

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

APPLE INC.,
Petitioner,

v.

VALENCELL, INC.,
Patent Owner.

Case IPR2017-00319 (Patent 8,923,941 B2)
Case IPR2017-00321 (Patent 8,923,941 B2)^{1,2}

Record of Oral Hearing
Held: February 27, 2018

Before BRIAN J. McNAMARA, JAMES B. ARPIN, and SHEILA F.
McSHANE, *Administrative Patent Judges*.

Case IPR2017-00319 (Patent 8,923,941 B2)

Case IPR2017-00321 (Patent 8,923,941 B2)

APPEARANCES:

ON BEHALF OF THE PETITIONER:

BYRON L. PICKARD, ESQUIRE
MICHELLE K. HOLOUBEK, ESQUIRE
MICHAEL D. SPECHT, ESQUIRE
MARK CONSILVIO, ESQUIRE
Sterne, Kessler, Goldstein & Fox
1100 New York Avenue, N.W.
Washington, D.C. 20005

ON BEHALF OF THE PATENT OWNER:

JUSTIN B. KIMBLE, ESQUIRE
JEFFREY BRAGALONE, ESQUIRE
Bragalone Conroy, P.C.
2200 Ross Avenue, Suite 4500W
Dallas, Texas 75201-7924

and

R. SCOTT RHOADES, ESQUIRE
Warren Rhoades
1212 Corporate Drive, Suite 250
Irving, Texas 75038

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P R O C E E D I N G S

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2 JUDGE McNAMARA: This is going to be the hearing in
3 IPR2017-00319 and 00321. And again, we'll hear first from the petitioner,
4 then the patent owner and any rebuttal from the petitioner. Petitioner has
5 40 minutes. Is there some amount of time you would like me to alert you to?

6 MS. HOLOUBEK: Yes, Your Honor, I would like to reserve ten
7 minutes for rebuttal, please.

8 JUDGE ARPIN: Counselor, before you begin, because we are
9 doing this as a consolidated hearing, although it is the same patent for both
10 cases, if there are arguments that you are presenting which are related only
11 to one of the two petitions, if you would please specify which petition you
12 are speaking of.

13 MS. HOLOUBEK: Yes, Your Honor, I'll do that.

14 JUDGE McNAMARA: All right. Please proceed.

15 MS. HOLOUBEK: Thank you. Good morning. May it please the
16 Board, my name is Michelle Holoubek and I represent petitioner, Apple Inc.,
17 along with my colleagues Mark Consilvio and Michael Specht, who are
18 backup counsel on this case.

19 At the outset, as I mentioned, I would like to reserve ten minutes
20 for rebuttal in this portion of the hearing. Both of them relate to Valencell's
21 '941 patent. First I will plan to discuss the 319 IPR which covers claims 1 to
22 2 and 6 to 13. And then I'll turn to the 321 IPR which covers claims 14
23 through 21, along with its motion to amend.

24 Regarding claims 1 to 2 and 6 to 13, the Board's analysis of these
25 claims in its institution decision was correct. Rather than presenting

1 anything new during the trial portion of this proceeding, Valencell simply
2 dug in on the same arguments as before that the Board had already
3 considered in its institution decision. No new information has been provided
4 that should change the decision previously rendered by the Board.

5 Each claim in this IPR would have been obvious based on the
6 combination of Luo and Craw, if we could turn to slide 2, which provides us
7 with a summary. And again, these demonstratives that I'm referring to right
8 now are in the 319 portion of our demonstratives.

9 So we have the combination of Luo plus Craw, and then separately
10 a combination based on the references Mault and Al-Ali. Valencell's
11 arguments to the contrary rest on a faulty and overly narrow reading of claim
12 1. And because the arguments have focused on claim 1 and not any of the
13 dependent claims, claim 1 is what we'll focus on today as well.

14 So let's take a look together at claim 1 to see what it actually
15 recites. If we turn to slide 3, we can see that we have a method with two
16 steps. We have a sensing step and a processing step. And I find these
17 individual steps pretty long, so I find it helpful to break them up. In the
18 sensing step, two types of data are sensed, physical activity and
19 physiological information. This data is sensed by a monitoring device. And
20 that monitoring device is open-ended so it can comprise any number of
21 sensors. But the claim does require that the physical activity be sensed by at
22 least one motion sensor. And the claim also requires that the physiological
23 information be sensed by at least one PPG sensor. Now, that doesn't mean
24 that all the physiological information sensed by the entire monitoring device
25 must come solely from this PPG sensor. It simply means that the PPG
26 sensor has to contribute to the physiological data. That's what it says.

1 JUDGE ARPIN: Counselor, with regard to claim construction, the
2 physiological information was something we construed in the DI, and I don't
3 believe that patent owner has challenged that construction. Is that your
4 understanding?

5 MS. HOLOUBEK: That's my understanding as well, yes.

6 JUDGE ARPIN: Patent owner, however, has proposed a
7 modification for the construction of the term "PPG sensor" which you just
8 mentioned. Do you have any objections to the patent owner's construction
9 of that term?

10 MS. HOLOUBEK: No, I have no objections to that, Your Honor.
11 We agree with that.

12 JUDGE ARPIN: Are those the only claim construction issues that
13 we are dealing with in the 319 case?

14 MS. HOLOUBEK: To my knowledge, we don't really have any
15 claim construction issues other than that correction to the PPG sensor. We
16 have not disputed any of the claim constructions as instituted by the Board.

17 JUDGE ARPIN: Thank you very much, counselor. Please
18 continue.

19 MS. HOLOUBEK: So going back to the claim, the claim says at
20 least one PPG sensor for sensing the physiological data. That is open-ended.
21 So other sensors can contribute to the physiological data as well. And that's
22 important because Valencell's primary argument against both grounds in the
23 319 IPR is that all the physiological data in the claim has to come from the
24 PPG sensor. But again, the claim uses words like "comprising" and "at
25 least" and is open-ended.

1 So we'll turn then to the processing step. What is it that's
2 processed? Signals from the at least one motion sensor and the at least one
3 PPG sensor. They are processed into a serial data output of physiological
4 information and motion-related information. Note that this portion of the
5 claim doesn't say that the serial data output is of the physiological
6 information. Instead the claim recites a combined output of physiological
7 information and motion-related information. And that output is configured
8 such that heart rate and respiration rate can be extracted from the
9 physiological information as it exists in the serial data output. That's not as
10 it existed prior to the processing. Nothing in the processing step that you see
11 here ties the physiological information of the serial data output directly and
12 solely to the PPG sensor.

13 So since the core of Valencell's arguments against the instituted
14 grounds relies on a different reading of the claims that skips over a lot of
15 words in the claims, it's our position that their arguments cannot succeed.
16 So why don't we take a look at Luo and Mault in turn. Turning to slide 6 of
17 petitioner's 319 demonstratives, Luo discloses a wearable physiological
18 monitoring device. This one is configured to be worn over the ear. As
19 shown in Figure 1, which is in the upper right-hand corner, Luo's device
20 includes sensors S1 and S2 along with a processor CPM.

21 If we look at Figure 3 here, Luo tells us that S1 is a physiological
22 sensor for detecting, among other things, heart rate and respiration rate. Luo
23 states that this is a PPG sensor. Luo also includes activity sensors S2 for
24 sensing physical activity. Raw data from the physiological sensors that you
25 see on that left-hand column of Figure 3 is fed into the processor CPM along

1 with the raw data from the activity sensors. And then Luo processes the
2 sensor data to produce parameterized data.

3 If we turn to slide 7, this processing is shown --

4 JUDGE ARPIN: Counselor, before you go to slide 7, go back to
5 slide 6. Does it matter that Luo describes the use of a reflection plate?

6 MS. HOLOUBEK: The only reason that it matters in the figure is
7 because S1 is the PPG sensor, because a PPG sensor operates on the basis of
8 emitted and then reflected or transmitted light in this configuration of Luo.
9 So the reflection plate here allows the light that's been emitted by the PPG
10 sensor. This, I think, attaches to the bottom of the ear lobe because this is an
11 ear cuff. So light transmits through the ear, hits the reflection plate, bounces
12 back through the ear and is received again by the PPG sensor.

13 JUDGE ARPIN: Counselor, you said reflected or transmitted. I
14 believe that Mault talks about the use of PPG sensors that reflect and
15 transmit. And that was the basis of my question. Is there any significance in
16 Luo's teaching to the use of a reflection plate?

17 MS. HOLOUBEK: No particular significance. No, Your Honor,
18 there are PPG sensors that operate without reflection plates.

19 JUDGE ARPIN: Thank you. Please continue.

20 MS. HOLOUBEK: So turning to slide 7, we can see the processor
21 in a little bit more detail. This is Luo's Figure 4 and Figure 5. Figure 4
22 covers how the physiological signals are processed. So you can see on the
23 left-hand side of Figure 4, you have the individual sensors. And that raw
24 data is fed into the center portion, which is what is happening in the
25 processor. And so you can see that raw sensor data is converted by the
26 processor into actual parameterized values that then tell you something

1 about the physiological information. So for instance, here you have body
2 temperature, you have SpO2 values, you have glucose. Luo also describes
3 in there that heart rate and respiration rate are calculated in the same way or
4 at least in the same processing. So then those parameters, as you can see in
5 Figure 4 --

6 JUDGE ARPIN: Counselor, where does Luo describe calculation
7 of respiration rate?

8 MS. HOLOUBEK: So if we look at in the petition on pages 17 to
9 18, this is in the 319 petition, so if we look at Luo in paragraph 1055 is the
10 exhibit and paragraphs 28 and 46, and that's where it describes sort of the
11 processing here. I will say claim 37 of Luo also discloses that a respiration
12 rate is calculated. And as our expert testified when asked about this in
13 deposition, you see between life sign 1 and life sign N, there are those dotted
14 lines, there's a lot of sensors in there, and similarly when you see body
15 temperature, SpO2 value and then there's some dotted lines, there's other
16 data. The processing is not just simply limited to those three data
17 parameters that you see in Figure 4. So respiration rate is one of those
18 parameters that's calculated in this overall process.

19 JUDGE ARPIN: Thank you. Please continue.

20 MS. HOLOUBEK: So just finishing up on Figure 4, you can see
21 that that physiological information is then output by the processor. Figure 5
22 you see the same thing happening with the activity sensors where the
23 activity sensors are input, the parameters themselves are processed and then
24 the activity information is then output. And so if you turn back to slide 6
25 momentarily, you can see that those outputs are transmitted to a recipient.

1 Luo indicates also that the monitoring device here can include a
2 USB port for downloading the output health information to an external
3 computer. So that implies that it's a serial data output. Now, Luo doesn't
4 explicitly describe the format of that output data or how it might be
5 converted into serial format. So that's where Craw comes in.

6 If we could turn to slide 8, Craw describes a network of
7 physiological monitoring devices that need to be able to communicate with
8 each other. In Craw you have sensors that detect various parameters like
9 blood pressure, heart rate and respiration rate just like in Luo. And shown in
10 Figure 7G here, this is slide 8 of the 319 demonstratives, that illustrates how
11 a serial data output would be formatted to transmit data. And you can see
12 here in this figure how it has parameterized values, and that's such as what's
13 demonstrated here, systolic value, diastolic pressure, heart rate, all of that
14 serialized into a single signal. Figure 8I at the top of the page also illustrates
15 what that signal looks like as a bit stream. And a receiving device such as a
16 display that you can see in Figure 9A can then extract the data from the
17 serial output signal and display the individual values.

18 JUDGE ARPIN: Counselor, with regard to claim 1, I don't see
19 where there is a transmitting step in that method. And I believe patent
20 owner argued that there is a distinction in Craw between preparing serialized
21 data for transmission or transmitting serialized data and the processing to
22 obtain serialized data that's described in the method. How do you respond to
23 that argument?

24 MS. HOLOUBEK: So this particular signal, when it's prepared, it
25 doesn't have to be transmitted. It's not simply transmitting -- sorry,
26 serializing the data for transmission. It is serializing the data into an output

1 data stream. That is all that the claim requires. And Craw does this. The
2 fact that this data stream is then later taken and transmitted to an external
3 device is in apposite to the claim because the claim doesn't provide any
4 limitations on what happens with the data after it's been serialized.

5 JUDGE ARPIN: Thank you. Please continue.

6 MS. HOLOUBEK: If we turn to slide 9, in fact, it's interesting to
7 see the comparison between Craw on slide 8 that we just showed and slide 9.
8 This shows Valencell's own annotations on Figure 18 of the '941 patent.
9 You can see that this is exactly the same thing that's happening in claim 1 of
10 the '941 patent and in Craw.

11 In Figure 18 there of the '941 patent, sensors feed data into the
12 processor multiplexer 602 in a serial string that looks just like Craw's.
13 Figure 8I is output. And then just as Craw illustrated that its signal was
14 formatted to include these parameterized information in the signal one after
15 the other, you can see that the '941 patent signal is formatted in the same
16 way.

17 I realize we have been going a long time on Luo plus Craw, so if
18 there's no further questions on that, I would like to turn to the next ground of
19 Mault and Al-Ali. Claim 1, if we turn to slide 15 of the 319 demonstratives,
20 claim 1 is also unpatentable over the combination of Mault and Al-Ali.

21 Mault discloses a monitoring device that's worn on the wrist, and Figure 4
22 here shows the details of monitoring device 84. So you can see that
23 monitoring device 84 includes a motion sensor 114 which corresponds to the
24 activity sensor of claim 1. Device 84 also includes a heart rate sensor 109
25 and a respiration sensor 105. Mault discloses that the heart rate sensor 109
26 is a PPG sensor.

1 All the data from those sensors is fed into CPU 88 which processes
2 the sensor data and then transmits it to other devices. Though as you
3 mentioned, Your Honor, transmission is not necessary. That's just what
4 happens with the data after it's been processed in Mault. Mault does not
5 explicitly disclose processing the signals into the multiparameter serial data
6 output. But that kind of data output would have been obvious in view of
7 Al-Ali.

8 If we turn to slide 20, slide 20 illustrates how Al-Ali works.
9 Al-Ali is a physiological measurement system quite similar to Mault. Raw
10 data from multiple physiological sensors 1302 is input into a signal
11 processor 1330 through interfaces 1310. As described in Al-Ali, signal
12 processors 1330 convert the raw sensor data into physiological parameters
13 such as pulse rate and respiration rate. Those parameters are then sent
14 individually. That's those lines 1332 to multiplexor 1340. And then
15 multiplexor 1340 then combines those parameters into a serial bit stream.

16 So it is petitioner's position that applying that data formatting
17 teaching to the output data of Mault would render claim 1 obvious.

18 JUDGE ARPIN: Counselor, that brings up a point with regard to
19 both of the combinations. Why would you do this combination? Why
20 would you add the serialization teachings of Al-Ali to Mault? Why would
21 you add the serialization teachings of Crow to Luo?

22 MS. HOLOUBEK: So in any combination you look to whether
23 there was a motivation, but you also look to what was known in the art, what
24 were the general possibilities for outputting data, for example, that was
25 known in the art. And in both of these cases, this is simply application of a
26 known technique to a known device and it produces a predictable result.

1 KSR tells us that that is a satisfactory rationale for combining two
2 references. This is a particular individual trying to implement a
3 physiological monitoring device would have their selection of any number
4 of output options. And there may be reasons to use one over the other. And
5 given that there are opportunities and options for outputting data, it's either
6 going to be you are outputting it in parallel or you are outputting it in serial.
7 So it's not like there are an infinite number of options there. So we think it's
8 reasonable that a person of skill in the art would have taken this known
9 technique of Al-Ali and applied it to the output of Mault as well as in the
10 earlier combination of Luo and Craw.

11 JUDGE ARPIN: But counselor, you are not relying on any
12 particular teaching in either reference for their combination. It's just that it
13 would be an option available to a person of ordinary skill in the art and that
14 there are a limited number of options available? Is that a summary of your
15 position?

16 MS. HOLOUBEK: I think it's also that neither Luo nor Mault, the
17 base reference in each combination, they don't really describe how the data
18 would be output. These claims are very specific in what the particular
19 format of that data is. And so when we are looking at, okay, if I am an
20 innovator or an individual looking at Mault or looking at Luo, I know I need
21 to output data. How am I going to output that data? Well, I would look to
22 known output processing techniques in the art to determine how to output
23 that data. So that's why when you are looking for that detail, that's why a
24 person of skill in the art would look to Mault or Al-Ali or would look to
25 Craw for the signal processing techniques.

1 JUDGE ARPIN: But there's nothing about the data here that lends
2 itself to either serialization or another form of transmission?

3 MS. HOLOUBEK: You can look at -- well, if you look at Al-Ali,
4 for example, you have the signal processors that initially when they come up
5 with the parameterized elements, like heart rate or respiration rate, if you are
6 sending something via parallel and say you have a monitor that is taking
7 several different parameters, to send them all in parallel there is a
8 complication that is introduced. So you have to have multiple transmitters.
9 These are typically very small devices when they are wearable devices. So
10 you would have to have multiple transmitters if you are transmitting them in
11 parallel. You would have to have sort of multiple encoding schemes on each
12 one so that the receivers could identify which ones they are going to receive.

13 JUDGE ARPIN: Do these arguments that you have just made
14 appear in the record now?

15 MS. HOLOUBEK: We do discuss about how there is the option of
16 serial versus parallel and that one of skill in the art would be motivated to
17 choose serial data. I don't know that we go into the detail of what all -- why
18 there would be a disadvantage to going into parallel.

19 JUDGE ARPIN: Thank you, counselor. Please continue.

20 MS. HOLOUBEK: Sure. I have about 11 minutes left, so I would
21 like to turn to the 321 IPR, if there's no further questions about the 319 IPR.
22 So now I'm going to be referring to the 321 demonstratives set, and we'll
23 start off on slide 2 here.

24 So each of claims 14 to 21 would have been obvious based on the
25 combination of Kosuda and Maekawa and separately based on the
26 combination of Aceti versus Fricke. As with the first case, Valencell here

1 has focused its arguments on the independent claim 14 and not any of the
2 dependent claims. So that's where we'll also be focused today.

3 Let's take a quick look at claim 14 on slide 3. Claim 14 is very
4 different from the claim we just reviewed for the 319 IPR. Claim 14 is a
5 device claim. And we have it here compared to Kosuda which is the
6 primary reference. So I would like to walk through what this claim requires.
7 It includes -- you know, the device, includes a housing. You have a chipset
8 located within the housing. The chipset includes --

9 JUDGE ARPIN: Counselor, one quick question. Again, I asked
10 previously about the claim construction issues in the DI. We construed
11 several terms, body, headset, housing, chipset, window. Neither party
12 appears to dispute those constructions. Again, patent owner has suggested a
13 modification to the PPG sensor construction. Is it correct to say that there is
14 no dispute, at least from petitioner's side, on any of these claim terms or on
15 the proposed term construction made by the patent owner?

16 MS. HOLOUBEK: That is correct, Your Honor.

17 JUDGE ARPIN: Thank you, counselor. Please continue.

18 MS. HOLOUBEK: So going back to claim 14, we have a chipset
19 in the housing. The chipset includes a PPG sensor, motion sensor and a
20 signal processor. Housing also includes a window to optically expose the
21 PPG sensor to a body and a non-air light transmissive material in optical
22 communication with a PPG sensor and the window. This is clearly taught
23 by Kosuda in view of Maekawa.

24 Comparing the claim to Figure 3 of Kosuda, you can see the
25 similarity. Kosuda include a housing comprising at least one window. And
26 in Kosuda, that's the combination of main body watch case 10A, back lid 14

1 and transparent glass 13C. There's a chipset within the housing, and that's
2 the circuit board shown in green on the demonstrative slide 5. That's in
3 Figure 3 of Kosuda. And the PPG sensor here is shown by LED 13A and
4 photodetector 13B. Acceleration sensor 12 constitutes the motion sensor,
5 and there is also a processor located on the circuit board. That's shown by
6 data processing circuit 17.

7 Turning to slide 6 very quickly, Figure 5 of Kosuda illustrates how
8 the processor takes signals from the motion sensor and signals from the PPG
9 sensor. And that's the detected pulse wave data. And since we are in a
10 hurry, I'll just mention that that's in Figure 5 of Kosuda. Those two signals
11 are processed together and outputs a cleaner PPG signal with reduced
12 motion artifacts. So that's just like the claim term requires that you are
13 taking the motion sensor and the PPG sensor information and using that to
14 create a cleaner PPG sensor signal with less noise.

15 So Kosuda clearly discloses everything from claim 14 except for
16 the non-air light transmissive material between the PPG sensor and the
17 window. But that would have been obvious in view of Maekawa. If we turn
18 to slide 7, you can see from Figures 2 and 6 of Maekawa that Maekawa has a
19 structure that is very similar to Kosuda. You have a main watch case with a
20 window on the bottom, and that's what's shown in Figure 2. I'm referring
21 here to the 321 slide 7. And Figure 6, which is kind of in the middle of the
22 page, shows that you have various components inside the watch case,
23 including a PPG sensor.

24 If we turn to slide 10, slide 10 shows Figure 10 of Maekawa. It
25 shows it inverted from what's in the actual reference, but we show it inverted
26 so you can see how closely this maps to Kosuda. Maekawa has a PPG

1 emitter and detector. That's emitter 4 and detector 5, along with a cover
2 glass 23 just like Kosuda has. But Maekawa also teaches that it would be
3 advantageous to include a fiber optic bundle or this light guide 40 between
4 detector 5 and the cover glass. And Maekawa indicates that this light guide
5 was added to prevent noise from reaching the PPG sensor's detector. So that
6 improves the signal-to-noise ratio, the pulse signal. That light guide
7 constitutes the non-air light transmissive material between the PPG sensor
8 and the window. So when you incorporate that teaching into Kosuda, the
9 combination discloses each and every element of claim 14.

10 So with five minutes left, I would like to touch base on a study and
11 then also briefly address the motion to amend. On slide 14 we can see Aceti.
12 Again, we compare it here to claim 14. Aceti discloses a monitoring device
13 100 that's shown in Figure 1. That's designed to be inserted into and wrap
14 around a person's ear. A device 100 has two parts. It has a processing
15 portion 102 and it has a conducting portion 104. And as you can see from
16 the detail in Figure 3 of Aceti, Aceti includes a PPG sensor. It uses the term
17 "PTG" instead. It's just another way of saying PPG. And an accelerometer,
18 which is the motion sensor.

19 Aceti indicates that those sensors can be located -- and referring
20 here to slide 14 of petitioner's demonstratives, those sensors can be located
21 in processor portion 102 or conductor portion 104. And then Aceti also
22 includes a set of light guides. That's what hears the non-air light
23 transmissive material that run through the conducting portion from the PPG
24 sensor to the end cap 112. And those light guides are covered by a sheath
25 which is what you see in Figure 1.

1 I want to jump quickly to the point that Valencell has made. They
2 have said that this doesn't constitute a housing because conductor portion
3 104 is detachable from processor portion 102. But that's simply not the case.
4 The construction that we agree with that the Board included in its institution
5 decision is that a cover -- is that a housing covers, protects, encloses or
6 encloses a device. It's also considered a casing.

7 And that's exactly what we have here. We have a conductor
8 portion 104, and when we look at the device as a whole, we have to look at
9 the device as a whole. The device doesn't include just the processor, which
10 would be the case if that's all we were concerned about, then okay, we have
11 a processor housing 106. But we are looking at the device as a whole. We
12 have light guides embedded there in 104. We have the window included in
13 the end cap 112. And when you consider that a housing covers all the
14 elements of the device, that's exactly what we have here. We have one
15 portion of the housing that covers the processing portion. We have a sheath
16 that covers the conducting portion, and then we have the end cap 112 that
17 includes the window, as is required by the claim.

18 So unless there are any questions on Aceti, I believe that was the
19 only argument that the patent owner had against Aceti. So in the remaining
20 time I would like to briefly address the motion to amend.

21 So if we just put up slide 18 of the 321 demonstratives, you can see
22 that Valencell's claim amendments modify the recited processor of claim 14
23 in two ways. First the processor extracts physiological and motion
24 parameters; and then second, the processor processes data to be output. And
25 that output data comprises physiological and motion-related information.
26 That output data is parsed out so that an API can use it for an application.

1 Right now I'll just address associate claim 22. There's many
2 reasons why the Board should not grant Valencell's motion to amend. There
3 are a number of procedural issues with the motion that we've addressed in
4 our briefs. One issue I do want to touch on is the claim construction. But I
5 also want to note at the outset that regardless of claim construction on the
6 motion to amend piece is that under either construction the substitute claims
7 are clearly shown by the art. We have two grounds, which are Kosuda,
8 Maekawa in view of Gupta which addresses this API limitation. And then
9 we also illustrate how Aceti, Fricke and Crow render this obvious with Crow
10 addressing the API limitations that you have here.

11 Now, we understand that in the 319 institution decision there were
12 a couple of claims there where the Board addressed a claim construction of
13 the term "API" or I guess the whole term is application-specific interface
14 (API). And the Board indicated that that needed to be -- you needed to show
15 that the data was formatted for a particular application. Petitioners had
16 indicated that that API, that acronym that was attached to the phrase
17 "application-specific interface" meant that that term was intended to be the
18 commonly understood phrase application-specific interface.

19 There has been -- you know, we look at that construction as a
20 preliminary construction. There has been significant evidence to change that
21 preliminary construction, most notably the fact that patent owner in its own
22 documents indicated, referred to that term as an application programming
23 interface. It spelled it out. And then Valencell's expert himself agreed that
24 an application-specific interface, as used in the patent, would have been
25 understood by a person of skill in the art to be the same as the well known
26 phrase application programming interface.

1 With that being said, I realize I'm just about out of time. So I
2 would like to close with saying that under either construction, we have
3 addressed both of those constructions in the papers, and so we believe that
4 the claims, even if you stick with the same construction or if you change it,
5 the claims are invalid or unpatentable under the combinations we've
6 proposed.

7 JUDGE McNAMARA: Thank you, counsel. Once again, counsel,
8 you have 40 minutes. You can use it any way you like.

9 MR. KIMBLE: Thank you, Your Honor. And just to foreshadow,
10 I am intending to leave ten minutes for co-counsel.

11 JUDGE McNAMARA: I know how that goes.

12 MR. KIMBLE: All right. I'm going to begin with the 319 petition
13 and then I'll alert you when I move to the 321 petition.

14 We believe there are at least five reasons why patent owner should
15 prevail in the 319 petition. The first is that claim 1 requires the claimed
16 processor to create a serial data output which Luo and Crow do not disclose.
17 The second is Luo does not teach a respiration rate that can be extracted
18 from a PPG sensor. The third is that Mault does not disclose that a
19 respiration rate can be extracted from signals obtained by a PPG sensor. The
20 fourth is that Mault does not disclose a single monitoring device, as required
21 by the claim, that's capable of sensing both heart rate and respiration rate.
22 And the fifth, we don't think that or believe that Mault and Al-Ali disclose
23 the processing of signals into a serial data output, similar to our contention
24 with respect to Luo and Crow.

25 JUDGE ARPIN: Counselor, I assume you are on slide 10?

1 MR. KIMBLE: Yes, Your Honor. I apologize for that. I'm
2 moving now to slide 13.

3 JUDGE ARPIN: Thank you.

4 MR. KIMBLE: Your Honor, may I ask, I'll just go ahead and
5 address claim construction, that we agree with the conversation you had with
6 petitioner about the fact that there aren't disputed claim terms.

7 JUDGE ARPIN: Thank you very much for saving me the time.

8 MR. KIMBLE: You are welcome. All right. I'm on claim 13 and
9 claim 1. So what we have highlighted on this slide and discussed in our
10 papers is a significant piece of this invention, that these signals that are
11 sensed must be processed via processor and to a serial data output, and not
12 just any serial data output, but one that is configured in a particular way.
13 And that is shown in the claims, but then that also is illustrated very well in
14 the figures.

15 So turning to slide 14, Figure 17 -- we show Figure 17 and 18
16 together here because they interact. Figure 17 shows how the signals from
17 the optical detectors and emitters are transmitted through a digital bus to a
18 processor which processes those signals into multiple data outputs in the
19 serial format 604. And then what Figure 18 then shows in more detail is this
20 serial data output of physiological and motion-related activity is parsed out
21 so that an API can utilize them for particular applications.

22 So just to get to it, the dispute is not serial transmission versus
23 parallel transmission. So that is not the dispute. And it is also not a question
24 of whether prior art teaches transmission. It's a question of whether the prior
25 art teaches the processing of this information into this particular serial data

1 output configured in this particular way. And our contention is that the art
2 just doesn't do that.

3 In fact, counsel said in the presentation the claims -- this is, I think,
4 an exact quote, claims are very specific about configuration of data. I think
5 that's right. So the prior art doesn't disclose this kind of processing of this
6 motion-related information, physiological-related information into this
7 particular serial data output that's parsed out in this way so they can be used
8 by different types of applications.

9 So now I'm moving to slide 16. So Luo and Craw only disclose
10 ways of transmitting data. As I mentioned, that's not what the claims call
11 for. In fact, I think Your Honor asked the question of where is the
12 transmission step in the claims. There isn't one. That's not what they are
13 about. Mere transmission of the data is reflected in the figure, but that's not
14 the Figure 17 of the '941 patent. But that's not what the claims are focused
15 on. They are focused on this creation of a serial data output via the
16 processor. Luo discloses that it can transmit data through a USB port.
17 That's the serial transmission. Again, that's as far as Luo goes. That's not
18 what the claims require.

19 Craw does not teach that heart rate and respiration rate are able to
20 be extracted after processing the signals. Instead, they just -- Craw just
21 teaches that this data can be transmitted serially. Again, that's as far as
22 either of those go. Neither one of them alone or in combination disclose the
23 processing of this sensed data into this particular serial data output.

24 JUDGE ARPIN: Counselor, in your slide 16 in the last bullet
25 point, it says, Likewise, Craw does not teach that heart rate or respiratory

1 rate are able to be extracted. Is that how I should read "can be extracted" as
2 recited in the claim, is able to be, is capable of being?

3 MR. KIMBLE: I think that's right. Can be, able to be, capable of
4 being, yes.

5 JUDGE ARPIN: So if it is or it's capable of being, it would meet
6 the limitation of the claim?

7 MR. KIMBLE: Yes.

8 JUDGE ARPIN: Thank you very much. Please continue.

9 MR. KIMBLE: Next I want to move to our next basis. And that is
10 that the claims require -- and this is a point of contention, that we do believe
11 the claims require that signals from a PPG sensor must be processed into an
12 output from which respiration rate can be required. We do think that that
13 information must come from the PPG sensor. Not just any sensor per the
14 claims. And in fact, I'm on slide 19, the institution decision in this case
15 seemed to confirm that. It said the question at the time was whether it had to
16 come from the same PPG sensor, and the Board found that it didn't. But the
17 Board confirmed that the physiological information may be sensed by at
18 least one PPG sensor and that the signals which are processed into the serial
19 data output from which the physiological parameters comprising subject
20 heart rate and subject respiration rate can be extracted are received from the
21 at least one or more PPG sensors.

22 So we agree with the Board's determination at that stage, at the
23 initial institution decision stage that respiration rate which can be extracted,
24 if it is, it has to come from information sensed by the PPG sensor. And that
25 is a fundamental difference between the patent owner's view of this claim
26 and petitioner's view of this claim.

1 So assuming that's right, Luo and Craw don't show that. Instead,
2 Luo describes or actually mentions briefly in two claims processing or
3 determining respiratory rate but it doesn't -- there's no description in Luo
4 anywhere, certainly not in those claims, of a determination of respiratory
5 rate coming from a PPG sensor. It just isn't there. So to the extent that the
6 Board agrees that the respiration rate would have to come from information
7 from the PPG sensor, Lou and Craw just don't show that.

8 JUDGE ARPIN: Counselor, Luo's claims 37 and 51, and I'm
9 going to refer to 37 here, state that the processing module is configured to
10 process the physiological activity and environmental variables to determine
11 a respiratory rate and an output signal is based on the respiratory rate. The
12 physiological variables, what sensor in Luo do you think gathers that data?

13 MR. KIMBLE: So that's the problem. So it talks not just about
14 physiological, but these activity environmental variables which, I think there
15 would be agreements, not coming from a PPG sensor. There's no disclosure
16 of the physiological variables coming from a PPG sensor and then used to
17 determine respiratory rate. That's why we think this mention in this claim
18 isn't enough to disclose what the claim requires.

19 JUDGE ARPIN: But Luo does disclose the use of PPG sensors.
20 You would agree with that, wouldn't you?

21 MR. KIMBLE: Yes.

22 JUDGE ARPIN: And it does show multiple sensors S1, I think it
23 is, in the figure that was annotated and shown in petitioner's slides?

24 MR. KIMBLE: That it can involve multiple sensors, yes, I think
25 that's true.

1 JUDGE ARPIN: And that those multiple sensors gather
2 physiological data; is that correct?

3 MR. KIMBLE: Yes.

4 JUDGE ARPIN: Please continue.

5 MR. KIMBLE: So my discussion so far has involved grounds 1
6 through 5 of the 319. So I want to focus now on grounds 6 through 11
7 which involve a different base combination. So Mault, the primary
8 reference for these grounds, similarly doesn't disclose a respiration rate that
9 can be extracted from signals obtained by a PPG sensor. Some of the
10 argument here overlaps in terms of what the claims require. With respect to
11 Mault specifically, it requires a PPG sensor -- or sorry, it references a PPG
12 sensor in a wristwatch device. But when it talks about respiration, it talks
13 about other things, the chest strap, ultrasonic sensing, a flow meter. So
14 there's no disclosure of using the PPG sensor to sense physiological
15 information from which respiration rate can be extracted.

16 JUDGE ARPIN: Counselor, are those just other embodiments
17 discussed in Mault, other types of sensors or does Mault say that it
18 exclusively measures respiration through one of those other devices?

19 MR. KIMBLE: Well, that's the only description of how -- under
20 our understanding of how Mault describes calculating respiration. This
21 comes into play in another part of our argument with respect to the single
22 device. We don't see anywhere else in Mault that there is a description of
23 determining respiration rate other than in those examples.

24 I'm going to move, then, to that next argument that I referenced.
25 This is what we had a signpost as reason 4. Mault doesn't disclose --

26 JUDGE McSHANE: We are on slide 24, correct?

1 MR. KIMBLE: Thank you, Your Honor. Yeah, slide 24. Mault
2 doesn't disclose a single monitoring device capable of sensing both heart rate
3 and respiration rate. Claim 1 plainly requires sensing physical activity and
4 physiological information from a subject via a single monitoring device
5 attached to a subject. The petitioner's expert testified that Mault's disclosed
6 respiration sensor is separate from the PPG sensor and the motion sensor.
7 And we have this testimony shown here, and I think there's other testimony
8 around this in our papers, but right here we are looking at Exhibit 2007,
9 page 128, 3 through 12.

10 I said, "So are you saying now that you disagree with that
11 statement that respiration sensor is separate from the PPG sensor and motion
12 sensors?"

13 He says, "I very much agree with that, with what I'm saying in
14 134, and I'm not contrasting that."

15 So he had said previously that he agreed that those are separate and
16 he confirmed that in his testimony.

17 And on slide 25, we have some images of the types of respiration
18 sensors that are shown in Mault. You have in the one instance the chest
19 strap working with the wristwatch. These are not a single device, plainly.
20 We show the ultrasonic sensor embodiment, multiple sensors in addition to
21 some other sensor, plainly not a single device. There simply isn't a single
22 device disclosed in Mault anywhere.

23 JUDGE ARPIN: Counselor, doesn't Figure 1 of Mault show a
24 wristwatch device and that's also shown in Figures 3A and 3B of Mault?
25 Isn't that a single device?

1 MR. KIMBLE: Certainly Mault shows single devices but it
2 doesn't show single devices that include some sort of a sensor for
3 determining respiration rate. You know, in their reply, petitioners refer to a
4 couple of those places -- I think maybe there's just one where Mault talks
5 about a single unit, but it's divorced from the later discussion of the
6 respiration, the sensing of respiration rate. So there's no disclosure of all of
7 these sensors in a single device in Mault.

8 JUDGE ARPIN: Please continue.

9 MR. KIMBLE: Thank you, Your Honor. So moving now to our
10 reason 5, I'm on slide 26, this is similar to our argument with respect to the
11 first few grounds. Again, the claim 1 requires this particular serial data
12 output to be processed. It has to be configured in a particular way.
13 Petitioner alleges that Mault teaches processing signals from the motion
14 sensor and that Al-Ali teaches processing physiological signals into a serial
15 data output of physiological information. But they don't argue that the
16 combination of those teaches processing signals from a motion sensor and
17 PPG sensor into a serial data output of physiological and motion-related
18 information.

19 And even if it was true, even if you assume that they did, their
20 conclusory statements just aren't enough to demonstrate the combination.
21 Really what they have done is just restated the claims as a roadmap to
22 combine Mault and Al-Ali. And really even then what Mault and Al-Ali
23 does at most is a creation of a generic serial data output. Not the serial data
24 output of physiological and motion-related information. That's key. I mean,
25 that's what the claim requires on its face. Again this was a key inventive
26 aspect to the '941 patent.

1 I think I may be moving to the 321. One moment. Yes. So I'm
2 going to go forward, unless there's questions about the 319, comment about
3 the 321 matter. So I'm beginning on slide 30. Here we think there are three
4 primary reasons why the 321 petition is unable to demonstrate that apparatus
5 claim 14 is unpatentable.

6 And again, just as a reminder, the foregoing conversation is about
7 the method claims of the '941. Now we are talking about apparatus claims.
8 Here again there's two groups of references. One is around Kosuda and the
9 other is around Aceti. So Kosuda does not disclose a chipset comprising a
10 PPG sensor within a housing. Also, the proposed motivation to combine
11 Kosuda with Maekawa ought to be rejected, because as I will discuss
12 further, there would be no reason for Kosuda or a person of ordinary skill
13 with Kosuda to look to Maekawa. In fact, using Maekawa's disclosure
14 would only complicate and make Kosuda's performance worse. And then
15 third, Aceti does not disclose a housing enclosing a chipset and comprising a
16 window.

17 All right. So Kosuda, we have a picture here. I'm on slide 33.
18 This is as annotated by petitioner initially argued and only argued in the
19 petition that the housing was a main body watch case 10A and then backlit
20 14, that that was the housing. Not transparent glass 13C. In fact, the expert
21 agreed in his deposition, he said, "I'm not claiming that transparent panel
22 13C is a part of the housing, that's correct."

23 All right. So let's take that as it is. If the housing is backlit 14 and
24 main body watch case 10A, plainly the PPG sensor, including 13A, 13B and
25 then the acceleration sensor 12, aren't enclosed within that housing. Further,
26 the petitioner has argued in the petition --

1 JUDGE ARPIN: Counselor, our definition or our construction of
2 the term "housing" was one or more parts that covers, encloses, supports or
3 protects. Why wouldn't those elements be one or more parts that cover,
4 enclose, support or protect the chipset?

5 MR. KIMBLE: In particular, are you asking about -- well, so if
6 you mean the backlit and the main watch case, those are one or more parts. I
7 think that's fine. But they don't enclose, support or protect the PPG sensor.
8 The chipset's on it. Not in it. I don't think and our expert agrees that that
9 would meet the definition of housing.

10 Furthermore, the petitioner has had multiple positions about what
11 13C is. Is it a window? Is it part of the PPG sensor? If it's part of the PPG
12 sensor, it cannot also be part of the housing. So to us, the issue here is not
13 whether it's multiple parts. It's whether, as defined by petitioner, whether
14 that encloses, supports or protects the chipset. We think it clearly doesn't.

15 And so I'm on slide 34. So petitioner contended that light emitting
16 diode 13A and 13B at least comprised the PPG sensor, and in one spot in
17 their petition at page 15 contended that the transparent glass 13C was also
18 part of the PPG sensor. Again, if transparent glass is part of the PPG sensor,
19 the alleged disclosed housing doesn't enclose or protect that PPG sensor.

20 JUDGE ARPIN: Counselor, how is the window as recited in claim
21 14 different from the transparent glass 13C shown in Kosuda's Figure 3?

22 MR. KIMBLE: So I think that one might be able to argue that
23 transparent glass 13C is a window. I know at least in one spot in the record,
24 petitioner has done so. They have also argued that it's part of the PPG
25 sensor, which then means it can't be the window. In either the instance,
26 though, it's not a part of the housing. And I think that that's important

1 because the housing, as identified repeatedly through the petition to be the
2 main body watch case 10A and backlit 14, simply don't satisfy the limitation
3 of the housing.

4 JUDGE ARPIN: Please continue, counselor.

5 MR. KIMBLE: So next I would like to, beginning on slide 36,
6 address our second reason with respect to the 321 petition or our second
7 primary reason. And that is that the proposed motivation to combine
8 Kosuda and Maekawa ought to be rejected. So claim 14 requires a non-air
9 light transmissive material and optical communication between the at least
10 one PPG sensor and the window. There's no disagreement that Kosuda
11 doesn't disclose that thing. Therefore, petitioner looks to Maekawa.

12 Now, the problem with that, however, is that petitioner hasn't
13 demonstrated that using Maekawa's technique would improve the
14 performance of Kosuda. And in fact, the disclosure in Maekawa, as we've
15 explained in our papers and I'll address in a moment, would worsen
16 signal-to-noise ratio. This would counsel against any person of ordinary
17 skill looking at Maekawa or Kosuda and thinking I want to use Maekawa's
18 technology because it would make my device worse. And that counsels
19 against obviousness under legion Federal Circuit law, including the case we
20 cite on slide 37.

21 So how does it make it worse? So in multiple ways. One is that
22 what Maekawa discloses as this fiber optic cable bunch between the sensor
23 and the window, and our expert has testified that that fiber optic bunch is
24 very susceptible to motion. So it's going to make noise worse. Not better.

25 Secondly, as we show on slide 39, Maekawa itself talks about this
26 glass 23 in a different embodiment but that's also present in the embodiment

1 that has the fiber optic bunch, that it increases noise because light gets
2 trapped in this glass 23.

3 JUDGE ARPIN: Counselor, referring to the recitations in claim
4 14, where do you link noise reduction with the non-air light transmissive
5 material?

6 MR. KIMBLE: So --

7 JUDGE ARPIN: Noise reduction appears to be discussed in
8 connection with the chipset. Whereas, there is no mention of noise
9 reduction with regard to the non-air light transmissive material.

10 MR. KIMBLE: Fair enough. But our argument is that a person of
11 ordinary skill in the art would know that noise reduction is key. That's been
12 talked about, I think, in both proceedings so far. Reducing noise is the main
13 objective or at least a main objective. And so the fact that adding this
14 Maekawa would worsen noise would counsel against a person of ordinary
15 skill in the art looking to Maekawa.

16 JUDGE ARPIN: Counselor, why isn't the reference to reduce
17 motion artifacts, and that's quoted from claim 14, why doesn't -- and that's in
18 the portion of the claim that discusses the chipset having the at least one
19 motion sensor. Why shouldn't we read that as directed to the at least one
20 motion sensor rather than to the non-air light transmissive material?

21 JUDGE McNAMARA: And before you answer that, let me ask
22 another question that's very much related to the same thing. So at the same
23 time if you answer, maybe we'll get both of them. The claim says the signal
24 processor is configured to process signals from the motion sensor and to
25 reduce motion artifacts. So the question then that it's not just the sensor but

1 it's the signal processor is configured to reduce the artifacts. So how does
2 that relate in this particular context?

3 MR. KIMBLE: So I understand what both of Your Honors are
4 saying, and I think that there are some specific callouts in the claims as to
5 ways of reducing motion artifacts. In general, in the technology, as has been
6 discussed so far today, I think maybe discussed going forward this
7 afternoon, there are various things that designers are doing to reduce noise.
8 What we are saying here is that this particular combination, though it doesn't
9 hit on the portions of the claims that Your Honors are referring to, still
10 counsels against such a combination because though it doesn't hit at the
11 particular claim limitation, notwithstanding that, the person of skill in the art
12 still isn't going to be inclined to go bring in a solution that is just going to
13 make the device worse. That's what we are trying to say. And worse in
14 terms of increasing noise, making the signal-to-noise ratio worse.

15 JUDGE McNAMARA: I think where I'm coming from on that is
16 if the signal processor is going to compensate for it, then maybe I'm not as
17 concerned about it, so maybe I would consider using something that
18 introduced a little bit of noise.

19 MR. KIMBLE: So I think the answer to that is with respect to the
20 inventions described in the '941 patent, maybe that is true. But what we are
21 talking about now is bringing in this other approach that has its own
22 problems. And I think it's very questionable as to whether the claimed
23 processing could fix what is wrong with Maekawa.

24 JUDGE McNAMARA: I don't want to apply my own hindsight
25 there. So I understand where you are coming from.

1 MR. KIMBLE: And I'm mindful of trying to give enough time to
2 my co-counsel. So what I would like to do is just address Aceti quickly. So
3 as was addressed, the issue here is that even under the Court's construction,
4 which we are not disputing of housing, Aceti simply doesn't disclose a
5 housing that encloses a chipset and that comprises a window.

6 Just to be clear, claim 14 requires that the housing enclose the
7 chipset that comprises one window and comprises non-air light transmissive
8 material. All of this has to be in the housing. I don't think that's disputed.

9 What's wrong with Aceti, and I'm looking at slide 42, is that we
10 think that that shows -- that's two housings. So we don't dispute what we
11 have highlighted in red, which is two pieces that are put together constitute a
12 housing, and that encloses a chipset. That's fine. But what we don't agree
13 with is that this bendable ear piece that has -- which is where petitioner
14 seeks to find other claim limitations is part of that housing. Maybe that's a
15 housing on its own. But we don't think, and our expert agrees, that a person
16 of ordinary skill in the art would look at this device with these two distinct
17 pieces and consider that to be a housing that encloses all of these claim
18 limitations.

19 And Aceti really confirms this. It says that the conductor portion
20 104, this is that blue wraparound piece, is a separate piece from housing 106.
21 It says conductor portion 104 is removably coupled to the processor portion
22 102 and is considered disposable. Additionally, the optical transparent
23 window 408 located at the end of the conductor does not cover, enclose,
24 support any of the electronic components. So the chipset, so this, quote,
25 window 408 as claimed, is at the tip of the bendable portion, but the

1 electrical components, the chipset are way back in a different part of this
2 device in this separate housing.

3 And Aceti goes on. It says -- I'm sorry, I'm on slide 45. First end
4 112 is configured for support, biocompatibility, durability, talks about the
5 types of materials that it can be made out of. Given the window's different
6 materials and function, a POSA, and our expert agrees with this as opined
7 about, would have considered elastomer window 408 to comprise a different
8 housing or to sit atop the housings comprised of one of the other housings.

9 So I think you just go back to the figure, and I am going to leave
10 the rest of my time unless there's questions, I think it's very clear that a
11 person of skill in the art wouldn't look at this device and consider the red
12 portion and the blue portion to be part of a housing. And certainly none of
13 the housings in the '941 patent have any similarity to what's shown in Aceti.

14 So with that, I have almost nine minutes. I'm going to leave the
15 rest to co-counsel, if that's satisfactory to Your Honors.

16 MR. RHOADES: Thank you, Your Honors. Once again, Scott
17 Rhoades speaking in relation to motion to amend. And there is only a
18 motion to amend in the 321 IPR related to the '941 patent.

19 If you look on page 2, or slide 2, it shows the claim amendment
20 being made. The key portion of this is the wherein clause. And specifically
21 drawing your attention to wherein the output data is parsed out such that an
22 application-specific interface can utilize the physiological information and
23 motion-related information.

24 Petitioners in their petition or in their response to our motion to
25 amend have ignored the claim construction set forth by this Board in the 319
26 IPR. Instead they have developed their own construction and applied that

1 construction to the prior art. Their construction is the application-specific
2 interface (API) simply indicates that data is delineated in some manner
3 instead of the instruction applied by this Board.

4 JUDGE ARPIN: Counselor, as an initial point, I think petitioner's
5 counsel testified that -- or not testified, stated that its expert testified that --
6 or excuse me, your expert testified that an application-specific interface was
7 actually an application programming interface. Is it patent owner's position
8 that an application-specific interface is an application programming interface
9 or are they different things?

10 MR. RHOADES: It is our position they are different things. It is
11 our position that this term "application-specific interface" should be
12 provided the definition that was set forth in the specification, the definition
13 set forth by this Board when it relied upon it for its construction. I mean, the
14 Board stated in its paper 10 that the specification explains that the
15 application-specific interface (API) is directed toward a particular
16 application. And that is the construction that this Board has given and that is
17 the construction we believe should be consistently applied to the same patent
18 in a separate IPR.

19 JUDGE ARPIN: Counsel, in that DI we did not institute on the
20 claims that were containing this limitation, and we stated at the end of that
21 DI that that was not a final construction. Is our construction as it appeared
22 in 319 -- and I'm basically saying this for the record, is the construction we
23 set forth in the 319 DI, is that the construction that you are arguing is the
24 correct construction of the term application-specific interface (API)?

25 MR. RHOADES: Yes, it is, Your Honor.

26 JUDGE ARPIN: Thank you. Please continue.

1 MR. RHOADES: In the response petitioner has taken several
2 positions related to this claim construction. First they state that we have
3 taken positions contrary to the previous positions and position of the Board.
4 In the motion to amend and since the Board has construed this claim, we
5 have taken the position, patent owner, that it is as set forth in the
6 specification, and it is application-specific interface (API) as directed toward
7 a particular application.

8 Petitioner stated this previously, that they would like the Board to
9 reconsider this construction or in this case, I guess, since there was a
10 preliminary, set forth a construction different than what is in the
11 specification. But what they are asking is they are asking that this Board
12 ignore a specific definition set forth in the specification, the one that the
13 Board has already found, and ignore in favor of extrinsic evidence in the
14 form of expert testimony.

15 The Board laid out the principle of claim construction in the paper
16 10 and the 319 stating -- and this is at the very bottom after the last ellipses,
17 that we are unable to construe the claim term from such extrinsic evidence,
18 and that extrinsic evidence is cited above as to the specific meaning they can
19 glean from the specification. That is what's happened in this case. Only
20 when you can't construe a term based upon gleaning meaning from the
21 specification would you ever turn to extrinsic evidence such as expert
22 testimony. Patent owner submits that the proper construction is a
23 construction previously identified by the Board and identified in the 319 and
24 request that such construction be given to that term.

25 Additionally, patent owner has argued that the precise scope of the
26 term "application-specific interface" is irrelevant for the purposes of

1 determining unpatentability on obviousness. Patent owner disagrees with
2 this term and is not exactly sure how you would make a claim term
3 irrelevant in an analysis.

4 Finally, they reach their ultimate conclusion. In the petitioner's
5 opposition, paper 31 at page 10, they state that wherein the output data is
6 parsed such as an application-specific interface (API) can utilize the
7 physiological information and motion-related information for an application
8 simply indicates that the data is delineated in some manner. Petitioners have
9 genericized this kind of construction of the application-specific interface
10 and applied that genericized construction in their analysis.

11 If you would please turn to slide 15, petitioners have argued that
12 Kosuda, Maekawa and Gupta render claims 22 through 29 obvious and that
13 Aceti, Fricke and Craw render claims 20 through 29 obvious. To do this
14 they rely -- they state that Kosuda does not disclose this element but rely on
15 Gupta to get there. However, it fails. If you look at slide 17, in their
16 opposition paper they state that Gupta's system receives the pulse signal and
17 accelerometer data from the sensors in a timed division multiplex manner
18 and processes data to provide a data packet, a serial data stream, of heart rate
19 impact motion.

20 They then cite to the Gupta reference which is 1045. They also
21 cite to Exhibit 1072 which is their expert. They then just state in the last
22 sentence that data is arranged such that an application-specific interface can
23 decode the packet and a particular application can display the information
24 from the packet. That reference only goes to their expert testimony. There
25 is nothing in Gupta that provides this information.

1 On slide 18, petitioners provide no citation to Gupta showing that
2 the output data is parsed such that an application-specific interface can
3 utilize the physiological information and motion-related information. They
4 merely imply there and simply indicates that data is delineated in some
5 manner and construction to this.

6 It's also important to note that nowhere in their opposition did they
7 state that they are applying both definitions. They applied one construction
8 which is the simply indicates, and to them that means if there's a data
9 structure, that simply indicated that the claim term API is met.

10 JUDGE McNAMARA: Counsel, your time expired. Are there
11 any questions from any of the members of the Board?

12 JUDGE ARPIN: I have one question, Judge McNamara. Is there
13 any particular meaning that patent owner is ascribing to the word "parsed"?
14 I know that it is supported in the '941 patent, but is there some particular
15 meaning that you are giving to that term?

16 MR. RHOADES: As it relates to the motion to amend, no. But I
17 have not been dealing with the main arguments in the petition itself.

18 JUDGE ARPIN: Thank you very much, counselor. Judge
19 McNamara, I have no further questions.

20 JUDGE McNAMARA: Thank you. We'll hear rebuttal from the
21 petitioner, ten minutes.

22 MS. HOLOUBEK: Thank you, Your Honor. I would like to just
23 briefly address the 921 [sic] grounds first, specifically Kosuda and
24 Maekawa. Patent owner has alleged that petitioner was unclear and did not
25 include the backplate or the transparent glass plate as part of the housing in
26 its petition. I just want to put in front of the Board, this is page 25 of the

1 petition for the 321 IPR which clearly states Kosuda discloses that the
2 housing, i.e., main body watch case 10A. And we previously on slide 20
3 said that the main body watch case included backlit 14. So Kosuda discloses
4 that the housing comprises a window. That means includes. The housing
5 comprises a window, i.e., transparent glass 13C in the opening and backlit
6 14 optically exposed at the PPG sensor.

7 So this is in the part of the petition that walks through the claim
8 elements one by one. We think the petition is very clear that all three of
9 those elements, the watch case 10A, the backlit 14, transparent glass 13C
10 were clearly indicated in the petition as being part of the housing.

11 Now, the patent owner does refer to language on page 15 that says
12 that the transparent glass 13C is part of the pulse wave sensor. Well, that's
13 Kosuda's own language. That's an overview of Kosuda which is where we
14 were describing what Kosuda itself discloses. And if you look at
15 paragraph 141 of Kosuda, you can see that that's where this language comes
16 from. Kosuda says that its PPG sensor includes an emitter, a detector and a
17 transparent glass 13C, but it gives a particular function to that. It says the
18 transparent glass 13C is to protect the emitter and detector. So that's why
19 when we were walking through the claim elements describing the
20 components that comprise the housing, that's why the transparent glass
21 which is in there to protect the emitter and detector constitutes the housing.

22 In addition, if you read just a little bit further, that's just a couple of
23 lines down in paragraph 141, Kosuda says that transparent glass 13C is fixed
24 as a component of the device main body. So it's our position that we were
25 very clear throughout that the housing in Kosuda constitutes the watch case
26 10A, the transparent glass 13C, the backlit 14. All of that encloses or

1 satisfies the terms of a housing because it supports, protects, encloses the
2 chipset.

3 I would also like to briefly touch on the motivation to combine
4 argument. Valencell has said that adding Maekawa's technique to Kosuda
5 would worsen the signal-to-noise ratio of Kosuda. And that just doesn't hold
6 water. Valencell offers no evidence that motion noise would be increased.
7 In fact, when you look at the two side by side, Maekawa is essentially the
8 exact same type of sensor as Kosuda. You have the emitters and the
9 detectors, the PPG sensor, and you have the glass plate. And they indicate in
10 Maekawa that that their device was improved by adding in this fiber optic
11 light guide between the detector and that glass plate.

12 In any event, even if some motion noise were added, as we
13 describe in our petition, Kosuda explains how to reduce motion artifacts.
14 And also Maekawa itself discloses techniques for reducing any signal noise
15 coming from the emitter.

16 So that's Kosuda and Maekawa. I would like to turn back to the
17 319 IPR, if there are no questions on the Kosuda and Maekawa aspect.

18 In the 319 IPR, two things. First just very quickly, I would like to
19 address counsel's position that the Luo and Crow combination shows
20 transmitting of this serial data output but not actually creating it. You can't
21 transmit something you don't have. The combination of Luo and Crow
22 clearly discloses how you would formulate a serial data output signal. What
23 you ultimately do it with it, whether it just sits there in storage or whether it's
24 ultimately transmitted is irrelevant because the claim doesn't go that far to
25 say what you do with a signal that you have created. It clearly shows how
26 you create the signal. It shows how you take the parameterizations out, and

1 just the fact that it transmits, again, you can't transmit something that you
2 don't have.

3 And I would also like to discuss the idea that the respiration rate,
4 Valencell's argument that the respiration rate in the Luo and Crow
5 combination doesn't come from a PPG sensor. Your Honor correctly noted
6 that Luo uses a PPG sensor to detect respiration rate. Luo states that
7 respiration rate is a physiological variable. But Valencell said, well, it also
8 talks about you have this activity sensor being involved, so it's not really
9 clear where the physiological information that constitutes respiration rate
10 comes from.

11 But claim 1 is not so limited that the respiration rate that's recited
12 in the processing portion as part of the serial output data must come solely
13 and directly unchanged from the PPG sensor that's recited in the sensing
14 portion. The sensing portion of claim 1 says that the physiological data is
15 sensed by at least one PPG sensor.

16 And claim 1 is an independent claim. There's also claims 6 and 8
17 which we have up on the screen now. This is slide 10 of petitioner's 319
18 demonstratives. Claim 6 indicates that prior to processing signals from the
19 motion sensor and the PPG sensor, you remove frequency bands and you
20 produce these preconditioned PPG signals and you filter them to reduce
21 motion artifacts. Claim 8 describes how you do that. You filter using these
22 various techniques.

23 And if we turn to the next slide, which is slide 11, this is Figure 13
24 of the '941 patent which explains how this preconditioning happens. You
25 have channel A, which is the signal from the physiological information. So
26 that's the at least one PPG sensor. You also have channel B, which is the

1 signal from the activity sensors, the accelerometers. And you can see that
2 these are combined. What's in the middle there is a dynamic filtering
3 method where you can see where the signal comes in from the activity
4 sensors. It's combined with the raw data signal from the PPG sensor. And
5 what comes out is channel C, and that's what the '941 patent describes as the
6 preconditioned signal.

7 Going back to the claims which say this all happens before it's ever
8 fed into the processor and before the processing is performed, so it's clear
9 that even in the '941 patent they recognize that the -- whatever the
10 physiological information is that's output in the serial data output, it is not
11 the same as the raw data signal that comes straight out of the PPG. It has
12 been processed. It's also been parameterized, and there's no requirement.
13 And in fact, the existence of claims 6 and 8 means that claim 1 necessarily is
14 broad enough to include the respiration rate being preconditioned by the
15 motion sensor data.

16 A couple other points, turning to Mault and Al-Ali, patent owner
17 has argued that there is no single monitoring device capable of sensing both
18 heart rate and respiration rate. And again, that's just not the case. If we look
19 at -- this is in Mault column 11, line 66 says that respiration sensors may
20 take several forms and goes on in column 12. It says that other -- it
21 describes a chest strap as was discussed by patent owner. It describes
22 several other types of respiration sensors, and it says right there, other types
23 of respiration sensors may also be used.

24 And if we look at Figure 4 here of Mault, you have a respiration
25 sensor. Patent owner has not disputed that respiration rate can be
26 determined by a PPG sensor. Mault says other types of sensors may be

1 used. And Figure 4 shows monitoring device 84, and it clearly states the
2 present -- a monitoring device, the various components of a monitoring
3 device may be housed within a single housing. So I realize that there is one
4 embodiment of a chest strap that communicates with another component of
5 the monitoring device, but Mault here clearly indicates that a single housing
6 can be used for the monitoring device which also includes respiration rate
7 sensor, heart rate sensor, which can be of any type of sensor.

8 And then lastly, I just want to address in the few seconds I have
9 left, in terms of this motivation to combine, since *KSR*, the teaching
10 suggestion motivation test is no longer the only test. *KSR* recognized that
11 there are many reasons why a person of skill in the art would look to
12 multiple references. Yes, there has to be a rational underpinning, but again,
13 there are many reasons identified in *KSR*. In our petition we indicate what
14 the rationale was and we submit that the references are properly combined.

15 Thank you, Your Honors.

16 JUDGE McNAMARA: Are there any other questions from the
17 panel?

18 JUDGE ARPIN: No further questions, Judge McNamara.

19 JUDGE McNAMARA: We are scheduled to resume at 2:00.

20 We've run a little over. I'm going to suggest that we resume at 2:15 p.m., if
21 that's all right with everybody. That's 2:15

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1 p.m. eastern time, Judge Arpin. And we will adjourn for now. Thank you.

2 (Whereupon, the proceedings at 1:15 p.m., were concluded.)

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PETITIONER:

Michelle Holoubek

Michael Specht

Mark Consilvio

STERNE, KESSLER, GOLDSTEIN & FOX

holoubek-ptab@sternekessler.com

mspecht-ptab@sternekessler.com

mconsilvio-ptab@sternekessler.com

PATENT OWNER:

Justin Kimble

Nicholas Kliewer

BRAGALONE CONROY, P.C.

jkimble-ipr@bcpc-law.com

nkliewer@bcpc-law.com