

BY THE WITNESS:

A As I mentioned, we use Pacurariu to strengthen elements of the claim so it's not necessarily the size is the function of progress that I was referring to that is very explicit in Pacurariu but it's all spelled out here in the initial declaration a lot of paragraphs addressing all of these questions.

BY MR. SCHMIDT:

Q And your opinions haven't changed from your original declaration to the present time, correct?

MS. LI: Objection, form.

BY THE WITNESS:

A The supplemental declaration is a rebuttal to the declaration of Dr. Foroosh and GoPro's response so if in my supplemental declaration there are elements in response to these documents that were not available when the first declaration was made, that might be reflected in the supplemental declaration.

BY MR. SCHMIDT:

Q But nothing about your interpretation of Pacurariu has changed since the initial declaration to the present time. Is that fair?

MS. LI: Same objection.

BY THE WITNESS:

A That's a very blanket statement. I would have to kind of compare what's in the original, what's in the supplemental declaration, and see that that is indeed the case.

BY MR. SCHMIDT:

Q Does anything come to mind sitting here?

MS. LI: Same objection.

BY THE WITNESS:

A As I mentioned, there is nothing that jumps out that became a change in my assessment in general but the supplemental being, again, a rebuttal to other documents might contain elements that were not in the original declaration.

BY MR. SCHMIDT:

Q Turning back to Thomason, I want to ask you about paragraph 15. For the record, this is Exhibit 5 to the deposition, the Thomason reference. Let me know when you're at paragraph 15.

A Yes, I'm there.

Q Do you see the reference to a panoramic image by stitching together a plurality of individual images?

A Yes, I do.

Q Do you have an understanding of what a panoramic image by stitching together a plurality of

individual images refers to?

A In general, it refers to taking two or more images that are specially consecutive and just stitching them together so that you end up with one panoramic image.

Q And are there alignment considerations when you take multiple images and turn them into one?

MS. LI: Objection, form.

BY THE WITNESS:

A This panoramic image generation can be done in multiple ways but at the very high level one has to just align, you might say, or correlate the images appropriately and then stitch them where they overlap so that it's a seamless transition and, yeah, you end up with a panoramic image that way.

MR. SCHMIDT: I have entered the next exhibit to the deposition. It's Exhibit 6. It's the Pacurariu reference, which is Exhibit 1005 to the IPR proceeding.

(Exhibit 6 marked for identification.)

BY MR. SCHMIDT:

Q Can you confirm for me Exhibit 6 in the ExhibitShare is the Pacurariu reference you analyzed?

A Yes, it is.

Q And then if you turn to paragraph 66 of Pacurariu, are you there?

A Just one second. Okay. I got it. You said paragraph 66, right?

Q Yes.

A Yeah, I'm there.

Q Paragraph 66 is talking about filtering or smoothing with certain types of filters. Do you see that?

A Yes, I do.

Q What's being smoothed in paragraph 66 is the tilt angle data, correct?

A That's how it reads, tilt angle data may be filtered or smoothed.

Q And the purpose of smoothing the tilt angle data is to make sure that you have an accurate reading from the sensor, agreed?

MS. LI: Objection, form.

BY THE WITNESS:

A Can you repeat your question, please.

BY MR. SCHMIDT:

Q Sure. The purpose of the filters being described in paragraph 66 of Pacurariu is to provide a more accurate measurement for the device orientation, correct?

MS. LI: Objection, form.

BY THE WITNESS:

A What the patent talks about is taking this angle data, which are discrete data, and smoothing them or filtering them and there are in the previous paragraphs suggestions of a number of ways to do that, may be averaged, it can have a moving average filter or some other filter they mention there. So these are examples of filter smoothing algorithms that will make this discrete data signal smoother as the name implies.

BY MR. SCHMIDT:

Q And the reason why a person of ordinary skill in the art would want to implement that is so that there is less error in the measurement of the device orientation at any particular time, is that fair?

MS. LI: Objection, form. Counsel, what's the relevance of this line of questioning?

MR. SCHMIDT: I'm not going to argue with you. I don't have explain the relevance.

MS. LI: Objection, outside of scope.

BY THE WITNESS:

A Yeah, why a digital signal is filtered may be for a large number of reasons and also the degree of filtering or smoothing is part of the equation here how much I want to smooth the data. If it's to remove noise, that could be one possibility, but assuming that

there are noise measurements, I want to remove some of this noise, but there may be a large number of reasons why somebody would want to, again, filter or smooth the data and that's the generic term but then the did he degree of smoothing is another important parameter here.

BY MR. SCHMIDT:

Q But just reading paragraph 66 of Pacurariu you can't say why a person of ordinary skill in the art would want to implement that type of smoothing for the tilt angle data?

MS. LI: Objection, form.

BY THE WITNESS:

A In paragraph 66 I don't see a reason stated why this data may be filtered or smoothed, just yeah, I want to have a smoother signal, that's all, but why do we need to do that, we have to see the rest of the specification to figure it out.

BY MR. SCHMIDT:

Q Okay. Doctor, I was looking at your CV and it looked to me like you spent the majority if not all of your career in academia. Is that a fair characterization?

A That's a fair characterization, yes.

Q And am I correct that in your professional

career you haven't served as a full time employee at any for-profit company?

MS. LI: Objection, form.

BY THE WITNESS:

A I have been employed in academia but I have had interaction with industry in different capacities.

BY MR. SCHMIDT:

Q But you've never been full time employed at a for-profit company, correct?

MS. LI: Same objection.

BY THE WITNESS:

A I've served as a consultant, I've served on boards, I've run a center funded by industry, quite a few activities like that, but a full time employee of for-profit I don't recall happening at some point, yeah.

BY MR. SCHMIDT:

Q And when you do these consulting jobs for industry, what is the nature of the consulting work that you provide?

A It varies widely just using my expertise in a certain field and with consulting it could be by serving on the boards, for example, or I ran for about 20 years a center that was funded by Motorola, I

founded it and directed it for about 20 years.

Q Have you ever been hired by industry to perform a competitive benchmarking study of a company's products against some competitor's products?

A In one of the cases I had to do such benchmarking, I had to just finalize the features of a particular device and so on.

Q Of a competitor's device?

A Well, I was asked to do an analysis of a camera.

Q So you were engaged by one company to do an analysis of that company's competitor's product?

A To analyze a product. Maybe competitor's a product, maybe not, but to analyze a camera, yeah.

Q What was the purpose of that analysis at a high level?

A Just to figure out the performance parameters, the features of the particular camera and report back.

Q Do you feel that you understand the line between competitive benchmarking and copying in the industry?

MS. LI: Objection, form.

BY THE WITNESS:

A My understanding of benchmarking is to

find out the capabilities of a competing product, what it can and cannot do, what are the limits, where it breaks, how well it performs. Copying means being able to get access to the source code of the device and being able to copy it. So benchmarking is a standard step where you say I have a product, the competitor has another product, let's compare them side-by-side how well the one performs with respect to the other.

BY MR. SCHMIDT:

Q What if a company tries to align the performance of their product to a competitor's product, where does that fall in terms of the line?

MS. LI: Objection, form.

BY THE WITNESS:

A Where does it fall in which line?

BY MR. SCHMIDT:

Q In terms of the line dividing competitive benchmarking and copying.

A I guess I need to get a bit more specific here and I don't know if there are legal aspects of your question or not legal aspects. I assume every company tries to improve their product and trying to just do well what the competitor does without, I guess, stepping on each other's feet and so on. I mean, yeah, trying to innovate and provide the function let's say

in the camera that a competitor has in a different way, different invention. It's very hypothetical here. Unless we get very specific, I just cannot be very specific myself.

Q When you were engaged by industry to do the competitive benchmarking work that you spoke about before, were you asked by your client to find ways to align your client's product with the other product you were analyzing?

MS. LI: Objection, form.

BY THE WITNESS:

A I did not say I was hired by industry to analyze a competitor's product and so on. I was hired to analyze a camera, the functionality of a camera and so on, that was extent of my engagement and, yeah, the rest is outside my field of how exactly somebody in the industry will think about adding features to an existing product or how it's motivated by competitor's product and so on. I mean, it's not a simple answer one can give.

BY MR. SCHMIDT:

Q You don't purport to be an expert in competitive benchmarking, correct?

MS. LI: Objection, form.

BY THE WITNESS:

A This is not something I considered in my opinions and so on.

BY MR. SCHMIDT:

Q You don't purport to be an expert on competitive benchmarking, do you, sir?

MS. LI: Objection, form.

BY THE WITNESS:

A I used my knowledge and expertise to analyze what was presented to me and offer opinion on what I was asked to do so being an expert in competitive benchmarking was not a question I had to address.

BY MR. SCHMIDT:

Q Simple question one more time, do you consider yourself an expert in competitive benchmarking?

MS. LI: Same objection, form.

BY THE WITNESS:

A I don't think that question is part of my investigation here.

BY MR. SCHMIDT:

Q Do you have specialized expertise in competitive benchmarking?

MS. LI: Same objection, form.

BY THE WITNESS:

A This was not a question I was asked to address competitive benchmarking and my expertise as pertained to this and that. I was asked to offer my opinion on the items I offered and the two declarations I generated.

BY MR. SCHMIDT:

Q Do you purport to be an expert in customer demand or marketing in the action camera space?

MS. LI: Same objection, form.

BY THE WITNESS:

A Yeah, these are labels that I don't think are relevant to what we're discussing here. I'm an expert on the subject matter that I was asked to provide my opinion and my declarations and that's what I did.

BY MR. SCHMIDT:

Q But you don't have any specialized knowledge or experience that would shed light on how consumers in the marketplace value certain features in an action camera, fair?

MS. LI: Same objection, form.

BY THE WITNESS:

A As I mentioned I have expertise that were required to generate the declarations I generated.

BY MR. SCHMIDT:

Q Focus on my question, please. Do you have specialized knowledge or experience that would shed light on how consumers in the marketplace value certain features in an action camera?

MS. LI: Same objection, form.

BY THE WITNESS:

A Yeah, I have the expertise required to do what I was asked to do generating the reports.

MR. SCHMIDT: Objection, nonresponsive, move to strike.

BY MR. SCHMIDT:

Q Doctor, do you have specialized knowledge or experience that would shed light on how consumers in the marketplace value certain features in an action camera?

MS. LI: Same objection, asked and answered numerous times.

BY THE WITNESS:

A Yeah, I'll give the same answer that I shared the expertise that was needed for what I was asked to do and I offered my opinions in the declarations.

BY MR. SCHMIDT:

Q What basis do you have to say that horizon-leveling is not a driver of GoPro's commercial

success?

MS. LI: Objection, form.

BY THE WITNESS:

A I analyzed what GoPro has submitted in its patent owner's response and what Dr. Foroosh submitted in the declarations and based on this analysis I am in agreement with the Board's conclusion. I found out that the HERO9 product that is supposed to be implementing the teachings of '832 is not practicing the claims.

BY MR. SCHMIDT:

Q Your opinion is that the HERO9 product doesn't practice the '832 patent claims?

A Yeah, based on my analysis of what was submitted and as I state in my supplemental declaration GoPro fails to show it practices the '832 patent.

Q If you turn to paragraph -- let me just ask a question. Your opinion that GoPro fails to show it practices the '832 patent, is that based on your independent analysis of the technical information?

A It's based on my independent analysis of what was submitted, as I mentioned, by GoPro and Dr. Foroosh.

Q Did you submit -- did you analyze GoPro technical information as part of forming those

opinions?

A I analyzed what was submitted by GoPro and Dr. Foroosh.

Q Did you review the initial information from the ITC on this subject?

MS. LI: Objection, outside scope.

BY THE WITNESS:

A I did not review any documents that pertained to the ITC proceedings.

BY MR. SCHMIDT:

Q For any purpose in rendering your opinions?

MS. LI: Same objection, outside scope.

BY THE WITNESS:

A I'm aware there is an ITC proceeding going on in parallel but that's the extent of my knowledge.

BY MR. SCHMIDT:

Q Understood. In paragraph 121 you offer the independent opinion that GoPro's own exhibits show that the purported commercial success is attributed to many factors unrelated to horizon-leveling. Do you see that?

A Yes, I do.

Q What basis do you have to opine on the relative contributions of GoPro's features to its

commercial success?

MS. LI: Objection, form.

BY THE WITNESS:

A So there is a GoPro survey that is mentioned in the paragraph that shows consumers have different purchase motivations and many other considerations.

BY MR. SCHMIDT:

Q And, Doctor, you believe you have the requisite expertise to analyze these surveys and provide opinions about what they show?

MS. LI: Objection, form.

BY THE WITNESS:

A As I mention in paragraph 120, GoPro's own cited evidence shows that there are a myriad of featured purchase drives that are completely unrelated to horizon-leveling such as the 5.3K video resolution and so on and this is a simple analysis to see that out of so many features, 33 I believe Mr. Lema mentioned that are the key drivers of the customer demand, the horizon-leveling is playing a minuscule if any role at all so it's a relatively straightforward analysis as far as that part goes.

BY MR. SCHMIDT:

Q Are you telling me that analyzing these

surveys doesn't require any sort of specialized expertise, is that what you're saying?

MS. LI: Same objection, form.

BY THE WITNESS:

A I just reviewed what was presented as I mentioned already by GoPro and Dr. Foroosh and that's what -- I mean there's in paragraph 120, for example, a table there showing the percentage of the importance of the different features to customers and in the top five shown there horizon-leveling is not one of them and there are many, many features that contribute to the success of the product.

BY MR. SCHMIDT:

Q In your view, is analyzing this evidence that you cite in your declaration, is that an analysis that requires specialized expert testimony?

MS. LI: Same objection.

BY THE WITNESS:

A Specialized expert testimony you said?

BY MR. SCHMIDT:

Q Yes.

MS. LI: Same objection.

BY THE WITNESS:

A Again, this is information provided by GoPro and they mention that Mr. Lema, for example,

admits that there are a lot of key product features like SuperView and HyperSmooth that are covered by different patents, there is a list of patents there that addresses all of these features, and '832 is one of many such features that based on these surveys that GoPro did, it also shows that it plays a minuscule role in the user preference.

BY MR. SCHMIDT:

Q What basis do you have to say that horizon-leveling plays a minuscule role in user preference?

MS. LI: Objection, form.

BY THE WITNESS:

A Based on the table there that they presented.

BY MR. SCHMIDT:

Q Exhibit 2018 you're referring to?

A Yeah.

Q Anything else?

A There are additional documents I reviewed regarding this evaluation here.

Q Did you review the survey that asked GoPro HERO11 users what features drove their decision to purchase the products and horizon-leveling was number two of all of the features of the camera, did you

review that survey?

MS. LI: Objection, form.

BY THE WITNESS:

A Is this a survey that was presented by GoPro and Dr. Foroosh?

BY MR. SCHMIDT:

Q Yes, it was.

A Which product you said?

Q HERO11.

MS. LI: Same objection.

BY THE WITNESS:

A According to testimony by Mr. Lema, horizon-leveling was released with HERO9 Black two years after HERO7.

BY MR. SCHMIDT:

Q What are you referring to, sir?

A Paragraph 117.

Q Let me ask you this. As between you and Mr. Lema, who do you think is more qualified to provide sworn testimony about what features customers value in a GoPro camera?

MS. LI: Objection, form.

BY THE WITNESS:

A I don't understand the basis of the question. Mr. Lema testified on the fact that there

are many features that contribute to the success of the products and many patents involved behind these features such as SuperView and HyperSmooth and so on so that's the information that was provided to me and then I just based my analysis on the information that was given to me.

BY MR. SCHMIDT:

Q Focus on my question. As between yourself and Mr. Lema, who do you think is more qualified to provide sworn testimony about which features GoPro customers value in a GoPro camera?

MS. LI: Same objection.

BY THE WITNESS:

A Mr. Lema has his expertise, I have my own. I don't know Mr. Lema, I just based my opinion on what was said by Mr. Lema, what were the documents presented to me by GoPro and Dr. Foroosh, that's the basis of my analysis.

BY MR. SCHMIDT:

Q You don't claim to have better knowledge of GoPro's customer demand than Mr. Lema, do you?

MS. LI: Objection, form.

BY THE WITNESS:

A I find that the question is irrelevant. I used the information that Mr. Lema provided. It's not

like I'm denying the information, I'm using it in my analysis what Mr. Lema provided during his deposition and other forms.

BY MR. SCHMIDT:

Q You read Mr. Lema's deposition?

A Pardon me?

Q You read his deposition?

A I looked at it.

Q Did you review any other testimony of Mr. Lema?

A I don't recall as we speak. I've looked at a lot of documents but I recall looking at his deposition.

MR. SCHMIDT: Okay. Those are all of my questions today. No further questions. Pass the witness.

MS. LI: I have a few more questions but, Dr. Katsaggelos, do you need to take just a few minutes break and then we will come back. It's been going for one hour.

THE WITNESS: Either way. If it's short --

MS. LI: It's short. Okay. All right.

THE WITNESS: -- I could stay.

MS. LI: Yeah. Thank you, Dr. Katsaggelos. I just have a few questions.

EXAMINATION

BY MS. LI:

Q Let's go to your Supplemental Declaration Exhibit 2.

A I have it in front of me.

Q Do you recall counsel asked you earlier about paragraph 20 in your supplemental declaration?

A Yes.

Q So in your opinion would a person with skill in the art at the time of the '832 priority date also be motivated to use the existing distortion in an image to mask an imperfect horizon?

MR. SCHMIDT: Objection, leading, outside the scope of the expert declaration.

BY MS. LI:

Q You can answer, Dr. Katsaggelos.

A I'm sorry. Can you repeat the question. It was interrupted.

Q Yeah. In your opinion, would a POSITA at the time of the '832 invention also be motivated to use the existing distortion in an image to mask an imperfect horizon?

MR. SCHMIDT: Objection, leading, outside the scope of the expert declaration.

BY THE WITNESS:

A I would say yes.

BY MS. LI:

Q Let's go to paragraph 75 in your supplemental declaration.

A Okay.

Q Can you read this into the record.

A (Reading):

"The Thomason-Pacurariu system results in an efficient horizon-leveling system. This system can be used to horizon-level distorted images/videos and non-distorted images/videos alike. At the time of the claimed invention, distorted images were commonly produced by cameras. Nothing in Thomason or Pacurariu limits horizon-leveling to non-distorted images and videos. A POSITA would understand that Thomason and Pacurariu's horizon-leveling can be used for distorted or non-distorted images and videos. The combination of Thomason and Pacurariu when processing a distorted image would disclose claims 3-5, and 13-15."

Q Thank you, Dr. Katsaggelos. Do you still stand by your opinion in this paragraph?

MR. SCHMIDT: Objection, leading, the document speaks for itself.

BY THE WITNESS:

A Yes, I do.

BY MR. SCHMIDT:

Q Now, let's turn to page 41 of your supplemental declaration.

A I'm there.

Q Do you see on page 45 there is a Figure 2 of the prior reference Voss?

A I'm sorry. What page? 43?

Q 41, sorry.

A Okay. Yes, I see Figure 2.

Q Does the inset rectangle in blue rotate with respect to the device?

MR. SCHMIDT: Objection, leading.

BY THE WITNESS:

A Yes, it does.

BY MS. LI:

Q And if you go to paragraph 85, the last sentence, can you read it into the record.

A (Reading):

"Dr. Foroosh agreed 'there is

relative rotation between them.'"

Q And what does "them" refer to as stated in your declaration here?

A The blue rectangle and the camera.

Q Do you stand by your opinion in this paragraph?

A Yes, I do.

Q So in your opinion does Voss disclose that its inset rectangle has different sizes?

MR. SCHMIDT: Objection, leading.

BY THE WITNESS:

A Yes, it does.

BY MR. SCHMIDT:

Q Now let's look at Figure 2 of Voss again. Do you see the size of the blue inset rectangle changes in Figure 2?

A Yes, it is clear that it changes.

Q And how does the size of the blue inset rectangle in 240 compare to the size of the blue inset rectangle in 222 -- sorry -- 240, yeah. Sorry. Strike that. Let me do that again.

How does the size of the blue inset rectangle in 240 compare to the size of the blue inset rectangle in 220?

A Yeah, the size of the blue inset rectangle

in 240 is larger than the size of the inset blue rectangle in 220.

Q Thank you. And can you have two viewing windows that have the same aspect ratio such as 1:1 but still have different sizes?

A Of course.

Q Thank you, Dr. Katsaggelos. Do you recall earlier counsel asked you some questions about the prior reference Thomason?

A There were multiple questions, yes.

Q Do you recall you testified earlier that Thomason discloses horizon-leveling for video framing using its corresponding rotation information?

MR. SCHMIDT: Objection, form.

BY THE WITNESS:

A Yes, I did testify that way, yeah.

BY MS. LI:

Q Do you also recall that you testified this process also happens for the whole video?

MR. SCHMIDT: Objection, form, leading.

BY THE WITNESS:

A Yes. It happens for the frame 8 -- or what's the exact word -- the image 8 and image 8 being part of a video, it happens for the whole video.

BY MS. LI:

Q Thank you. And in your opinion does Thomason disclose do this horizon-leveling process for each of the frames in the video based on frame specific rotation data?

MR. SCHMIDT: Objection, leading.

BY THE WITNESS:

A Yes, it does.

BY MS. LI:

Q Thank you. Just one more question, do you recall counsel asked you earlier about claim 7 of the '832 patent?

A Yes.

Q Do you want to just go to the claim 7 in the patent?

A In the patent, right?

Q Yeah.

A Okay, I'm there.

Q In your opinion does claim 7 cover determining the same size at different times?

MR. SCHMIDT: Objection, leading, form.

BY THE WITNESS:

A Yes, as I believe I replied when asked about this, if the viewing window has the same size over time it discloses claim 7.

Q So the answer to my question is yes?

A Yes.

MR. SCHMIDT: Objection, form.

MS. LI: Thank you. No more questions.

FURTHER EXAMINATION

BY MR. SCHMIDT:

Q Doctor, turn back to paragraph 75 which you were just asked about.

A Of the supplemental?

Q Yes.

A Okay.

Q Counsel pointed you to the sentence that reads (reading):

"Nothing in Thomason or Pacurariu limits horizon-leveling to non-distorted images and videos."

Do you see that?

A Yes, I do.

Q But nothing in Thomason or Pacurariu discusses explicitly horizon-leveling distorted images and videos, correct?

MS. LI: Objection, form.

BY THE WITNESS:

A I don't know for sure if that's indeed the case but definitely Thomason or Pacurariu do not exclude the processing of distorted images which were

in existence at that point in time because wide angle lenses were used, for example, so they don't exclude the processing of distorted images and the steps don't have to change, they're identical steps in horizon-leveling a distorted or undistorted image.

BY MR. SCHMIDT:

Q But, Doctor, in paragraph 75 you don't cite any express disclosure in Thomason or Pacurariu about horizon-leveling distorted images in order to mask an imperfectly leveled horizon in the final output, correct?

MS. LI: Objection, form.

BY THE WITNESS:

A Again, Thomason or Pacurariu do not explicitly say that the teachings are only for non-distorted images and since distorted images are generated in a number of applications and since again the procedural steps don't change, as it's stated here that they can also process distorted images.

MR. SCHMIDT: Objection, nonresponsive, move to strike.

BY MR. SCHMIDT:

Q Doctor, you have not cited any express disclosure from Thomason or Pacurariu that expressly discloses horizon-leveling a distorted image in order

to mask an imperfectly leveled horizon either in paragraph 75 or anywhere else for that matter, correct?

MS. LI: Same objection, form.

BY THE WITNESS:

A Throughout the specification, throughout the patent there is no statement that excludes the processing of distorted images.

BY MR. SCHMIDT:

Q Okay. Turn to paragraph 85 quickly. I want to make sure I understand your opinion about this inset rectangle in Figure 2 of Voss rotating. Counsel asked you some questions about the fact that the rectangle is being rotated relative to the device. Do you recall that?

A Yes.

Q And are you opining that all the claim requires is that for the device to rotate in the inset rectangle to stay fixed in the original orientation?

MS. LI: Objection, form.

BY THE WITNESS:

A The steps are not explicitly shown but one can visualize that this rectangle assumes the camera is in the vertical position, this rectangle is in there, the camera turns and then to compensate for the rotation the inset rectangle turns in the opposite

direction by the same amount, let's say, 10 degrees to the right and 10 degrees to the left, but in rotating to compensate for the rotation, it also adjusts its size so it's the maximally inscribed rectangle inside the camera frame. So you can visualize while this rectangle is rotating to compensate for the motion, it has to kind of shrink or adjust appropriately so that it can fit now inside the red rectangle.

BY MR. SCHMIDT:

Q But can we agree that what you're describing is not shown in Figure 2?

MS. LI: Objection, form.

BY THE WITNESS:

A It is described in the specification what I'm describing, it's what I read earlier. The inset rectangle 255 is transformed to compensate for rotation by essentially rotating in the inverse of the device's own rotation. That's what I described kind of pictorially what is stated in this specification.

BY MR. SCHMIDT:

Q But can we agree that what you described is not shown in the diagrams of Figure 2?

MS. LI: Same objection.

BY THE WITNESS:

A In Figure 2 we see the result of this

counter rotation but we go to the specification to understand exactly what the teaching is of Voss.

BY MR. SCHMIDT:

Q And when you opined in your declaration and in your redirect testimony that there's a relative rotation between the inset rectangle and the device, you were just referring to the fact that the device is rotating around the fixed orientation of the inset rectangle in Figure 2, correct?

MS. LI: Objection, form.

BY THE WITNESS:

A Yeah, the fact of the matter as Dr. Foroosh also agrees, there's a relative rotation between them and you can interpret it whether this is fixed or the relative rotation is, again, the camera moves one way and the rectangle moves the other way to undo the rotation of the camera.

MR. SCHMIDT: Okay. Those are all of my questions.

MS. LI: I'm sorry, Dr. Katsaggelos, I have one more question.

FURTHER EXAMINATION

BY MS. LI:

Q Can you turn to paragraph 76 in your declaration, supplemental declaration.

A Yes, I'm there.

Q Do you see the first sentence in paragraph 76 states (reading):

"A POSITA would understand that an amateur camera, such as an action camera, uses a wide angle lens and thus has distortions."

Do you see that?

A I do.

MR. SCHMIDT: Objection, leading, and it's outside the scope of my examination.

BY MS. LI:

Q You can answer again.

A Yes, I see the sentence.

Q Does Thomason disclose a camera used by amateur?

MR. SCHMIDT: Objection, leading, and outside the scope of recross-examination.

BY MS. LI:

Q Dr. Katsaggelos, you can answer.

A Yeah, I believe that is indeed the case that Thomason discloses that.

MS. LI: Thank you, Dr. Katsaggelos. That's all my questions.

THE WITNESS: Thank you.

MR. SCHMIDT: One moment, please.

THE WITNESS: So is this an infinite loop?

MR. SCHMIDT: Well, sometimes it ends up that way.

THE WITNESS: And I thought I was done.

MR. SCHMIDT: Okay. I have no further questions.

MS. LI: Thank you, Dr. Katsaggelos. You are dismissed.

THE WITNESS: Thank you very much.

MR. SCHMIDT: Do we have any instructions for the transcript?

MS. LI: We'll get the, yeah, I'll follow-up but that's probably okay.

MR. SCHMIDT: We'll follow-up, too, but just to give you a heads up I think we're going to need a quicker expedite on the final because we have a brief due next week. I think it's Friday but I have to double-check. We'll follow-up with exactly when we want it.

(Adjourned at 3:43 p.m. CST)

C E R T I F I C A T E

I, Diana G. Rodriguez, an RPR and Certified Shorthand Reporter do certify that heretofore said witness appeared before me produced as a witness for examination in said cause.

I further certify that the said witness was first duly sworn; that the testimony was reduced to writing by means of machine shorthand and afterwards transcribed into typewriting via computer-aided transcription under my personal direction; and that the foregoing is a true and correct record of the testimony given by said witness.

I further certify that my certificate annexed hereto applies to the original transcript and copies thereof, signed and certified under my hand only. I assume no responsibility for the accuracy of any reproduced copies not made under my control or direction.



Diana G. Rodriguez, RPR

CSR No. 084-002945

MS. LILY LI

YLi@mofo.com

August 26, 2025

RE: Arashi Vision Inc. v. Gopro, Inc.

8/22/2025, Dr. Aggelos Katsaggelos (#7561766)

The above-referenced transcript is available for review.

Within the applicable timeframe, the witness should read the testimony to verify its accuracy. If there are any changes, the witness should note those with the reason, on the attached Errata Sheet.

The witness should sign the Acknowledgment of Deponent and Errata and return to the deposing attorney. Copies should be sent to all counsel, and to Veritext at (production-ca@veritext.com).

Return completed errata within 30 days from receipt of testimony.

If the witness fails to do so within the time allotted, the transcript may be used as if signed.

Yours,

Veritext Legal Solutions

Arashi Vision Inc. v. Gopro, Inc.

Dr. Aggelos Katsaggelos (#7561766)

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Dr. Aggelos Katsaggelos Date

Arashi Vision Inc. v. Gopro, Inc.

Dr. Aggelos Katsaggelos (#7561766)

ACKNOWLEDGEMENT OF DEPONENT

I, Dr. Aggelos Katsaggelos, do hereby declare that I have read the foregoing transcript, I have made any corrections, additions, or changes I deemed necessary as noted above to be appended hereto, and that the same is a true, correct and complete transcript of the testimony given by me.

_____ _____

Dr. Aggelos Katsaggelos Date

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