EXHIBIT A

IN THE UNITED STATES DISTRICT COURT

IN AND FOR THE DISTRICT OF DELAWARE

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PERSONALIZED USER MODEL, L.L.P., Plaintiff, v GOOGLE, INC., Defendant.	:	CIVIL ACTION
GOOGLE, INC., Counterclaimant, v PERSONALIZED USER MODEL, L.L.P., and YOCHAI KONIG, Counterclaim-Defendants.	:	NO. 09-525-LPS

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Wilmington, Delaware
Wednesday, March 12, 2014
Jury Trial - Volume C

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BEFORE: HONORABLE **LEONARD P. STARK**, U.S.D.C.J.

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APPEARANCES:

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and

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P R O C E E D I N G S

(REPORTER'S NOTE: The following jury trial proceedings were held in open court, beginning at 8:33 a.m.)

THE COURT: Good morning.

(The attorneys respond, "Good morning, Your Honor.")

THE COURT: Are there any more issues plaintiff wants to raise this morning?

MR. NELSON: I don't believe so, Your Honor.

THE COURT: Okay. Any issues defendants want to raise?

MR. PERLSON: Yes, Your Honor. Good morning.

THE COURT: Good morning.

MR. PERLSON: A few issues on, there are some issues with some of the issues with the Konig exhibits. I don't think we're going to get to the, I guess the cross of the cross for Konig. I think we can put that off for now and focus on Pazzani.

THE COURT: Okay.

MR. PERLSON: So there are a few different objections for Pazzani. There are two correspondence, attorney correspondence between our firm and SRI Denton that plaintiff seeks to introduce into evidence through Dr. Pazzani basically about discovery disputes. It's PTX-226

and 379. And I think these are implicated by slide 109.

I mean it's very prejudicial to, and confusing for the jury to get these things. I mean, for example, there is back and forth about discovery. You know, it's talking about how David Perlson isn't traveling today and can't meet and confer, and then, you know, back and forth about how your accusations are inappropriate. There is no reason to put this stuff in because they have the evidence that they supposedly wanted for it elsewhere.

For example, PTX-266, they want to put in the portion of the letter where Andrea Roberts, our counsel, says if DoubleClick system does not provide adequate advertisement, then YouTube is treated as any other publisher in the Adsense for Content system. And they want to use her statement to prove this, but they played Nemeth's testimony yesterday and said the same thing. So they don't even need it.

Then there is another one that they want to put in that says, so YouTube doesn't do any special cookie related targeting, but we provided the exact same thing in our second set of supplemental interrogatory responses to plaintiff's fourth set of interrogatories. So having this, you know, irrelevant I guess, you know, really hearsay statements from counsel, I mean I think the jury is going to be very confused and it's totally unnecessary and

irrelevant.

THE COURT: Okay. We'll hear plaintiff's response.

MR. NELSON: May I have slide 109, please? The third page. Thank you.

So, Your Honor, this is slide 109. This is the first of the two letters we're talking about. And we're not seeking to introduce these to talk about discovery disputes or anything like that. We're seeking to introduce these because these letters were provided to us in lieu of taking additional discovery to try to remedy discovery disputes. We relied on these letters, Dr. Pazzani relied on these letters.

We offered last night, if they're willing to stipulate that YouTube is treated as any other publisher in the Adsense For Content system, because that is how we're basically going to try to prove YouTube infringing because it does the same thing as any other publisher in the Content Ad system, if they're willing to stipulate to that, we will withdraw this letter.

But if they're not, they introduced some testimony counterdesignated from Nemeth that indicated maybe they're still trying to differentiate the two systems. And this statement was provided in lieu of a 30(b)(6) deposition to us, and we relied on that statement.

One, it's not hearsay. It's an admission of Google. Two, it's highly probative. Three, it's not prejudicial and we're not seeking to use the other stuff. I mean this isn't about discovery disputes.

THE COURT: But you want to offer into evidence the underlying letter which I guess is PTX-226. Can we go ahead and redact that and limit it just to the portion you have on the slide here?

MR. NELSON: Sure. We absolutely could, Your Honor.

THE COURT: And that's one of the two issues I think raised.

MR. NELSON: Yes, that is one of the letters. May I have the other letter, please? It is slide 183. It's the second deck, please.

So while the slide is come up, Your Honor.

So this one, let me just read a portion the letter. This is a letter from Google's attorneys to Christian Samay of our firm relating to a potential 30(b)(6) deposition. And the letter says: Given the timing of the letter briefs, we think this should moot much, if not all, of what PUM is seeking through interrogatory responses or 30(b)(6) depositions.

Then it goes on for three pages to identify specific subroutines and code that link up to the Google

systems, so basically to put the code files together with the functionality of the accused systems by name.

And, again, we absolutely relied on this letter as a basis for which code does which thing for which system. And so, you know, to the extent this letter has anything about back and forth and underlying discovery stuff, we're happen to redact that. We're not looking for, you know, prejudice and some kind of discovery fight.

THE COURT: Are these letters referenced in Dr. Pazzani's expert report?

MR. NELSON: Yes, they are.

THE COURT: Do you have anything else?

MR. NELSON: No. They're not hearsay and we think they should come in.

THE COURT: Mr. Perlson, do you want to respond?

MR. PERLSON: Yes. Can you put 109 back up, please?

So I don't think -- what we're saying here, first of all, if you can see on here, that there is discovery squabble. The request for another 30(b)(6) is without merit. And then on the bottom, they say, you know, issues are not ripe for the Court.

THE COURT: So if they redact all of that, do you still have an objection?

MR. PERLSON: I do. And he is mischaracterizing

what it said. We're pointing to, we're just repeating the very same testimony that they played yesterday.

THE COURT: All right. But is there a dispute on that? Are you disputing the substance of this point? YouTube is treated --

MR. PERLSON: No, but he testified to it yesterday. There is no reason to put in attorney correspondence.

THE COURT: Are you willing to stipulate to it?

MR. PERLSON: That there are two methods -- I mean I will go back and see if there is some clarification on that but I suppose if you want us to stipulate on something we can do that.

THE COURT: I don't want both --

MR. PERLSON: I don't think we have to stipulate to anything just because they tried to get in evidence through a letter between us.

THE COURT: You don't have -- I'm not going to force you to stipulate to it, but I'm going to let them either put in evidence that they relied on in lieu of discovery, which it sounds like this is. We would redact it to eliminate hopefully any undue prejudice to you. If it's a disputed point, then they're entitled to put in the evidence their expert relied on. If it's not a disputed point, then it's not a disputed point, and my ruling would

be different.

MR. PERLSON: Just because our expert relied on it doesn't mean it's admissible. What is in there is our -- we're saying they're not required to, they shouldn't get another 30(b)(6) deponent because we provided a deponent who already testified to something and they played that testimony. They don't need this at all.

THE COURT: All right. Well, my ruling is I guess you are not -- you can have time to think about whether you want to stipulate, but if you don't stipulate, then I will allow them to put on a redacted version of this slide that takes out any confusion or risk of confusion about there is a discovery dispute and what lawyers are arguing about. Similarly, the underlying document would need to be redacted consistent with that.

The expert has apparently indicated in his report he relied on this letter. Plaintiff indicate they relied on it in lieu of taking additional discovery and for those reasons, I would allow them to present the slide and the underlying document.

MR. PERLSON: Okay. We'll confer.

And then the other one, 379, is this letter, PTX-379. Could you -- I don't know if you can put that up.

I mean they say they relied on this letter, but there was no rebuttal to my other, my main point which is

that we put this information in defendant's second supplemental set of interrogatories and that same information is in there. So we said it in a letter, sure. And then we supplemented the interrogatory. That is what they should be pointing to. They don't need this.

THE COURT: So if they redact all the back and forth in discovery and, you know, you are unavailable, et cetera, then what is the prejudice to them using it in a letter form as well as in lieu of an interrogatory?

MR. PERLSON: I don't think it's appropriate to be putting before the jury a letter between counsel at all. I mean it should be an interrogatory response. That is the type of thing that they could do for Your Honor. I think it will be confusing for the jury to see the Quinn Emanuel letterhead on there and have back and forth who are these people, what is this thing behind them, when they're getting, all it is is this information. That is not an appropriate piece of evidence that should be before a jury.

THE COURT: Is there anything else?

MR. PERLSON: No, Your Honor. Not on that.

THE COURT: Right. Understood. Mr. Nelson, why not just the interrogatory? Why do we need the letterhead, et cetera?

MR. NELSON: Because the interrogatory doesn't contain every single piece of information that this letter

does. And I can't go back and point code by code file, but this letter was given to us in response to a discovery dispute, answering a lot of the questions that we relied on it to.

THE COURT: All right. I'll accept your representation. You will need to redact it to take out anything that night be characterizing counsel's interactions and just limit it to the substance that you are going to rely on. But the fact that the jury will learn lawyers do communicate and have a letterhead I don't think will be unduly confusing or prejudicial under these circumstances.

MR. NELSON: Thank you, Your Honor.

THE COURT: So the objections are overruled. If you work out some stipulation, fine. Otherwise, you have my rulings.

MR. PERLSON: Again, obviously we need to see the redacted copy.

THE COURT: Of course. Of course.

MR. PERLSON: Another one is PTX-381, slide 150. Would you pull that up, please.

So this is a deposition of Google -- of a Google witness, Michael Jahr in another case. And I guess they just want to read it to the jury, but it was on their exhibit list. The actual deposition was on the exhibit list and we didn't have a problem with them using the deposition

just like they would any other deposition, but just because the deposition is in another case doesn't mean that they can just throw it up there. If they want to use it like a deposition, then they should have designated it and, you know, played it and we can counter and that sort of thing. This is just taking an answer that they plucked out that they want to show to the jury. I don't think that is appropriate and it's not supposed to be how you use a deposition.

THE COURT: All right. Thank you.

MR. NELSON: Thank you, Your Honor.

So we tried to work this out last night, and I guess we still haven't, but the only portion -- this is the deposition from a previous case, not this case, and the only portion of it that we want to use is what is on the slide, not the whole deposition or anything like that.

And, you know, because it was from another case, it basically just got left off the designations inadvertently; and, you know, there is certainly a lot of law that says there is no reason why this isn't admissible, you know, other than it didn't come in in the form that it would have come in a couple days ago.

We're happy if they want to counterdesignate something, to have that come in as well on cross or just be read in. We just ask that this come in, in this limited way

as stated on the slide.

THE COURT: All right. Mr. Perlson, would you like the opportunity to counterdesignate if I'm going to allow them to do this?

MR. PERLSON: No, Your Honor. I mean I don't think we should have to. I don't know what the full scope of this deposition is, frankly. But Your Honor already ruled they can't do this. This is what we raised before. That they wanted to throw a bunch of deposition testimony up without designating it; and this is the exact -- it's exactly what they've done. And this, just because it's in another case doesn't excuse it from your prior ruling. This would essentially undo your prior ruling and there is, you ruled they had a time to designate the testimony. They didn't and it shouldn't be admitted.

THE COURT: Is there other -- I don't know what's still coming from you, but is any of it, from your review of the slide deck, is there other deposition testimony that would fall into this category where they neglected to timely designate it?

MR. PERLSON: I don't think so, as far as I know.

THE COURT: All right. Well, I will sustain this objection given the failure to comply with the guiding order here. It is only a couple of lines, but I'm not

persuaded that it's neglect that is, under the circumstances it's usable in the form of prejudice to Google by allowing it to be, so I will sustain that objection.

MR. PERLSON: One final objection. If you could pull up PTX-1268, the replacement, I guess.

So here's -- we got a replacement set. I guess there was an earlier one before last night and if you could just kind of page through it. It's basically a hodgepodge of stuff. It's like search results and portions of Google documents and stuff, you know. And apparently the idea is that this goes back to the jury, and I don't think that's appropriate. It's not a single exhibit.

If they wanted to mark some of this stuff and introduce it as exhibits, that's fine. Some of it is in other places, or if they just want to use it as a demonstrative, that's okay.

But it's inappropriate to just dump a bunch of stuff in. It's basically all the figures in Dr. Pazzani's report. If they want to use demonstratives, that's fine, but it shouldn't be an exhibit.

THE COURT: And is this an exhibit that was disclosed to you consistent with the timing and all the exchanges in connection with the pretrial order?

MR. PERLSON: Well, there was a prior version of it that was disclosed and it was objected to.

THE COURT: And it was different than --

MR. PERLSON: It was different than this. I don't know exactly how different. We just got this last night. And, you know, out of 90 exhibits, I don't know if it came up before, but, you know, it seems to me there should be a way to work this out because, again, they should be able to use these as demonstratives, and if there are a couple parts of it that they really think need to go back to the jury -- like I think Mr. Nelson had mentioned that the first two are like search results from something that Dr. Pazzani did, totally fine with that. We just don't think that we should just throw all of this in.

THE COURT: All right. Mr. Nelson?

MR. NELSON: And we may be able to work this out. I mean, what happened was the original 1268 was supposed to be all the figures in Dr. Pazzani's report and somehow some SRI-related stuff got attached to it. That was not intended. That was disclosed in a timely manner.

We then were attempting to fix that, and in fixing that, apparently some of the figures got left out. That was the confusion at the start of his testimony yesterday, just the picture of what search results are, you know, Search Ads. And so if on their representation, if we could just put them up, put some of the figures up as a demonstrative now as we go through this so we can move

through Dr. Pazzani's examination efficiently, we can then probably work out the portion that gets marked as exhibits after the fact.

THE COURT: It sounds like that's a workable arrangement to at least get through the testimony.

MR. PERLSON: Yes. Yes. We just want to make sure that demonstratives don't go back to the jury.

THE COURT: Right. So the demonstratives don't go back to the jury just because they are demonstratives, but you all need to talk about which subset of what has been marked as PTX-1268 the plaintiffs want to be admitted into evidence and go back to the jury. And you will have to talk about that, and if we have disputes, we'll deal with them some time before we submit the case to the jury.

MR. NELSON: Yes.

THE COURT: Understood?

MR. NELSON: Yes, Your Honor.

THE COURT: Understood?

MR. PERLSON: Understood.

THE COURT: Any other issues from defendant?

MR. VERHOEVEN: No, Your Honor. I just want to put on the record, Mr. Pazzani's deposition, several times when he was asked questions, he said basically, I wanted this, but Google wouldn't give me the documents. And we met and conferred because we thought that was inappropriate for

him to say such a thing in front of the jury and we reached agreement that he is not going to say that. But I just want to put it on the record just in case something happens.

THE COURT: All right.

MR. VERHOEVEN: My understanding is we have reached agreement on that.

THE COURT: Is that correct?

MR. NELSON: My understanding is the same.

THE COURT: And I think Dr. Pazzani is in the courtroom, but, Mr. Nelson, have you advised him of this agreement and/or will you?

MR. NELSON: I think I have, but if I haven't, he is now so advised.

THE COURT: All right. Anything else from defendant?

MR. VERHOEVEN: No, Your Honor.

THE COURT: What are the proposals on submitting jury instructions and verdict sheet?

MS. JACOBS: Your Honor, I need to hear back from our, how long it's going to take to compile this into a single document. We have not -- my assumption is we'll be able to do that today, and we have not -- based on that, we need to talk about when we can meet and confer and get that done. My hope would be by Friday.

THE COURT: It's certainly going to have to be

by Friday that we get something.

Mr. Horwitz?

MR. HORWITZ: That's my understanding. Once they're compiled into one document, then each side needs to look at them. I think we need to spend some time to see if we can resolve some differences from where we were before the pretrial conference and the aim is to get them to you during the day on Friday.

THE COURT: Okay. Well, let's revisit it tomorrow. Let's say they will be due Friday. Sometime tomorrow I will set a time on Friday, but I will hear from you first as to what your proposal is as to what time on Friday it should be. Okay?

MS. JACOBS: Thank you, Your Honor.

THE COURT: Yes?

MR. PERLSON: One thing I'm happy to report in agreement between the parties.

THE COURT: We like agreements.

MR. PERLSON: On, I mentioned the issue of JMOLs yesterday and the parties agreed, and if it's acceptable to Your Honor, we would propose that we do JMOLs orally, argue them, and then the parties have the option to follow it up with a written brief, if that's acceptable.

THE COURT: Certainly, it's acceptable. Do you have an agreement as to how long you will give each other to

file the written brief?

MR. PERLSON: We had suggested three days after. We didn't, we didn't agree to limit ourselves either way, I guess, but if you want us to limit the time after, that would be my suggestion, but I'm sure we can work that out.

THE COURT: All right. Well, I think there should be some sort of deadline to it, so see if you can continue the agreement trend and work out an agreement on that and let me know at some point --

MR. PERLSON: Okay.

THE COURT: -- what that agreement is.

MR. PERLSON: Do you have any preference on how much time after?

THE COURT: I think the sooner, the better.

MR. PERLSON: Okay.

THE COURT: But something in the neighborhood of three days sounds fine, but I'm not holding you to that.

MR. PERLSON: Okay.

THE COURT: You talk.

MR. PERLSON: Fair enough.

THE COURT: All right. Anything else before we check in with the jury?

MS. JACOBS: No, Your Honor.

MR. PERLSON: One more thing. Another agreement.

THE COURT: You're the bearer of good news.

MR. PERLSON: On source code I had mentioned that we wanted to, that there were some confidential portions that we had concerns. We looked through it very carefully and it is highly confidential stuff, but it's our understanding it's only going to be shown for a very short period of time and that, you know, we could deal with it later in terms of the transcript and work with plaintiffs in terms of redacting it. But we understand it's a burden on the Court to open and close it, and so we decided that we won't -- we don't need to close the courtroom.

THE COURT: And does that go for today or for the remainder of trial, as far as you know?

MR. PERLSON: Well, I don't know exactly what will come in later, but it goes for Dr. Pazzani's presentation.

THE COURT: Okay. So we will not anticipate being asked to close the courtroom during Dr. Pazzani's testimony.

MR. PERLSON: Correct.

THE COURT: All right. Is that correct from your point of view as well?

MR. NELSON: That is correct.

THE COURT: All right. Anything else?

All right. We'll take a short break and then

we'll get the jury ready.

(Short recess taken.)

THE COURT: We will bring the jury in.

(The jury entered the courtroom.)

THE COURT: Good morning, ladies and gentlemen of the jury. Welcome back. We are prepared to begin, so I think we'll have Dr. Pazzani return to the stand.

Good morning and welcome back to you. I remind you, you remain under oath.

Mr. Nelson, you may proceed.

... MICHAEL PAZZANI, having been previously sworn as a witness, was examined and testified further as follows ..

DIRECT EXAMINATION (Continued)

BY MR. NELSON:

Q. Good morning, Dr. Pazzani.

A. Good morning.

Q. Let's go back briefly to yesterday to sort of reorient people to where we left off.

A. Okay.

MR. NELSON: Could I get slide three, please?

BY MR. NELSON:

Q. I want to talk just about the accused products. What is this slide?

A. This slide shows the Google Search system. A user can type some terms in the search box like car repair, click

on Google Search and get search results.

MR. NELSON: Can I have slide 4, please in.

BY MR. NELSON:

Q. Can you identify the search results?

A. Yes. This is a search results page. There are a number of search results here. They're in the box that's green in the lower center. It contains things like expert car advisor web results about do-it-yourself auto repair.

Q. And what about the portion labeled Search Ads? What is that?

A. The Search Ads are ads that are displayed on the search results page. Advertisers offer to pay Google when users click on the ads and Google conducts an auction to decide which ads to display there based on part of probability the user will click on the ad and on how much the advertiser is willing to pay for it.

Q. And are these two of the accused products in this case?

A. Yes, they are.

MR. NELSON: And let me have slide 5, please.

BY MR. NELSON:

Q. And can you explain what this slide is?

A. Yes. This is an example of Content Ads. So advertisers can also display ads on content pages, things like CNN or the Los Angeles Times or blogs.

So this is actually my blog. I'm a bird watcher and I've entered into an agreement with Google to display ads on the blog, and the ads are related to birds. A similar auction is conducted to decide which ads to display there.

Q. Let me have slides 5 and 6, please. We had this up yesterday. This is YouTube?

A. Yes. This is a YouTube video. Users could watch the video or click on the ad about the Fiat that's in the bottom of the screen.

Q. Are Content Ads and the YouTube Content Ads, are those the other two accused products in this case?

A. That's correct.

Q. So you gave a summary of your opinions yesterday and I won't repeat that because I want to move on to what makes you qualified to give an opinion in this case? Can you tell me your educational background?

A. Yes. I received a Bachelor's and Master's degree in computer science from the University of Connecticut. The Master's was in 1981 and I specialized in artificial intelligence.

I received a -- then I went to UCLA, University of California, Los Angeles, where I received my Ph.D. in 1998 in computer science specializing in machine learning.

From there I became a Professor of Information

and Computer Science at the University of California, Irvine, where I was on the faculty there for about 18 years or so.

I went to the National Science Foundation in Washington, D.C., where I oversaw the government's programs in information intelligence systems, funding research in areas like machine learning, databases, search engines, and personalization.

From there I became the Vice President of Research at Rutgers, the State University of New Jersey, just up the road a bit.

And in 2012 I went back to California, at the University of California, Riverside, where I'm now the Vice Chancellor of Research and Economic Development and also a Professor of Computer Science and Engineering.

Q. Thank you, Dr. Pazzani.

Let me ask you a couple other questions. So you mentioned you had involvement with the National Science Foundation. Can you explain that a little bit further?

A. Yes. At the National Science Foundation, faculty from across the country submit proposals and ideas that they would like to do, and the National Science Foundation finds about 15 percent of them to be very meritorious. And that provides funding so that the faculty can conduct that research to advance the state of the art, areas like machine

learning or personalization, search engines, databases, speech recognition, many of the topics involved in this case.

Q. And did you have other awards such as being a fellow, things like that?

A. Yes. So I'm a fellow of the American Association of Artificial Intelligence. Approximately, 10 people a year are elected by our peers due to their accomplishments; and I think I was elected in about 2004.

I'm also on the editorial on the Machine Learning Journal and a couple other journals.

Q. Have you taught courses in machine learning?

A. Yes, I have taught numerous courses in artificial intelligence, machine learning, personalization.

Q. Have you published in this area as well?

A. Yes, I have a number of publications in that area.

MR. NELSON: Let me have slide 10, please.

BY MR. NELSON:

Q. So can you explain to the jury what you did in order to prepare yourself to give an opinion in this case?

A. Yes. So Google made available thousands of documents that were stored on a secure website. And I was able to look through those documents. Approximately 250 were printed out then because they contained words related to this case. And I read those in detail.

I attended the depositions of many Google witnesses. Those were the videos that you saw yesterday. And I also read the depositions of those that I could not attend.

PUM's lawyers asked Google its questions, interrogatories that you heard about. And I read Google's responses to those interrogatories.

I spent about 30 days in front of computers in San Francisco, New York and Los Angeles in Google's lawyers offices studying the source code for Google trying to understand how it operates, and you will see just a little bit of that today.

And then I also read numerous public documents regarding Google systems, their help files or their box that explains their features.

Q. And did you conduct any experiments using the Google systems.

A. Yes, I did.

Q. And can you explain those experiments?

A. Yes. I asked an assistant to simulate various types of users. So in one case, I asked her to simulate an animal lover and recreate an account called Brianne animals; and she searched for animals, cats, dogs, birds and click on web sites related to those animals or click on ads related to animals.

In another case, I asked Brianne to simulate a user who was a car enthusiast, and so she would search for things like Mustang or Honda Civic and click on the search results related to Mustangs and Honda civics.

And then Google provided the profiles, the information that Brianne had done over the course of a year, and we got together about one once a month. I was able to review the history of what she did and look at the search results of the two accounts and compare them.

MR. NELSON: May I have slide 11, please.

BY MR. NELSON:

Q. And are those two accounts, the Brianne animals and the Brianne car accounts that are on the slide?

A. Yes. Those are the two accounts that we'll be discussing.

Q. And can you turn to your binders, PTX-375, please?

A. Is it the big one?

Q. The big one, yes.

A. (Witness complies.)

Q. Can you tell me --

A. That was 373. Sorry.

Q. 375 may be the really big one.

A. Yes, 375 is the really big one. That's part 2. Let's move over here.

Yes, this is PTX-375.

Q. And can you just identify PTX-375 for the jury, what it is?

A. PTX-375 is the profile of the Brianne cars account. So this contains, all these two binders contain all of the searches that she did over the course of about eight or nine months in 2011 and every search result, everything she clicked on, every ad she saw, every ad she clicked on as well as the profiles that Google took of her interests.

Q. And that is information that came from [redacted] correct?

A. Yes, [redacted]. And I actually checked this morning. [redacted]

MR. NELSON: I'd like to offer PTX-375 into evidence.

MR. VERHOEVEN: No objection.

THE COURT: It's admitted.

(PTX-375 admitted into evidence.)

BY MR. NELSON:

Q. Please identify PTX-373.

A. PTX-373 is the profile of the Brianne animal accounts. And, similarly, it contains the animal searches

done using this account, simulating an animal lover as well as the ads she clicked on, the ads that she saw in 2011.

MR. NELSON: And I'd like to offer PTX-375 -- 373 into evidence.

MR. VERHOEVEN: No objection.

THE COURT: It's admitted.

(PTX-373 admitted into evidence.)

BY MR. NELSON:

Q. Can you look at PTX-33 and 34 and just together identify what those exhibits are?

A. So PTX-33 and 34 are the Google [redacted]

Q. So together, PTX-33, 34, 37 --

MR. NELSON: I'd like to offer PTX-33 and 34 into evidence.

MR. VERHOEVEN: No objection.

THE COURT: Those are admitted.

(PTX-33, PTX-34 admitted into evidence.)

BY MR. NELSON:

Q. So together, PTX-33, 34, 373 and 375, all of that is information that was [redacted] correct?

A. That is correct.

Q. And so this is all the information that Google has

[redacted]

A. [redacted]

MR. NELSON: Let's turn to a little bit of history and kind of go back in time for a little while. Can I get the next slide, please.

BY MR. NELSON:

Q. And I want to talk but World Wide Web and the Internet. Did you prepare a demonstration or an illustration to discuss early search engines?

A. Yes, I did. First, let me just explain what the interpret was like before search engines.

So before there were search engines, to go to a website, you had to type an URL. Something like WWW.NewJersey.com/CapeMay.html to see about my bird watching at Cape May.

But it's really hard to remember those URLs so search engines were made to make it easier for people to find things.

MR. NELSON: Can I have slide 13, please.

BY MR. NELSON:

Q. And can you explain what is going on in slide 13?

A. Yes. Slide 13 shows a search engine. It's a brief overview of what a search engine is. Essentially what a

search engine does is first it has a program called a crawler that goes out on the web and finds all of the documents on the web. And it actually analyzes those document, finds the important words in those documents and puts them in a database. It associates those important words with the address, the URL, so that when you type one of those important words, it can find that document on the web.

So that's one part of the search engine. That's the part that is stored at the search engine company's headquarters.

The part that you use, that users use is the query box, if you like. You type a query into a search engine, a word like jaguar. The search engine looks through the database, finds all the counts that contain the word "jaguar" and it returns some of those documents as search results to the user and on a search result page that contains links to the documents on the website like the New Jersey birds website.

MR. NELSON: Let me have slide 14, please.

BY MR. NELSON:

Q. Can you just explain what this slide is intended to depict?

A. Well, this slide is intended to depict that the user is getting search results about jaguar, but this particular

user, a car enthusiast is much more interested in the car pages about jaguar, but they're hidden among the sports pages, the Jacksonville Jaguars or the animal pages or even the Jaguar guitar pages, so he can't exactly find what he is looking for.

MR. NELSON: Let me have the next slide, please.

BY MR. NELSON:

Q. And what is this slide intended to illustrate?

A. This slide is illustrating the general principle of information overload. There might be 22,000 documents that contain the word "jaguar" and how do you find the few that are the most important, the most interesting? And that's the problem that Konig and others tried to solve.

MR. NELSON: And let me go to slide 18.

BY MR. NELSON:

Q. And did that problem have a name?

A. Basically, the name is information overload. It's just hard to find what you are looking for. It's like trying to find a needle in a haystack. If you are trying to find the jaguar car dealer, you might find jaguars at the local zoo instead.

Q. As the Internet grew and the World Wide Web grew, did that problem become more serious?

A. Sure. So as there were more and more documents available, it's harder to find the document that you are

looking for.

Q. Let me take you now to 2000 and let me have you turned in your binder to PTX-6, please.

A. (Witness complies.) Yes.

Q. And can you just identify what that is?

A. Yes. This is an article from Nature Magazine entitled Souped-Up Search Engines.

Q. And the founder of Google is quoted in that article; is that right?

A. That's correct.

MR. NELSON: Your Honor, I'd like to offer PTX-6 into evidence.

MR. VERHOEVEN: No objection, Your Honor.

THE COURT: It's admitted.

(PTX-6 admitted into evidence.)

MR. NELSON: Can I get slide 19, please.

BY MR. NELSON:

Q. So let's fast forward now to the date of this article which is May 11, 2000. What did Mr. Brin say about the future of search at this time?

A. The article said: Google's Brin predicts that in five years, the search engine as we know it will no longer exist, or be marginal. In its place will come intelligent programs that search by using their experience of the needs and interests of their users.

MR. NELSON: And let me turn now to the patents in question. Let me have slide 21. Actually, 22. Go to the patent. Thank you.

BY MR. NELSON:

Q. And so can you identify what is on slide 21 or 22?

A. Slide 22 is the '040 and the '276 patents, entitled Automatic, Personalized Online Information and Product Services. The inventors are Konig, Twersky and Berthold. And it was based on a provisional patent filed in December 1999.

Q. And these are the patents in this case; right?

A. That's correct.

Q. And they were filed in December 28th, 1999; right?

A. The provisional was.

Q. Yes. And that is about five and-a-half months before Mr. Brin made his statements in that Nature article; isn't that right?

A. Yes, it is.

Q. So one of the things that Dr. Konig talked about was learning machines and machine learning yesterday, and you talked about it a little while ago in going through your background. Did you prepare an illustration to help explain what a learning machine actually is?

A. Yes. We worked on a pretty simple illustration of that.

MR. NELSON: Let's begin with slide 24.

BY MR. NELSON:

Q. And what is on slide 24?

A. Well, on slide 24 is an apple. But imagine you are trying to teach a child what an apple is or maybe teach a computer what an apple is. And really machine learning is trying to do what human learning does but with a computer instead of a person.

MR. NELSON: And let's have slide 25.

BY MR. NELSON:

Q. Can you explain the graphic on slide 25?

A. Yes. So this graphically depicts a learning machine. On the left you will see a box with a funnel and a monitor and we are going to put examples in that. Examples of things like this is an apple, this is not an apple. And we're going to ask the machine to learn what an apple is.

Once it has learned, we're going to ask it to apply its knowledge of what an apple is. We're going to show it things and ask it what an apple is. This is sort of what you might do with a child. This is an apple, this is an orange. This is a green apple. And over time, the child will learn how to tell apples from oranges and pears, et cetera.

Q. And you have got this written sort of as a box with a monitor. What is in reality learning machines are

mathematical functions and models?

A. Yes. They're mathematical functions, models often implemented by computer programs.

Q. And you have got two parts there. What do the two parts represent?

A. Well, the left part is the training part. It's the part that you give examples with their answers to, and the right part is the applying your knowledge part. You ask it questions: Is it an apple? And it will tell you whether it's an apple or not.

MR. NELSON: Let's go to the next slide now.

BY MR. NELSON:

Q. Can you explain what is going on?

A. Yes. So we're putting a labeled example into the learning machine. We have it labeled as an apple, and it is indeed an apple.

Q. And go ahead and start the animation.

A. And now the apple has gone into the learning machine and it has learned something about the properties of apple. Perhaps their shape, their color, they have stems, things of that sort, and you can see it's depicted by an approximate sketch of an apple.

Q. And why is it kind of fuzzy at this point?

A. Well, it doesn't fully know what an apple is yet. It has only seen one example.

MR. NELSON: Let's go to the next slide, please.
BY THE WITNESS:
A. Okay. This is another example of an apple slightly different shaped, maybe a little brighter red.
MR. NELSON: Can you please run this.
BY THE WITNESS:
A. And the apple goes into a learning machine and it builds a slightly better model of what an apple is.
Q. Now, what do we have?
A. It looks like a lime, and we're telling it this is not an apple. And, again, your child might confuse an apple with a lime and first think it's any small fruit and it gets put into the machine and told, no, that is not an apple.
MR. NELSON: You can go ahead and run that.
BY THE WITNESS:
A. And it learns a little bit more precisely what an apple is. Perhaps the color is more important.
MR. NELSON: Let's go to the next slide, please.
BY THE WITNESS:
A. So the next part shows the applying part. We're asking it a question. It's learned something and we're asking it the question is this an apple? Or what is the likelihood this is an apple?
MR. NELSON: And go ahead and run that one.
BY THE WITNESS:

A. So the model of the apple has moved over and the model looks at the properties of the apple, the shape, the size, and it's asked a question: Is this an apple? And it answers, yes, indeed it is an apple and says there is a .92 likelihood or probability that this is an apple that is above 50 percent. So, yes, this is an apple. Looks like a pretty good one. Not exactly identified to what we have seen before. It's generalized to learn something about it.

Q. And let's go to the next slide.

A. Now we show it something else and we ask if this is an apple and the properties are examined. We ask whether it's -- we ask the model whether it's an apple and it produces a prediction. It says there's only a ten percent chance it's an apple, so it's less than 50 percent. So, yes -- so, no, this is not an apple.

Q. And let's go to the next slide, please.

A. Now we see something else and ask, is this an apple? And the properties -- well, the model looks at the properties, asked if it's an apple, and it says there's a 55-percent chance it's an apple. Our learning machines aren't perfect. There's a better than 50-percent chance this is an apple. It's a tomato. So we need to teach it a little more.

Q. So let's go to the next slide, please.

A. We put other examples in. We tell it a pineapple is

not an apple, a green apple. Grapes are not apples. Slightly different apple. Strawberries are not apples. I don't even know what that is.

Q. And so now what happened to the picture of the apple?

A. It has become more precise. The model of the apple has improved over time as we've given it more and more examples. It has learned.

Q. And what is the, the apple on the screen, what is that intended to represent?

A. It's just intended to represent the learning machine's model of an apple.

Q. And what it knows about the apple?

A. Yes.

Q. And let's go to the next portion, the next examination.

A. So now when we give it the tomato, the model looks at the properties of the tomato and sees, for instance, that the color differs, the stem shape is a little different. And now it does a better job and says there's only an 18-percent chance this is an apple, less than a 50-percent chance. So, no, this is not an apple. And that's the basic idea behind the machine learning. There's lots of mathematics behind it, but it's just presenting examples and learning them.

Q. And let's turn to -- now let's turn back to the

patents and talk about the patents and the claims a little bit.

A. Sure.

MR. NELSON: And to do that, may I set up a couple of boards, Your Honor?

THE COURT: You may.

And, Mr. Verhoeven, if you need to move around, feel free to do so.

MR. VERHOEVEN: Thank you, Your Honor.

(Mr. Nelson placed boards on the easels.)

BY MR. NELSON:

Q. And, Dr. Pazzani, if I can ask if you step down --

A. All right.

Q. -- it might be easier to describe what's on here standing up as opposed from over there.

(The witness left the witness stand and approached the easels.)

BY MR. NELSON:

Q. And can you just explain what is on the left?

A. Yes. This is a figure in the patent that describes the invention.

Q. And it's Figure 2; is that correct?

A. Yes.

Q. And the color codes aren't in the original figure, are they?

A. No.
Q. And then can you explain what is on the right?
A. That's that same figure together with the claims of the patent.
Q. And so when we're doing the color coding, do you intend the color coding to represent the whole claim or just the little estimate parameters, for example, on the bottom? Go ahead and explain.
A. Yes, it may be parameters, represents the entire claim, Element C. You just can't fit the entire claim in that little box, so it says, just summarizes it. But in my analysis, I will go through each of these words.
Q. And each of the colors then corresponds with the respective claim element?
A. Yes. So 32 corresponds to B, and 38, estimating probabilities, corresponds to E, that statement.
Q. Okay. Thank you. I will take these down.
(The witness resumed the witness stand.)
MR. NELSON: And may I have slide 35, please? 35.
BY MR. NELSON:
Q. And so let's start just explaining the patent, and let's start with analyzing the document. Step 35. Why did you want to start there?
A. It's actually step 36.

Q. Oh.

A. Analyzing the document is something that is not dependent on the user. All the other steps in the, in this particular claim depend on the user. This is -- the document analysis is the same for every user, so you might want to do that once ahead of time instead of do that for each user because the results of that analysis will be exactly the same. You can do it in any order, but it's a good idea to do it ahead of time so you have the results when you need them.

MR. NELSON: And let me have slide 36, please.

BY MR. NELSON:

Q. And this is a portion of the patent. Can you explain what's on slide 36?

A. Yes. Slide 36 describes various types of analysis within the patent. So at the bottom is one type of analysis, finding a list of users previously interested in the documents. That's analyzing who has clicked on that document in the past, for example.

In the middle there's something I want to talk about. It's a topic classifier probability distribution. That's just a fancy mathematical way of saying documents can have multiple topics. You can be partially about sports and partially about cars. For instance, a document that might describe giving away a car at halftime of the basketball

game to one of the audience member who shoots a hoop, that would be partially about sports and partially about cars.

MR. NELSON: And let me have slide 37, please.

BY MR. NELSON:

Q. This is Figure 7 from the patent. Can you explain that slide, please?

A. Yes. So in Figure 37, it shows that the topics can be displayed in hierarchies. So you could, for instance, have a topic magazines, which is part of the topic publishing, which is part of the topic industry, which is part of the topic business, the business of publishing magazines, if you like. And there's many of these topic hierarchies on the web. In the patents, they have looked at the open directory project as one of the sources of obtaining a hierarchy of topics.

MR. NELSON: Let me have the next slide, please, 38.

BY MR. NELSON:

Q. And so now let's turn to monitoring the user's interactions with the data, or let's turn to -- did you prepare an animation to illustrate these steps?

A. Yes, I did. So we can look at what does monitoring user interactions mean.

MR. NELSON: And let me have the next slide, please.

THE WITNESS: So here's a user. They type a word like "dictionary" and then they go to the Merriam-Webster website, and so monitoring the user is watching the user as the user does those actions: Typing the query, receiving the results, and looking at the results the user clicked on.

Q. Is that what the magnifying glass is intended to represent?

A. Yes. The magnifying glass is depicting things.

MR. NELSON: And let me have slide 40, please.

BY MR. NELSON:

Q. So let's turn to the updating user-specific data files. The next slide, please. And can you explain that set?

A. Yes. So updating the user data files, it's not just monitoring the user, it's recording what the user has done.

So this is Figure 14 from the patent, which shows the user has gone to two websites, the Merriam-Webster one we saw before as well as a herring.com website, and you can see they're stored in a database. That database contains the document ID, which would be in this case the URL of the document. It also contains things like the time you accessed it, how you got there, whether you were interested. It contains the context. For instance, you

typed the query dictionary to go to the Merriam-Webster website.

So updating user-specific data files is continuously doing things, continuously updating your data about what the user has done.

Q. And is this, the top part, that's Figure 14 from the patent; is that correct?

A. Yes. So the patent describes document IDs or things like the URLs. And, again, they're storing the interaction times, the access times and other items.

Q. And let's turn to slide 42, please. And let's focus on the top part. Can you explain what's going on now with the top portion of the slide?

A. Yes. So this is a user who has visited a number of auto member websites. They typed things like "used cars" or "Ford" or "Kelly Blue Book," and after doing that, they've gone to those websites, and this is just updating the database to include information about the user that has done that.

The patent says that it's the user and his or her associated, associated representation denoted with U. In this case, that representation might be an identifier, the user identifier that identifies that user.

Q. And in 1999, in late 1999, what sorts of identifiers were there for users?

A. Well, there are two common ways of identifying users. One is having them create an account with a password. Another is to put a cookie, a small piece of text on their machine with an identifier.

Q. So in 1999, just like today, you didn't have little tiny people inside the computers, did you?

A. No. The people are represent by some number.

Q. Some sort of electronic representation?

A. There's an electronic representation, yes.

Q. And let me turn to slide 43.

A. So slide 43 is intended to depict the fact that there are multiple users of the system. Each of them would have their own identifier, and there might be one large central database in which all of this data is stored, but each user has their own identifier. And you can find the woman's search history by using her identifier and the man's search history by using his identifier. It looks like she has been searching for animal-related topics and he has been searching for car-related topics.

Q. And so are the respective, let's take the one on the left. Is that then, is that information then associated with the user ID, for example, on the left side of the figure?

A. Yes. So one way to do that would be to have a database with a key, the user ID, and from that ID, you can

get that user's interactions. In this case, the man's interactions with the car website.

Q. And are documents also associated with the respective document ID that you described earlier in the patent?

A. Yes. So it, in this case, it's storing the URL as a representation of the document.

Q. And so together, that list of, that list of documents on the left side, www.Kelly, KBB for Kelly Blue Book, www.AutoTrader, is that, is that a set of documents associated with the user?

A. Yes. Related to the user ID.

MR. VERHOEVEN: Objection to leading.

THE COURT: Objection to leading. I'm sustaining it.

BY MR. NELSON:

Q. Can you explain the column on the left?

A. The column on the left are the documents the user has visited and they're associated with the user by means of the document ID and the user ID.

MR. NELSON: Let me have slide 44, please.

BY MR. NELSON:

Q. And let's turn now to the estimating parameters of a learning machine and the rest of that claim element.

A. Okay.

MR. NELSON: Let me have slide 45, please.

BY MR. NELSON:

Q. And can you explain what this slide is intending to illustrate?

A. Yes. Slide 45 shows a user typing a word into a search box. In this case, the word is "ram," and then they visited the Ram Trucks website and that is recorded in the database.

Q. And feel free to use the laser pointer you have up there, too. I apologize. The slides, it looks a little small.

An let's go to the next portion of this animation. And can you explain what is happening here?

A. Yes. So now the user has typed "car repair" and visited a car repair website, and that is also stored in the database.

Q. And the next slide, please.

A. Again, the user has typed another query, Mustang, got a search result page back, found one of the results related to what he was looking for, and went to the Mustang Club website. And that's the third entry in this database.

Q. And next slide, please.

A. Now the user has typed "Dodge" down to the Dodge.com website and now over time we've continued to update the database with each of the searches, each of the items the user has clicked on.

Q. And let me go to the next slide, please.
A. Looked at used trucks and went to the Auto Trader website.
Q. And next slide, please. And can you tell me what is depicted here now on slide 46?
A. Yes. So this is showing a learning machine estimating, estimating the parameters of the learning machine from the user-specific data. The data is the data about the searches the user has entered and the websites the user has visited, and we're going to put that data in the learning machine and learn something about the interests of the user.
Q. And what is sort of a blank thing, a blank learning machine represent?
A. Well, the blank learning machine is a generic learning machine. It has not learned yet. And then that learning machine is going to become specific to the user. When it analyzes the user-specific data, it will be a user model.
MR. NELSON: And can we run that animation, please?
THE WITNESS: So now this data goes into the learning machine and we can see things like there's a topic, cars. The topic "cars" has a high weight.
BY MR. NELSON:

Q. Is that what the lights are intended to represent?
A. Yes. The topic cars has a high weight, indicating someone is very interested in cars. The topic animals doesn't have a weight. He hasn't gone to any animal websites there's an interest in sports. And some of the weights that have a value between 1 and 7. Others might be just be on, off. We've also figured out this person is also an online shopper.

Now, we are depicting a model of him as someone wearing a Nascar hat, but it's really the parameters and the values that the system really uses to depict to understand what the interests of the user are.

MR. NELSON: And let me have the next slide, please. Go back here. One back. Sorry. 46.

BY MR. NELSON:

Q. And so what is the, what is the aspect of the learning machine that we just showed? Is that the training portion you referred to earlier?
A. Yes. So on the right is, again, the training portion of the learning. On the left is the training portion of the learning machine. That's the part that has learned the parameters. And then we're going to use that model later on to make predictions about other documents, to see whether the user would be interested in them.

MR. NELSON: And let me have the next slide,

please.

BY MR. NELSON:

Q. And now let's go on to talk about step 38, the next slide, please.

A. So here we have the user model that's specific to this user. We type a word, the user types something like jaguar, and we get a pile of documents. And then for each of these documents, we can estimate the probability the user would be interested in that document based on model we've learned about the user.

So we compare that model to the document. Here, it's looking at one of those green jaguar, the animal documents, and it hopefully predicts a low probability that the user would be interested in this.

Q. And the next demonstration?

A. On the other hand, one of the car-related Jaguar documents is compared to the user model, and in this case, the user, predicts the user would be interested in that. There's a .89 probability. So what we want to do is show the user things he's likely to be interested in.

Q. And next portion of it. Can you explain what's going on here?

A. Yes. So this is showing a different user model. This is Brianne animals, if you like, and you can see that the car light is low and the animal light is high. So this

is a user who is an animal lover caricature depicted as someone as a model wearing a safari hat.

MR. NELSON: Can you run the next animations here?

THE WITNESS: Oh, and in this case, can we go back one? In this case, it has compared the model to the document about the jaguar, the animal, and predicted there would be a .92 probability that this user would be interested in that, better than 50-percent chance it's likely they want to see this document.

MR. NELSON: And let's go to the next slide, please.

BY MR. NELSON:

Q. And so let's now talk about step 40 and the next slide.

A. Okay. So this is talk talking about personalizing services. So we have these two users with different models. We have a set of documents all about jaguars we can look at, but one of them wants to see one type and the other wants to see the other type. And we can use their model to predict the probability of interest and order the documents by the ones they are most likely to click on.

So we'll see that the man, who is the car lover, gets lots of car documents, and the woman, who is the animal lover, gets lots of animal documents. Each of them contain

the word "jaguar."

Q. And these documents here, these are intended to represent web pages?

A. Yes, they are.

Q. So let's turn, let's turn now to the next slide. And I want to talk a little bit about Google systems.

And, first of all, does Google use a lot of different terminology that's, you know, kind of difficult to understand until you understand the nomenclature?

A. Yes. There's a lot of computer terminology and also a lot of unique Google playful terminology.

MR. NELSON: And so let's talk about that a little bit. May I have the next slide?

BY MR. NELSON:

Q. And I want to talk specifically about users, Kansas, profilers/profiles, and [redacted] as some of the Google terms.

A. Okay.

Q. Let's start with users. Can you turn in your binder to PTX-576, please?

A. (Witness complies.) Got it.

Q. Can you identify that document?

A. Yes. PTX-576 is a Google document entitled Gaia.

MR. NELSON: And I'd like to offer PTX-576 into evidence.

MR. VERHOEVEN: No objection, Your Honor.

THE COURT: It's admitted.

(PTX-576 is admitted into evidence.)

MR. NELSON: Can you put up Exhibit 576, please.

Can you further then pull up the pullout as well?

BY MR. NELSON:

Q. So what is this document tell you, say about Gaia?

A. It says that Gaia is the user ID management system used by all Google products. It's used for signed-in users, those that have accounts. They created an account and a password. And then Google creates a unique 64-bit number, a computer number called a Gaia ID that uniquely identifies that user.

And I think earlier you saw associated with the [redacted]

MR. NELSON: Let me have PTX-12.

BY MR. NELSON:

Q. And can you identify PTX-12?

A. Yes. PTX-12 is called [redacted]. You might remember [redacted] is actually a cookie.

Q. And is it a Google document?

A. Yes, it's a Google document.

MR. NELSON: Let me ask PTX-12 be admitted into evidence.

MR. VERHOEVEN: No objection, Your Honor.

THE COURT: It's admitted.

(PTX-12 is admitted into evidence.)

BY MR. NELSON:

Q. What is the [redacted]

A. [redacted]

MR. NELSON: Let me have slide 57, please. And the next portion.

BY MR. NELSON:

Q. And is this Google's document evidencing what a [redacted] document is?

MR. VERHOEVEN: Objection. Leading, Your Honor.

BY MR. NELSON:

Q. What does this document tell you?

A. This document tells how Google identifies non-logged-in users. [redacted]

Q. And let me have you turn in your binder to PTX-113.

A. (Witness complies.)

Q. And can you identify that document?

A. Yes. This is a document called User-Based Ads Quality. So it describes the personalization system that Google uses in search ads.

Q. Is this a Google document?

A. Yes, it's a Google document. A PowerPoint presentation.

MR. NELSON: I ask that PTX-13 be moved into evidence.

MR. VERHOEVEN: No objection.

THE COURT: It's admitted.

(PTX-13 is admitted into evidence.)

MR. NELSON: May I have slide 58, please. And the second portion.

BY MR. NELSON:

Q. What does that document tell you?

A. Well, it says that in the Search Ad system, a user is defined by a prefID cookie. So there are different types of cookies by different products in Google. This is call the prefID cookie that Search Ads used to use and now Search Ads uses then Gaia and [redacted] IDs as well.

Q. Let me have you turn to PTX-736, please.

A. (Witness complies.) Yes.

Q. Can you identify that document?

A. Yes. This is a Google document called Interest-Based Ads or ID Ads.

Q. And you identify what is in that document? Oh, stop. Let me ask is it a Google document?

A. Yes, this is a Google document.

MR. NELSON: Let me ask that Exhibit 736 be moved into evidence.

MR. VERHOEVEN: No objection.

THE COURT: All right. 736 is admitted. And the one on the screen, is it 113 or is it 13?

MR. NELSON: It's 113, Your Honor.

THE COURT: So you did not mean to offer 13 into evidence, did you?

MR. NELSON: No, I did not.

THE COURT: Okay. But you did mean to offer 113?

MR. NELSON: Correct. Thank you, Your Honor.

THE COURT: There is no objection to 113? Correct.

MR. VERHOEVEN: That's correct, Your Honor.

THE COURT: So 113 is admitted but not 13. Go ahead.

MR. VERHOEVEN: Thank you, Your Honor.

(PTX-113 is admitted into evidence.)

MR. NELSON: Can you put up slide 59, please. And the next portion of it.

BY MR. NELSON:

Q. What is this document say?
A. Well, this document describes a fourth way of identifying users in Google. And you heard a lot of testimony about this yesterday from Google witnesses. This is called the DoubleClick cookie and it identifies users in the Content Ad system. Those are the ads that are on the websites like LA Times or my blog.
MR. NELSON: And let me turn to slide 60, please.
BY MR. NELSON:
Q. So let's not talk about Kansas. And if I can direct you to PTX-13 in your binder.
A. Yes.
Q. And can you tell me what PTX-13 is?
A. Yes, PTX-13 is a Google document entitled Kansas.
MR. NELSON: And I offer PTX-13 into evidence.
MR. VERHOEVEN: No objection, Your Honor.
THE COURT: Okay. 13 is now admitted.
(PTX-13 is admitted into evidence.)
MR. NELSON: Can I have slide 61, please.
BY MR. NELSON:
Q. And what is this document tell you?
A. This document describes Kansas which is essentially a large database system that Google uses to store user information. [redacted]

[redacted]

Google says it's an infrastructure for storing large amounts of user information and profiles for online retrieval and personalization.

So this is really where the user model is. We think it's called Kansas because Kansas is in the center of the country, central to Google.

Q. Can you identify which of the accused Google systems use Kansas?

A. Yes. I think all of them do. So Search Ads uses Kansas to store the searches the users -- well, Search uses Kansas to store the searches the users have done as well as the results the users have seen and the results the users clicked on.

Search Ads uses it to look at the searches the users have done again, the ads the user has seen and the ads the user has clicked on.

Content Ads uses Kansas to store, again, the ads the user has seen and the ads the user has clicked on and also the web pages on which those ads occurred.

And that YouTube video ads also uses it.

Q. Does Kansas also store timestamps?

A. Yes. So associated with each of those interactions are the timestamps.

Q. Let me turn to, or actually let me direct you in your

binder to PTX-14.

Can you look at PTX-14?

A. Yes.

Q. What is that document?

A. That document is the Google Developers Handbook.

MR. NELSON: I'd like to move PTX-14 into evidence.

MR. VERHOEVEN: No objection, Your Honor.

THE COURT: It's admitted.

(PTX-14 is admitted into evidence.)

MR. NELSON: Can you put up slide 62, please? And the next portion.

BY MR. NELSON:

Q. What is this portion of the document refer to?

A. This portion of the Google Developer's Handbook further describes Kansas. And what is most important here is that Kansas has a variety of user keys. Those are the cookies that with discussed earlier, the Gaia ID, the prefID, and the [redacted] ID. Also the mobile phone number.

Q. Let me have you turn in your binder to PTX-15?

A. (Witness complies.)

Q. What is PTX-15?

A. PTX-15 is entitled Data Available to Personalized Search. It's a Google document.

MR. NELSON: And let me offer PTX-15 into

evidence.

MR. VERHOEVEN: No objection.

THE COURT: It's admitted.

(PTX-15 is admitted into evidence.)

MR. NELSON: Can I have slide 63, please?

BY MR. NELSON:

Q. And so can you tell me what the table here on the left is intending to depict?

A. Yes. This depicts one of the tables in Kansas. It's called a Gaia table. And that stores the information associated with a Gaia ID, a user in Kansas. [redacted]

Another important column in Kansas is [redacted]

MR. NELSON: Let me have the next portion of this slide.

BY MR. NELSON:

Q. So now, can you tell me what the prefID table refers

to?

A. Yes. This is very similar to the Gaia table. The prefID table is just associated with one of the other cookies, the prefID cookie, [redacted]

Q. And for search, the prefID isn't used any more; is that right?

A. Yes, that's correct. It's just Zwieback for non-signed-in users and Gaia for signed-in users.

Q. And does the [redacted] store similar information in Kansas?

A. Yes.

Q. And let me turn your attention in your binder to PTX-395.

A. (Witness complies.)

Q. What is PTX-395?

A. PTX-395 is a Google document entitled How UBAQ -- that is Users-Based Ad Quality -- and SmartAds Work Together.

MR. NELSON: I'd like to move PTX-395 into evidence.

MR. VERHOEVEN: No objection, Your Honor.

THE COURT: It's admitted.

(PTX-395 is admitted into evidence.)

MR. NELSON: Can I have slide 65, please?

BY MR. NELSON:

Q. What is this document now tell you about?

A. This document describes some of the columns in Kansas that store different types of data for search ads. [redacted]

[redacted]

And during that [redacted] it can learn a lot about you.

Q. And just like with the longer ones, what is the goal of keeping this information for [redacted]?

A. The goal in keeping this information is to improve the quality of ads presented to the user, to personalize what the user sees so they're more likely to click on them.

MR. NELSON: And let me turn to the next Google terminology here. May I have slide 66.

BY MR. NELSON:

Q. And let's talk about profilers and profiles.

A. Okay.

Q. Can you turn in your binder to PTX-213?
A. (Witness complies.) Yes.
Q. And can you tell me what PTX-213 is?
A. PTX-213 is a Google document entitled Personalization Profiles, Exercises and Tips.
MR. NELSON: I'd like to offer Exhibit PTX-213 into evidence.
MR. VERHOEVEN: No objection, Your Honor.
THE COURT: It's admitted.
(PTX-213 is admitted into evidence.)
MR. NELSON: May I have slide 67, please?
BY MR. NELSON:
Q. And can you tell me what this portion of Exhibit 213 is intended to represent?
A. This starts to describe the personalization process in Google. In essence, personalization consists largely of generating profiles for users. That is some kind of inferred information about a user's preferences. These profiles can then be used for a number of purposes, such as twiddling search results, or making recommendations.
Twiddling search results is changing the order of the search results so they're more personally relevant to the user.
MR. NELSON: And let me have the next slide, please.

BY MR. NELSON:

Q. And this is part of the same exhibit, PTX-213. Can you tell me what this slide says?

A. Yes. This goes into a little bit more detail about how Google generates a profile of the user and it says the profiles could be the categories we think the users are interested in, and then it says Google has a nice profiling infrastructure that makes it easy to look at each user's Kansas data, compute a profile from this data, and then store that profile back into Kansas so it can be used to personalize the search results of the user.

Q. And is that profile, is that the base that was represented of our user, our car user, our animal user?

A. That is one way to represent it, but it's actually the parameters. That's the important part.

Q. And PTX-33 and 34 are those examples?

A. Yes.

Q. Let me turn to the next term here which is [redacted]. Can you tell me what [redacted] is?

A. Yes. [redacted] is Google system for storing information about documents. The documents that are out on the web, for example.

Q. Can you turn to Exhibit 16, please, in your binder?

A. Yes. (Witness complies.)

Q. Can you tell me what that document is?

A. Yes. Exhibit 16 is a Google document entitled [redacted] Developers Guide.

MR. NELSON: And I'd like to offer Exhibit 16 into evidence.

THE COURT: Any objection to 16?

MR. VERHOEVEN: Just considering it, Your Honor. One second.

No objection to the document.

THE COURT: Okay. It's admitted.

(PTX-16 is admitted into evidence.)

BY MR. NELSON:

Q. And let me direct your attention to a portion of the document. Can you explain this document or this portion?

A. Yes. So this goes into a little bit more detail about the [redacted] database, the repository, and it basically says that the [redacted] repository is a set of documents that are tokenized as well as indexed so that they can be browsed as well as searched.

So this tokenization process is finding all the important words in this document and associating with that document so later on when you are searching for something like jaguar you can find the documents that contain jaguar.

Then it goes on to say that this, each document in [redacted] has a global document ID that can be used to specify a document in the whole repository. [redacted]

[redacted]

So it's not just like the address of an envelope. It's like you have opened up the envelope and read all the important words in it, recorded it in the database and then stored the address associated with those important words so that you can find that envelope later on by the words that are in it.

Q. Let me direct your attention to PTX-372.

A. (Witness complies.) Okay.

Q. Can you identify that document?

A. Yes. 372 is the Google glossary.

MR. NELSON: I'd like to offer PTX-372 into evidence.

MR. VERHOEVEN: No objection, Your Honor.

THE COURT: It's admitted.

(PTX-372 is admitted into evidence.)

BY MR. NELSON:

Q. Can you tell me what the Google glossary says about document ID?

A. Yes. So the Google glossary defines the document ID. It says each document that Google indices has a unique doc ID assigned to it, generated from the URL of the document

essentially.

[redacted]

MR. NELSON: And let me have the next slide, please.

BY MR. NELSON:

Q. And so I want to shift gears a little bit now and talk about the Google accused systems sort of in the context of the terminology and the patents.

Let's talk about Google Search first and personalization. Can you turn to PTX-21, please?

A. Yes.

Q. Can you please identify PTX-21?

A. Yes.

Q. And what is it?

A. Oh. It's an overview of personalization efforts at Google. It's a Google document.

MR. NELSON: I'd like to move PTX-21 into evidence.

MR. VERHOEVEN: No objection, Your Honor.

THE COURT: It's admitted.

(PTX-21 is admitted into evidence.)

MR. NELSON: The next slide, please.

BY MR. NELSON:

Q. Can you tell me what the pullouts say?

A. Yes. This discusses the search personalization team at Google. The goal of the search personalization team is to improve search quality based on what we know about a user. And then it goes on to say that they have advantages in personalized search quality. They store a user's searches and click history. That is the Project Kansas that we talked about. Then they have algorithms for customizing search results based on this search history and click history.

Q. Now, I know we'll talk about those in a lot more detail here probably later today and this afternoon. So we'll move to -- can you look at PTX-22, please?

A. Yes.

Q. What is PTX-22?

A. PTX-22 is a PowerPoint presentation entitled Personalized Search. It's a Google document.

MR. NELSON: I'd like to move PTX-22 into evidence.

MR. VERHOEVEN: No objection.

THE COURT: It's admitted.

(PTX-22 is admitted into evidence.)

BY MR. NELSON:

Q. Dr. Pazzani, there is a drawing in PTX-22, and rather than put it on the board here, we blew it up so it would be a little bit earlier to see and I would ask you come down and walk through a sort of overview of the Google Search system using that drawing and I'll put it up here.

A. Okay.

Q. Can you just walk through sort of the general description of the Google Search system using this figure from PTX-22?

A. Yes. So this describes the personalization and search system in Google. The part that the user sees is the user types a query to the Google web server and the user gets a response, search results back that you can click on. So that is the part that is visible to the user.

And then this part is all behind the scenes what is happening at Google.

So some of the things that are happening is when you type the query and you signed into Google, associate

[redacted]

Q. What happens next?

A. Well, let's describe a couple things. Now, what happens is after you typed a number of queries and clicked on a number of results, Google can learn a profile of your interests. So this system called a profiler looks at your

search history in Kansas and learns the interests. [redacted] -- I'm sorry. [redacted] then stores that profile back into Kansas.

It knows the documents are about animals and cars [redacted]

Once it has your profile, when you type a search result, that search result, the query plus your profile go to [redacted], and the search results are reordered for you based on your profile. Some of them are [redacted], given to the web server and then sent to the user.

Q. And can you identify the portions of just on a high level, the portions of this drawing that would be the training portion of the learning machines?

A. Sure.

MR. VERHOEVEN: Your Honor, I'm objecting outside the scope of the expert report.

THE COURT: All right. What is your response, Mr. Nelson?

MR. NELSON: This is totally in the expert report, in numerous paragraphs.

Jennifer.

THE COURT: You will have to identify it more.

(Pause.)

MR. NELSON: The figure is in paragraph 53, Your Honor. I'm sorry. The document is in paragraph 53.

The analysis is throughout the report but in particular the portion that is going to talk about now begins at paragraph 163 and ends at paragraph 197.

THE COURT: 163 to 197?

MR. NELSON: Yes.

THE COURT: Mr. Verhoeven, you can review that quickly and let me know if you still have your objection.

MR. VERHOEVEN: Yes, your Honor. We still maintain the objection. We believe this section is talking about something different.

THE COURT: Tell me again what the question is that you've asked the witness.

MR. NELSON: Well, the claim elements have estimating parameters of a learning machine, using those parameters to create a user model specific to the user. Element C in the claims. This figure is sort of a high level way to describe that, but within the words of the report --

THE COURT: What's the question that --

MR. NELSON: Oh, the question was: Can you identify the portion that would be the training aspect of

the learning machine or user model?

THE COURT: All right. And you are saying that the training aspect of the learning machine is discussed in these 30 paragraphs of the report?

MR. NELSON: The objection is to the word "training," maybe not, but the training aspect of it is discussed elsewhere in the report. This is the, these are the portions of the learning machine that he identified is discussed in these paragraphs of the report.

THE COURT: Mr. Verhoeven, is that responsive to your objection?

MR. VERHOEVEN: I guess my objection, Your Honor, we read it in the report, had the expert go through this document and start describing all the different portions of the system. And, in particular, that question right there I don't believe is anywhere in the reference section, Your Honor.

If counsel would like to stay within the description in that section, we would have no objection, but we feel like they're going beyond the scope of the expert report.

THE COURT: All right. Do you want to try to restate it or do you want me to rule on the objection?

MR. NELSON: Well, we disagree. I can ask it.

BY MR. NELSON:

Q. Can you just describe using this document generally how the system learns and then applies what is learned?

MR. VERHOEVEN: Again, Your Honor, there's no disclosure.

THE COURT: All right. Well, ladies and gentlemen of the jury, we're going to take our break a little bit early this morning. There are some matters I need to attend to with counsel, so no talking about the case during the break, and we'll get you back here just as soon as we can.

(The jury was excused for a short recess.)

THE COURT: All right. So, Mr. Nelson, it's 163 and 193 I need to review in order to rule on this objection. Correct?

MR. NELSON: I believe so, yes. And then also, Your Honor, the second portion of this is the twiddling portion with Kansas, that would be Element D, and that section, this would be for stuff coming up here down the road. That section for Element E and F would be paragraphs 208 through 245.

And what he does in the report is he walks through and identifies what is the learning machine, what is the learning machine and then how it's applied. And so the training portion is Kansas plus the profilers, and the applying portion is Kansas plus the profilers plus the

Kaltix twiddler which is doing the applications.

Also for background, there's background in here in paragraphs 62 to 96 generally on all of this stuff as well, and this figure is used.

THE COURT: All right.

MR. NELSON: The report is very comprehensive and we thought an easier way to present it was to just sort of walk through this figure and that's what we're trying to do, which it is in the report.

THE COURT: Mr. Verhoeven, anything else I should have in mind as I review your objection?

MR. VERHOEVEN: Yes, yes. When you read through the passages, it's very unclear what portion of the system the expert witness is pointing to. And we certainly did not use this figure and point to these portions in the system in our view, Your Honor.

So this is a surprise to us. We actually, when we read the expert report, were uncertain as to these aspects and so for us, it's a surprise the a least. That's the way we feel.

THE COURT: Okay.

MR. NELSON: They certainly explored this during Dr. Pazzani's deposition as well and can address some of the issues on cross as well if they feel that they didn't know what was accused.

THE COURT: And you said earlier, Mr. Nelson, I could find this figure in the report?

MR. NELSON: Paragraph 55. Correct, Jennifer? Where is this figure? It's Exhibit 17 to thinks report. I'm trying to find where the figure is exactly.

THE COURT: Mr. Verhoeven, is there a dispute as to whether Exhibit 17 to the report contains the figure that we're looking at? I don't have the exhibit.

MS. BENNETT: Exhibit 17 is in paragraph 53 of his report.

MR. NELSON: Paragraph 53. The figure does not appear on that page, but the paragraph. I believe the figure is in here, too. I'm just trying to find out exactly where.

It is footnote 24 that's in his description of personalized search and that is Exhibit 17 and I think the figure is reproduced later.

THE COURT: Right. So you're telling me that the figure, which we now have as a demonstrative and which is labeled PTX-22, it looks like from here?

MR. VERHOEVEN: It's an exhibit, Your Honor.

MR. NELSON: It's an exhibit. It's a portion of admitted 22. I think it's like page 6 of it.

THE COURT: You are saying if I have page 17 to Pazzani's report, it would be the same thing.

MR. NELSON: Correct.

THE COURT: Do you agree with that?

MR. VERHOEVEN: I don't know. We're checking the 17 part. We'll take his represent. Currently, if you look at what he cited, we're in a different section. We're in paragraph 53. These reports are very voluminous and many, many exhibits, Your Honor. And the only reference he has pointed to is a footnote that does not explain the document, and it's a different section than what he's talking about here that he's citing you to that has the substantive description.

And so there's no way we could divine that he was going to talk about this specific exhibit because just from the fact that it was cited in footnote 23 in a different section of the report from the substance section he's going into now.

THE COURT: All right. Well, we'll go take a look at it. We'll be in recess.

(Proceedings resumed after the short recess.)

THE COURT: Have a seat for a moment. I reviewed, to the extent we could, the materials that were referenced, and pending Google's objection to the testimony of Dr. Pazzani as beyond the scope of the expert report,

Google's objection is overruled.

It appears that the witness is going to testify and maybe even has been testifying at somewhat a higher level of generality about those aspects of Google that constitute a learning machine, higher level of generality than appears in the expert report. The report details specifics in the context of specific user profiles.

The generality offered here in court, while not literally in the report, is helpful, I think to the jury, should not be a surprise to Google, and which I believe has seen the demonstrative and has seen the exhibits that were going to be used on direct. And the context is not, in the Court's view, unfairly prejudicial to Google.

The Court is going to charge Google five minutes for the argument that we devoted to the objection while here in Court, plus whatever time it's taking me now to articulate my ruling, but I will not charge Google or anybody for the 15 minutes or so it took us to figure this all out back in chambers, since it happened to come up during the time when we were about to take a break anyway.

So that's the ruling. Any questions about that?

MR. NELSON: No, Your Honor.

THE COURT: All right. Any questions?

MR. VERHOEVEN: No, Your Honor.

THE COURT: All right.

MR. VERHOEVEN: Thank you.

THE COURT: We will bring the jury back in.

(The jury entered the courtroom.)

THE COURT: Welcome back, ladies and gentlemen. We are ready to continue.

Mr. Nelson, you may proceed. It has gotten very cold in here now, predictably. It's warm back there, yes, I'm sure that is true. It's an old building. We're going to see if we can get the temperature raised a little bit. We'll see how that goes.

MR. NELSON: Thank you, your Honor.

Dr. Pazzani, may I ask you to come back down and continue your explanation, please?

THE WITNESS: Yes.

(The witness left the witness stand and approached the easel.)

BY MR. NELSON:

Q. So I think before the break I asked you to identify the training portions of the learning machine from this drawing and Google. Can you do that, please?

A. Yes. The training portion of the learning machine is really the profiler. [redacted] And it estimates the user's interest in

categories. These are parameters, things like topics like cars or animals, and that's how the profile is represented. And then the profile is stored back into Kansas.

Q. The long term profiles. What about short-term profiles?

A. The short-term profiles are kept in the main memory. They just stick around for about [redacted].

Q. And we're going to talk about this in a whole more detail in a little while. Can you continue explaining how the Google Search engine works at a high level just walking through this?

A. Yes. So it's the Google web server that monitors the user interactions and then the Kansas database is where the interactions are updated to and associated with the Gaia ID in this case.

And then the profile goes to the Google web server and the twiddler. And the profile is the user's interest. It's compared to the possible documents to show the user, and those that have the -- [redacted] And we'll get into a little about math later. They get [redacted].

So the search results are individualized by the users and the twiddlers and then they are sent back to

the user, and then you can monitor what the user clicks on to see if you've got it right, and if they click on the top things, you have a good model of the user. If they don't click on, you go to the next page and you get to learn something about the user.

Q. And just to tie it back to the graphics, the profiles, is that the phase from our graphics?

A. That's how we are representing that as a phase, but it's really the weights.

Q. It's really a bunch of data?

A. Yes.

Q. All right. Thank you.

(The witness resumed the witness stand.)

MR. NELSON: May I move it?

THE COURT: You may move it.

(Mr. Nelson removed the board from the easel.)

MR. NELSON: May I have slide 75, please?

BY MR. NELSON:

Q. So let's talk now about analyzing a document to determine its properties.

MR. NELSON: And may I approach the witness, Your Honor?

THE COURT: You may.

(Mr. Nelson handed an exhibit to the witness.)

BY MR. NELSON:

Q. Let me hand you something that's not in your binder.
A. Okay.
Q. And can you tell me what is Exhibit 202, please?
A. Yes. It is a Google document entitled "Text classification and personalized applications."
MR. NELSON: I'd like to move Exhibit 202 into evidence, please.
MR. VERHOEVEN: No objection, Your Honor.
THE COURT: It's admitted.
(PTX-202 was admitted into evidence.)
MR. NELSON: May I have slide 76, please.
BY MR. NELSON:
Q. And can you tell me about what this portion of the document discusses?
A. Yes. So in general, the document discusses text classification, ways of analyzing text by classifying it into topics. And this describes the ODP classifier, the open directory project classifier that was mentioned earlier in the patent. And it says that the ODP model is a library that classifies text into selected ODP categories.
Q. And did Google provide some examples of what the document classification looks like?
A. Yes, it did.
Q. And can you turn to PTX-25, please.

A. Yes.

Q. And please identify that.

A. It is a Google document entitled [redacted]

[redacted]

MR. NELSON: I'd like to move PTX-25 into evidence.

MR. VERHOEVEN: No objection, Your Honor.

THE COURT: It is admitted.

(PTX-25 was admitted into evidence.)

MR. NELSON: May I have slide 77?

BY MR. NELSON:

Q. And can you identify, first of all, the graphic on the right?

A. Yes. The graphic is a, today's contents of a web page. And the web page is http.MassEffect.biowear.com. It is about a computer game, essentially.

Q. And just to make clear, the graphic on the right, that's not part of the document, is it?

A. No, it's not.

Q. Yes. I mean, what is it intended to represent?

A. Well, the graphic is what is on that web page today. I don't know what was on that page ten years ago.

Q. Can you look at PTX-25 and just describe what the exhibit is showing?

A. Yes. The exhibit is showing the ODP categories that

are used by the link profiler. So each one of those lines is a category and a hierarchy, and these are things like, one of the things that is highlighted is Dungeon and Dragon games. So this is a computer game web page and it has classified it as a Dungeon and Dragon-type game.

Now, we saw in the patent that documents can have multiple topics, and it has actually identified about ten topics in this document. They're all very closely related to computer games.

Q. And this says link. What is link?

A. [redacted]

MR. NELSON: And let me have the next slide, please. This is another portion of PTX-25.

BY MR. NELSON:

Q. What does this one say?

A. So this is the same web page, but it's a different form of analysis. This type of analysis is called dilip in Google, [redacted]

So this shows that, for instance, the computer game website is associated with other websites, such as

XBox.com. [redacted]

[redacted]

MR. NELSON: And let me have the next slide, please. This is slide 79. This is another portion of PTX-25.

BY MR. NELSON:

Q. What does this slide depict?

A. This slide depicts the same website with a third categorization system called rephil. Actually, the first one was called phil and they did it again and called it rephil.

And this also shows that the topics are things like video games and XBox associated with this particular page. But it's, if you like three different hierarchies, three different alternative ways of classifying the world.

Q. Let's turn to the next slide, please. And let's now talk about the monitor user interactions with data. May I have the next slide, please?

And can you just explain what this slide is showing?

A. Yes. [redacted]

[redacted]

[redacted]

[redacted]

[redacted]

Q. This was part of your experiments that was done on Google Systems?

A. That's correct.

MR. NELSON: Let me have the next slide, please.

BY MR. NELSON:

Q. So let's talk next about the user-specific data files. And let me just ask a quick question. You see where the 1(a) and 1(b) and 1(d) are appearing. What are those intended to represent?

A. Those are intended to represent the claim elements of the first claim of the '040 patent, but, again, my analysis is not just by the words in that box, but it's by the entire claim element.

Q. And let me have slide 83, please. And can you explain what is going on here?

A. [redacted] you can see right here. So that's that number there that gets put into

the database. So that's how you distinguish [redacted]. There's a different ID associated with that.

Then, it shows the query. [redacted]

So, for instance, the hummingbird.net page was in position 5 and she clicked on it at this time, [redacted]

Q. And the [redacted], the URLs [redacted] what do those represents?

A. The URLs are the location of the document on the Internet. That's the URL you would type in to get there and that's one way of associating the document with the user. The user has an ID. The document has an ID. You have the document ID in the database column associated with the user and then you can tell the user accessed that document on that day.

MR. NELSON: And let me have the next slide, please.

BY MR. NELSON:

Q. And let's talk about the estimating parameters of a learning machine element again.

A. Okay.

MR. NELSON: Let me have the next slide.

BY MR. NELSON:

Q. And this is back to our graphics. Can you say what this is?

A. Yes this is the abstract learning machine. It's a mathematical function or model.

MR. NELSON: And can I have slide 86, please?

BY MR. NELSON:

Q. And can you explain what is going on here?

A. Yes. So this showing the learning machine that estimated the parameters.

Can I ask you to zoom in on this portion?

So what this shows are the [redacted] associated with [redacted].

[redacted]

[redacted]

[redacted]

[redacted]

[redacted]

[redacted].

Can we zoom out so we can see that on the learning machine?

Now we represent that in the learning machine by these numbers. [redacted] and the lights light up indicating the strength of that association.

And again, we're depicting that with a woman wearing a safari hat. [redacted]

Q. And do those change over time as the user does other service?

MR. VERHOEVEN: Objection, leading.

THE COURT: Overruled.

BY MR. NELSON:

Q. Go ahead.

A. Yes. The whole goal of learning is to create a more and more accurate model. So if you have only seen five web pages, you don't really know what someone's interests are, but after they have seen 50 or 100 web pages, then you know much more. In fact, there are Google documents that show that they don't really see the effect of personalization until after about the first month or so.

MR. NELSON: Let me have the next slide, please.

BY MR. NELSON:

Q. And what is this slide intending to represent?

A. [redacted] I told you there are three different hierarchies or three different categorization schemes.

This is the [redacted] of [redacted]. And this shows, for instance, [redacted] And we are representing this in the learning machine by lights that are either on or off. [redacted] There is not that finer gradation that we saw [redacted].

Q. And how are those categories represented as squares, how are those determined whether or not they get in or out of the profile?

A. So I'm going to go into a lot of detail of that later, [redacted]

MR. NELSON: Let me have the next slide, please. actually, go ahead and take it down.

BY MR. NELSON:

Q. Turn to your PTX-38, please.
A. Yes.
Q. What is that document?
A. It is a document interested Personalized Search. It's a Google document.
MR. NELSON: I'd like to move PTX-38 into evidence.
MR. VERHOEVEN: No objection.
THE COURT: It's admitted.
(PTX-38 is admitted into evidence.)
BY MR. NELSON:
Q. Can you describe PTX-38?
A. Yes. PTX-38 is a PowerPoint presentation that discusses Personalized Search.
MR. NELSON: Can I have the pullout.
BY MR. NELSON:
Q. What does this show?
A. This shows a [redacted]. So this is a profile Google learns over the course of [redacted]. In this case, they know that the user session contains the query Boston. You typed Boston and then you clicked on a website, the City of Boston. And essentially it has learned that the topics of interest are Massachusetts, Boston, arts and entertainment in Boston which that website describes.
Q. And if a user continued to search over that [redacted]

window, what would happen?

A. It would get better and better, more categories would enter into that. So some users might be interested in the Boston Celtics and then the sports categories would be entered. Others might be more interested in the aquarium in Boston and the animal categories would show up in there.

MR. NELSON: May I have Slide 89, please.

And let's talk about estimating the probability that a user is interested in a document step.

May I have slide 90, please.

BY MR. NELSON:

Q. So can you explain what the graphic is intended to depict?

A. Yes. This graphic is depicting just to illustrate how one estimates the probability that the user is interested in the document.

So we have a user model that is specific to the user. [redacted]

Q. Does this one animate or not?

A. No, this is just showing that in this case, the [redacted]

Q. And why is that? Is that number an estimation?

A. Yes, it is.

Q. And why is that?

A. Well, it's not precise. First of all, we have only learned a little bit about [redacted] We have only seen a few documents so far.

Q. What happens if you see more documents? What is the result?

A. It becomes more and more accurate, but you can never, with 100 percent accuracy, predict a user's interest.

MR. NELSON: And let me have the next slide, please. Whoops. Stop.

BY MR. NELSON:

Q. Let me have you turn to PTX-729, please.

A. (Witness complies.)

Q. Please identify Exhibit PTX-729?

A. It is a Google document entitled Optimization For User Profile [redacted]

MR. NELSON: I'd like to move Exhibit 729 into

evidence.

MR. VERHOEVEN: No objection, Your Honor.

THE COURT: It's admitted.

(PTX-729 is admitted into evidence.)

MR. NELSON: Let's put up slide 91.

BY MR. NELSON:

Q. Can you tell me what is [redacted]?

A. [redacted]

But essentially what this is saying is Google uses a number of [redacted] to predict the probability the user will click on that. Some of these [redacted] come from the Kansas database that are individualized to the user and some of these are aggregate across all. In this case, we

are only concentrating on these [redacted] that come from Kansas.

MR. NELSON: Let me have slide 92, please.

so let's talk now about using that estimating probability to provide the personalized service.

Can I have slide 93?

BY MR. NELSON:

Q. Can you tell me what this graphic is depicting?

A. Yes. So slide 93 is depicting from all of the possible search results that contain the word "jaguar" which ones [redacted] would be most interested in, and it has more of the animal documents and a couple other ones, music and computers as well.

But in general, what it has done is it has found documents that are potentially of interest to [redacted] by estimating her probability of interest and [redacted] them or [redacted]. So they're at the [redacted]. So, for instance, that [redacted] doesn't have to scroll down to find them, they're within the [redacted] on the screen.

Q. Can you turn in your binder to PTX-41, please?

A. (Witness complies.)

Q. Please identify that document?

A. It is a Google document entitled Twiddler Quick Start Guide.

MR. NELSON: I'd like to move Exhibit 41 into evidence.

THE COURT: Any objection?

MR. VERHOEVEN: No objection. I'm sorry, Your Honor.

THE COURT: It's admitted.

(PTX-41 is admitted into evidence.)

MR. NELSON: Can you put up slide 94, please.

BY MR. NELSON:

Q. What is a twiddler?

A. [redacted]

MR. NELSON: And let me put up slide 95.

BY MR. NELSON:

Q. What did Mr. Taher Haveliwala say about twiddler?

A. So you saw this on video yesterday. But when asked, he said:

"Question: And what is a twiddle?"

He says:

"Answer: [redacted]

[redacted]

Q. And can I have you turn to PTX-44, please?

A. Yes.

Q. What is PTX-44?

A. It is a Google document entitled Twiddler Catalog.

MR. NELSON: I'd like to move PTX-44 into evidence.

THE COURT: Any objection to 44?

MR. VERHOEVEN: No, Your Honor.

THE COURT: It is admitted.

(PTX-44 is admitted into evidence.)

MR. NELSON: Please put up slide 96.

BY MR. NELSON:

Q. What does Google say about -- what is the Kaltix Twiddler?

A. The Kaltix Twiddler is the [redacted] that I have sketched and I will describe in more detail later. [redacted] And this is a user who at that time has opted into Personalized Search.

Q. Where did the name Kaltix come from?

A. Kaltix was the company that Google acquired I think in 2003. The witness that we just saw and some others were

founders of Kaltix, and then they became Google employees and started the Kaltix Project to personalize search results.

BY MR. NELSON:

Q. Let me have you look at PTX-43.

A. It's a Google could entitled Personalized Search For Everyone.

MR. NELSON: I'd like to move Exhibit 43 into evidence.

MR. VERHOEVEN: No objection.

THE COURT: It's admitted.

(PTX-43 is admitted into evidence.)

MR. NELSON: Can you put up the next slide.

BY MR. NELSON:

Q. What does Google say about personalization for everyone?

A. Well, it says that on December 4th, 2009, we're helping people get better search results by extending personalized search to signed-out users worldwide.

Now when you search using Google, we'll be able to better provide you with the most relevant results possible.

Previously, we only offered personalized search for signed-in users and only when they had web history enabled. What we're doing now is expanding personalized

search so we can provide it to signed-out users as well. Essentially, all users of Google whether they have signed in or signed out.

Q. Is there a specific ID that is associated with the signed-out users?

A. The signed-out users use the [redacted] cookie, the one we described a little earlier.

MR. NELSON: Let me have slide 99, please.

BY MR. NELSON:

Q. Can you explain what is going on here?

A. Yes. So slide 99 it's a Google Search for the word insight. [redacted] That's what it says up here.

Can you zoom in on that, actually?

So you can see this is a search done when [redacted].

And now if you zoom back out?

You can see that the first search result is for a Honda Insight. That is a car.

The other search results I didn't know, but there is insight communication, the word insight, et cetera.

MR. NELSON: And could I have slide 100, please?

BY THE WITNESS:

A. Slide 100 is the same search "insight" for their [redacted] accounts. See, it's a little longer. We

won't zoom in but take my word for it. That is [redacted], and we'll see the Honda Insight is not the first search results.

Why don't we zoom in on that?

So now the insight communications and other insight things are the first things, and the Insight car I think is the sixth or seventh result. So it shows that different Google users get different search results based on what Google has learned about them. It has personalized the results to them.

MR. NELSON: May I have the next slide, please.

BY MR. NELSON:

Q. So let's generally talk about Google Search Ads at a high level. Let me set up the board to give you an opportunity to stretch your legs a little bit.

A. Okay. Thanks.

Q. Can you just, using this board, just sort of at a high level walk through the functionality of the Google Search Ads system explaining the different pieces of a picture as appropriate?

A. Sure. So here we have the user. That's the person typing the search query. The search query, a word like car repair, goes to the Google front end, the Google web server, the balancer.

The most important thing here is the ad mixer.

That was described in some of the testimony you saw yesterday. What the ad mixer does is it retrieves ads related to the search query. These are ads, for instance, that an advertiser has said, display these when the words "car repair" or "auto repair" are typed.

And then Google wants to decide which ads to display, and it uses a system called SmartAds as depicted here by a wizard with a crystal ball, and that wizard with the crystal ball is trying to predict which ads the user is most likely to click on. It's an estimation. Wizards don't calculate, they predict.

SmartAds uses the UBAQ profile, the User-Based Ad Quality profile, we'll see that in a little bit more detail, which contains information that Google has learned about the user, what type of ads they click on, what type of ads they ignore.

After we predict here what ads the user is most likely to click on, the ad mixer conducts an auction. It combines how likely the user is to click on an ad with how much the advertiser is willing to pay. And it selects the ads that maximize Google's revenue, a combination of your likely to click on it but you will not pay on it or you are less likely to click on it and the advertiser is going to pay a lot. It balances that and figures out which will earn Google the most revenue.

There is a couple other factors that go into it. The ads go into the Google web server, the Google front end, and then the user gets the results page. Those are the search results plus the ads that are on the right side.

THE COURT: All right. Thank you.

THE WITNESS: Thank you. Oh, I think you are going to ask me to come back.

MR. NELSON: I will. I need you to look at PTX-115 first.

THE WITNESS: Okay. (Resuming witness stand.)

BY MR. NELSON:

Q. Can you identify PTX-115, please?

A. Yes. PTX-115 is a Google document entitled Ads Quality System and Team Overview.

MR. NELSON: Can I get the next slide up on the board?

THE COURT: Do you want to offer that document?

MR. NELSON: Yes, I do, please. I offer PTX-115 into evidence.

MR. VERHOEVEN: No objection.

THE COURT: It's admitted.

(PTX-115 is admitted into evidence.)

BY MR. NELSON:

Q. Can you explain what this document is?

A. Yes. This document describes the ads quality, the

system that tries to improve the quality of ads shown to a user. Basically, users are more -- if they're more interested in them, they're more likely to click on them.

MR. NELSON: And can I get you to zoom in a little bit on the portion right there that Dr. Pazzani is pointing to that says "UBAQ?"

And can you explain what UBAQ and UBAQ adjusted pCTRs are?

A. [redacted]

MR. NELSON: Could I get the portion blown up in the next part of the slide? I think it's the next. Oh, there we go.

BY MR. NELSON:

Q. And just at a high level -- we already talked about some of these so I'm not sure we need to go back through them. Let me have you turn in your notebook to PTX-222.

A. Okay.

Q. And please identify PTX-222?

A. It is a Google document entitled CTR Prediction in Content Ads, AdSense For Content. CTR stands for

click-through rate. It's trying to estimate whether the user is going to click on it or not.

MR. NELSON: I think that has already been offered into evidence. If not, I'll offer it again.

THE COURT: Any objection.

MR. VERHOEVEN: No.

THE COURT: It's admitted or readmitted.

(PTX-222 is admitted into evidence.)

BY MR. NELSON:

Q. So let me have you explain the overall functionality of Content Ads just using this diagram from PTX-222.

A. Okay. So what this shows here is a web page. This is not a Google web page, it's a web page on a third-party site. But that site has entered into an agreement with Google to allow Google to display ads on it. So these are the Google ads, and I know it's really small. So when the user visits that site, a request goes to [redacted]

Then it goes to the ad mixer. The content ad mixer is very similar to the ad mixer in Search Ads. And essentially it retrieves information about this page -- this page is about Java, the programming language, for instance -- and retrieves a set of candidate ads.

Once it has a set of candidate ads, it conducts a similar auction to determine which ads the user is most

likely to click on and this auction involves a profile of the user from Kansas as well as other information, and then again the same maximization of revenue happens. The ads are sent back through [redacted] to that web page.

And all of that happens very quickly, within a half second or so.

Q. And what is the Kansas up there on slide 105?

A. You probably remember there was a witness that drew in during the deposition, so the Google document did not contain Kansas but he updated the document to show that it includes the user information from Kansas.

Q. And let me have you turn to PTX-223 in your binder?

A. Yes, I've got it.

It's a Google document entitled CUBAQ Overview; where CUBAQ stands for Content User-Based Ads Quality.

MR. NELSON: And let me offer PTX-223 into evidence.

MR. VERHOEVEN: No objection.

THE COURT: It's admitted.

(PTX-223 is admitted into evidence.)

MR. NELSON: Can you pull up slide 106, please?

BY MR. NELSON:

Q. What does CUBAQ stand for, first of all?

A. The Content User-Based Ads Quality.

Q. What is shown on the pullout of this document?

A. On the pullout is actually shown the profiler. So the user profile is constructed from the ads, the sites the user has visited. So if you go to the Los Angeles Times car section, it knows you learned about -- you like cars because there is Google ads on the Los Angeles Times car section. Also, the ads you have seen and the ads you have clicked on.

And then once you have that user profile, it goes into the auction where the probability of the click-through rate is multiplied by the cost per click to determine what the winning ads are.

MR. NELSON: Finally, let's talk for a minute about YouTube. Can I have the next slide? And really the Content Ads aspect of YouTube.

And may I have the next slide, please?

BY MR. NELSON:

Q. And you may remember Mr. Nemeth from yesterday. What did Mr. Nemeth say about YouTube?

A. On YouTube, he said that the way Adwords, Content Ads works, it's no different from the way it works on any other site. So Google owns YouTube and Google displays Google ads on YouTube but it uses the same mechanism in essence that it uses for the Los Angeles Times or my blog.

Q. And let me have you look in your notebook at PTX-226.

A. Yes.

Q. Can you identify that document?

A. PTX-226 is a letter to Mark Nelson from Google's attorneys.

Q. Thank you.

MR. NELSON: I'd like to offer PTX-226 into evidence with the clarification we discussed this morning.

MR. VERHOEVEN: Your Honor, this is subject to the morning's discussion and we have not seen a copy of the document as we discussed to be provided. Can we reserve on this motion?

THE COURT: You can reserve, but subject to that, you're okay with the exam going forward?

MR. VERHOEVEN: Yes, Your Honor.

THE COURT: Okay.

MR. NELSON: I'd like to put up PTX-226 but just the portion that is here that relates to Mr. Nemeth.

BY MR. NELSON:

Q. Can you tell me what Google's counsel said relating to Mr. Nemeth?

A. Yes. It said that Mr. Nemeth made clear that there are two methods for identifying and retrieves ads to display on YouTube, using the DoubleClick system. And if they don't work, then it uses the AdSense For Content system. And he further made it clear that if the DoubleClick system does not provide adequate advertisements, then YouTube is treated as any other publisher in the Adsense for Content system.

So there is a special advertising system for Google and YouTube, and if that one doesn't work, then it uses AdSense For Content and that is what we're alleging infringes.

MR. NELSON: And let me put up PTX-110, please. The next slide. I'm sorry.

BY MR. NELSON:

Q. And Mr. Zamir testified yesterday. What did he say about Content Ads --

A. Well, he described in a little --

THE COURT: Dr. Pazzani, you have to wait until the question is done.

THE WITNESS: Sorry.

BY MR. NELSON:

Q. What did Mr. Zamir say about YouTube for Content Ads?

A. He described in general about how YouTube for Content Ads worked. [redacted] It's based on the DoubleClick cookie, stores this information in Kansas, and the [redacted] that ad mixer that was on the diagram we saw, serves their ads, and the infrastructure for the most part is the same as the Content Ads.

Q. And you offered an opinion that YouTube Content Ads infringes; is that right?

A. Yes.

Q. And is that opinion based on the way the Content Ads works?

A. Yes. So I relied on the Google witnesses who say it works the same as other content ad sites.

Q. For each of the claim elements that we're going to discuss in the next portion of your presentation, is your opinion relating to the YouTube Content Ads going to be the same as for Content Ads?

A. Yes, it is.

Q. I just don't want to ask the same questions all the time relating to YouTube.

May I have slide 111, please?

Can you just describe for now a summary of your testimony from this morning as to what is depicted on this slide?

A. Yes. So this slide depicts Figure 2 from the patent. Again, the patent describes monitoring user interactions, updating user specific data files, estimating parameters, analyzing documents, estimating the probability the user is interested in those documents, and providing personalized services.

Q. And what is depicted on the right?

A. The right summarizes how the Google system operates. It operates by transparently monitoring the user, updating in Kansas information about the user.

MR. NELSON: Can I get you to blow up the boxes here as he talks about each one, please?

BY THE WITNESS:

A. Just the right side is fine.

So this shows that Google is transparently monitoring the user. It updates user specific data files, the files in Kansas. It estimates the parameters of the learning machine. These are the weights associated with the profiles. It analyzes documents. It determines which categories they belong into, whether it's [redacted] It uses a number of methods to estimate the probability the user is interested in the document. And then it uses that probability to reorder the search results.

Q. Thank you.

MR. NELSON: With this, I'd like to turn to the next portion of Dr. Pazzani's presentation now and add some new notebooks.

THE COURT: That's fine.

THE WITNESS: Can we take one away?

THE COURT: If he doesn't need all of those, you might want to give him some space by removing some.

MR. NELSON: Yes.

(Binders passed forward and other binders taken off witness stand.)

MR. NELSON: So may I have slide 1 of the next

presentation?
BY MR. NELSON:
Q. I'd like now to talk about, you have given your opinions. I'd now like to talk about your opinions in a lot more detail on an element-by-element basis of the claims. And I want to start with the '040 patent, and I know a lot of the '276 claim elements are very similar, and so we'll work through that a little more quickly. And I know this is going to be some heavy going so we'll try to move through it as quickly as we can.
A. Okay.
MR. NELSON: So let's talk about claim 1 first of the '040 patent. And particularly may I have slide 3, please.
BY MR. NELSON:
Q. So this is claim 1 of the '040 patent; right?
A. That's correct.
Q. And let's talk about the preamble first.
A. Okay. Can you zoom in on that?
MR. NELSON: Can I have the slide blown up? Do you have a pullout?
BY MR. NELSON:
Q. Can you read that?
A. Sure. So this claim 1, the preamble is: A computer-implemented method for providing automatic,

personalized information services to a user u, the method comprising: And then it's the six steps below.

Q. What is the highlighting?

A. The highlighted terms are the terms the Court has construed, provided a definition for.

Q. And just to make clear, so this is a copy of the patent, claim 1 from PTX-1; correct?

A. That's correct.

MR. NELSON: And can you put up the next slide, please?

BY MR. NELSON:

Q. And what does this slide represent?

A. The slide defines the word "user."

"A user is a person operating a computer or the associated representation of the user."

MR. NELSON: And may I have the next slide, please.

BY MR. NELSON:

Q. And this is a portion of previously admitted PTX-576. What does this document identify the user as?

A. This describes a user. We have seen the document just a minute ago. This is the Gaia ID, the identifier associated with signed-in users. Those are the users who created accounts with passwords, and they then have a unique ID.

Q. Let me have you turn in your notebook to PTX-365, please.

A. (Witness complies.) Okay.

Q. Did you find it?

A. Yes, I did.

Q. What is that document?

A. It's the document "[redacted] in a Nutshell" that had previously been entered in.

Q. Is this a Google document?

A. Yes, it is.

MR. NELSON: I'd like to move PTX-365 into evidence.

MR. VERHOEVEN: Your Honor, I don't have an objection but I think it's already been admitted.

THE COURT: Okay. It's either admitted or readmitted. Thank you.

(PTX-365 is admitted into evidence.)

MR. NELSON: Can you put that up on the board?

BY MR. NELSON:

Q. And what has Google identified the user as with respect to this document?

A. Well, this describes the [redacted] ID, the cookie that Google places on the user's computer, and that cookie contains a user identifier.

Q. And this, we're talking about Google Search here;

right?

A. Yes, Google Search and Google Search Ads use the [redacted] ID. Again, it says it's used as a key for server side data storage. What that means is that the Google servers store data associated with that user by this identifier.

MR. NELSON: Let me turn you in your notebook to PTX-1312.

A. (Witness complies.) Okay.

Q. Can you identify that document?

A. Yes. It's a new document, Work in Progress. Migrating Ads in Search to Use [redacted] UID. That is User Identifiers.

Q. Is it a Google document?

A. It's a Google document, yes.

MR. NELSON: I'd like to move PTX-1312 into evidence.

MR. VERHOEVEN: No objection, Your Honor.

THE COURT: It's admitted.

(PTX-1312 is admitted into evidence.)

MR. NELSON: Can you put up the next slide, please.

BY MR. NELSON:

Q. What does those document further tell you?

A. This describes some user keys in Kansas. These are

the keys used to identify an enduser in Kansas. It consists of an ID type, such as the prefID, the [redacted] ID, or the Gaia ID.

THE COURT: Dr. Pazzani, let me remind you again. For the court reporter's benefit at least, please wait until the question is complete before you begin to answer. Okay?

THE WITNESS: Okay. My wife is a court reporter so she has taught me that.

BY MR. NELSON:

Q. Let me turn you back to PTX-140, please.

A. 140.

Yes. This is a Google document. It's actually an e-mail between several Google employees.

MR. NELSON: And I'd like to offer PTX-140 into evidence.

MR. VERHOEVEN: No objection, Your Honor.

THE COURT: It's admitted.

(PTX-140 is admitted into evidence.)

MR. NELSON: Can you pull up slide 8, please.

BY MR. NELSON:

Q. Who is Karthik Gopalratnam?

A. He is one of the gentlemen, the Google engineers interviewed yesterday. He works in the Search Ads Quality Team.

Q. What does this document indicate about users?
A. That for signed-in users, they store data in the Gaia tables. And for signed-out users, they store data in the Zwieback tables. So, again, two different IDs depending on whether you have an account or whether you are not signed into Google.
MR. NELSON: And let me have you put up the next slide, slide 9. And pull it out.
BY THE WITNESS:
A. So we have seen this before. This is the prefID cookie used by Google Search ads. It's another way of identifying the user. It's defined as the prefID cookie.
Q. And this was replaced by [redacted] correct?
A. Yes.
Q. Let me turn you in your notebook to PTX-407.
A. Okay. It is a Google document entitled Content User-Based Quality.
MR. NELSON: I'd like to offer 407 into evidence.
MR. VERHOEVEN: No objection, Your Honor.
THE COURT: It's admitted.
(PTX-407 is admitted into evidence.)
BY MR. NELSON:
Q. And what does this document say?
A. Well, it describes the DoubleClick cookie and how

it is used in Content Ads. Now that Google is using this DoubleClick cookie, they have access not only to the current page being visited by the user but also all the browsing history of the user.

Q. And can you look in your notebook to PTX-406?

A. Yes.

Q. And what is that document?

A. It is a test ad serving privacy policy and cookies, cookie opt-out. It's a Google document.

MR. NELSON: I'd like to offer Exhibit 406 into evidence.

MR. VERHOEVEN: No objection.

THE COURT: It's admitted.

(PTX-406 is admitted into evidence.)

MR. NELSON: Can I have the next slide, please?

BY MR. NELSON:

Q. And what does the user ID there represent?

A. The user ID here is one of those 64-bit numbers. What it is showing is when an ad is served by the Google server, Google records some information each time you view an ad. And it shows an example of the information its recording. The ad has an ID and the user has an ID.

Q. Now, for all these different user identifiers, the term "user" is used elsewhere in the claims; is that right?

A. Yes. It's used in almost every claim.

Q. And is it your opinion that these user identifiers are the representations of the user throughout the claims?
A. Yes, there is an enduser who is using the computer, and this is an identifier that represents that user.
Q. When you run a Google Search and get results, how much time does it take for the results to come back?
A. I think they try for less than half a second and that's about my observation as well. It might be a second.
Q. Is there any human intervention during that period of time?
A. There's no time for any Google employee to do anything.
Q. Is that the same, is it true for Content Ads and Search Ads as well?
A. Yes. The results come back really quickly if it's done automatically by Google servers.
Q. And are all of these computer systems?
A. Yes.
Q. And do all of these accused systems provide personalized information services?
A. Yes. We've discussed personalization the first couple hours.
Q. What about with respect to the creation of the profiles that we discussed? Is there human intervention during the time they're created?

A. No. So some of the profiles, [redacted], are created on the fly, while the user is typing queries. It's created between the time you type the query and it returns the results. [redacted]

Q. And let me have you turn in your notebook to PTX-632, please.

A. Yes. Of this is a Google document. It's entitled automatic profile generation and monitoring.

MR. NELSON: I'd like to offer PTX-632 into evidence.

MR. PERLSON: No objection.

THE COURT: It's admitted.

(PTX-632 was admitted into evidence.)

MR. NELSON: Put the slide up. Slide 13, please.

BY MR. NELSON:

Q. What does this document talk about?

A. This document discusses the automatic profile generation and it basically describes the profile generation and monitors framework used in generating personalized search results. And, again, the automated is the important part here. That's one of the claim terms.

Q. And let me put up slide 14. And does this slide,

what does this slide represent?
A. Well, it summarizes my opinion on just the first part of claim 1 that Google is a computer implemented method for providing automated personalization.
Q. And do the checkmarks represent that you believe that each of the Google systems contain that element, perform that element?
A. Yes. The checkmark for search box there, the checkmark for Search Ads, there's a search ad, and the checkmark for Content Ads and YouTube.
Q. All right. Let's turn to the next, let me turn to slide 15, and the next element, the transparently monitoring the user interaction with data element.
May I have slide 16, please, and the pullout. And so this is Element A now, transparently monitoring. Can you explain this element?
A. Yes. This is transparently monitoring user interactions with data while the user is engaged in normal use of a computer. So this is claim 1(a) where transparently means something like without any extra user effort and user is defined as it was before.
Q. And what is the normal use of a computer?
A. Well, things like browsing and searching and e-mail are the normal uses of the computer.
Q. And does Google Search, Search Ads and Content Ads,

each do their transparently monitoring while the user is engaged in normal use of a computer?

MR. VERHOEVEN: Objection, Your Honor. Leading.

THE COURT: Overruled.

BY MR. NELSON:

Q. Go ahead and answer.

A. Yes, they do.

Q. Let me put up -- let me direct you in your notebook to PTX-11.

A. Yes. It's a Google document entitled "Cookie-Based personalized search."

MR. NELSON: I'd like to move PTX-11 into evidence.

MR. VERHOEVEN: No objection, Your Honor.

THE COURT: It's admitted.

(PTX-11 was admitted into evidence.)

MR. NELSON: Can you pull up the pullup?

BY MR. NELSON:

Q. And what does this document tell you?

A. It goes into more detail about what is transparently monitored. These are the [redacted] that are recorded as part of a normal web search and they're associated with these cookie-based identifiers, [redacted], Gaia, and retained for a finite period of time, [redacted].

Q. And let me have slide 18, please. This is Mr. Horling from yesterday. What did he say?

A. So the two-line quote from that video is:

"So the system watches what the user is doing and tracks it?"

And his answer is: "At a high level, yes."

Q. Let me have slide 19. This is Mr. Gopalratnam. What did he say about the Search Ad system?

A. The Search Ad system he talked a little bit about and he confirms that they monitor the [redacted]

Q. Let's go back to search for a minute. Does the user have to do anything for this monitoring to happen?

A. No. It's effortless to the user.

Q. Does the user -- they don't have to sign in? They don't have to do anything?

A. That's correct.

Q. What about for Search Ads? Is the user aware this is even going on?

A. It's effortless to the user.

Q. What about for content ads? Is it transparent to the user there as well?

A. Yes. The user doesn't have to do any steps to get

his information, his or her information recorded in the Google databases.

Q. And let me direct your attention to PTX-395. Actually, just go to the next slide. This one has already been admitted.

This is a slide about Search Ads. What does this slide say with respect to what's monitored in Search Ads?

A. Well, this describes again what is monitored in Search Ads, [redacted]

Q. And what is UBAQ on the bottom?

A. UBAQ is actually a profile of the user in Search Ads, and that is a summary of their activity in the [redacted] It expresses what the user is interested in and what the user is not interested in.

Q. And let me put up slide 21, please. This is Mr. Ponnekanti from yesterday. What did he say what was monitored in Search Ads?

A. This is Content Ads, I believe.

Q. I'm sorry. Content Ads.

A. And he said that Content Ads monitors [redacted]

[redacted]

Q. And let me put up slide number 22. This is Mr. Zamir from yesterday. Can you summarize what he said?

A. Yes. The quick summary is he said that Content Ads looks at [redacted]

Q. And just one more. Let me direct your attention to PTX-404.

A. Okay. It's a Google document AFC user profiler, where AFC stands for Ad Sense per content.

MR. NELSON: I'd like to offer Exhibit 404 into evidence.

MR. VERHOEVEN: No objection, Your Honor.

THE COURT: It is admitted.

(PTX-404 was admitted into evidence.)

BY MR. NELSON:

Q. Can you put that on the screen? And what does Exhibit 404 say about what content --

A. It goes into more details about Content Ads. It says, we, that is Google, looks at the following activities for each user: [redacted]

Q. And let me put, direct your attention to PTX-370.

And what is Exhibit 370?

A. 370 is a document from a website, I believe, called read, write web. Its author is Greg Linden.

MR. NELSON: And I want to offer Exhibit 370 into evidence.

MR. VERHOEVEN: No objection, Your Honor.

THE COURT: Admitted.

(PTX-370 was admitted into evidence.)

BY MR. NELSON:

Q. Who is Greg Linden?

A. Greg Linden was a former Amazon employee. He is the person that wrote Amazon's personalization system.

Q. And what does Mr. Linden say about Google on this topic?

A. He says that searchers don't have to do anything explicit to use it. It here is referring to Google personalized search. It's all implicit. So he's getting at the transparently monitoring.

Q. And let me turn to slide 25. And can you summarize your opinion whether Google's search, Search Ads and Content Ads and YouTube Content Ads practice all of the elements of claim 1 of '040 claim, element 1(a)?

A. Yes. So Google keeps track of things like your searches, your result clicks, the ads that you've seen, the ads that you've clicked on, whether it's Search Ads or

Content Ads, anywhere including YouTube.

Q. Is it your opinion that that element is met?

A. Yes.

(Pause while counsel conferred.)

MR. VERHOEVEN: I apologize, Your Honor.

THE COURT: You all can meet and confer. That's fine.

(Pause.)

MR. VERHOEVEN: Your Honor, I don't want to disrupt the proceedings, but I thought we had agreed that the left-hand column would be modified to have all the words and it was represented it would. If we could fix that as soon as possible, I won't interrupt the proceedings.

THE COURT: Will you agree you'll fix that when you have a chance?

MR. NELSON: Yes, we are. There are some larger boards that we have later that have them all. It's clear we're going through all of the elements of the claims here.

THE COURT: We don't need any more argument about it, but we'll fix it, and when we do, we'll let the ladies and gentlemen of the jury know that we've replaced it.

MR. VERHOEVEN: Thank you, Your Honor.

BY MR. NELSON:

Q. So to summarize your opinion on claim element 1(a) --
A. Yes. Search --
THE COURT: Dr. Pazzani, I know you had to wait through all of that, but it's important that you wait until the question is asked before you answer it.
Go ahead.
BY MR. NELSON:
Q. Let me re-ask it. Dr. Pazzani, can you summarize your opinion with respect to whether Google's search Search Ads, Content Ads and YouTube practice each element of the '040, claim limit 1(a)? Each aspect of element A of the '040 patent?
A. Yes, they do.
Q. Let's turn to element B.
MR. NELSON: Can I get slide 27, please. Can you pull out Element B.
BY MR. NELSON:
Q. And can you read Element B to the jury?
A. Yes. Element B is the second element of claim 1. Updating user-specific data files, wherein the user-specific data files comprise the monitored user interactions with the data and a set of documents associated with the user.
MR. NELSON: And may I have slide 28, please.
BY MR. NELSON:
Q. And can you read what is on slide 28 and tell me what

it is?

A. Yes. So this is the Court's construction of two terms. User-specific data files is the monitored interactions with data and a set of documents associated with the user.

And the Court has defined monitored user interactions with the data to be, the collected information about the user's interactions with the data.

Q. And let's talk first about that aspect, the monitor user interactions with the data.

MR. NELSON: Could I get slide 29.

BY MR. NELSON:

Q. And this is a pullout. And this is a portion of PTX-15 that we talked about earlier. Can you describe what this document is talking about?

A. Yes. So Kansas stores the user-specific data and it is updated and it's -- Kansas contains the Gaia ID, the ID of the signed-in user, and it updates the data that it stores, or the web queries as well as the results clicks.

Q. And what about for the PrefID?

A. That same data is stored for the PrefID tables, the earlier once, and now the [redacted] as well.

Q. And let me have slide 30, please.

And so this is -- first of all, can you identify the data on the left part, that's the PTX-373?

A. Yes. This is from one of the [redacted]. I think this is [redacted]. And this shows the interactions. So the query migration [redacted]

Q. There's also the [redacted] that we will discuss next, I think.

And what about the portion up on the top there? What is that intending to represent?

A. This is representing the Kansas database. [redacted]

Q. Let me turn to the next slide, please. And so let's talk now about the set of documents associated with the user. Can you tell the jury how that was defined?

A. Yes. A set of documents associated with the user is a group recollection of documents associated with the user.

Q. And what is a document? What is the second part of the document?

A. A document is an electronic file, including text, or any type of media.

MR. NELSON: And let me have slide 32, please.

BY MR. NELSON:

Q. And this is PTX-372 that we saw earlier. Can you explain what a document ID is?

A. Yes. A document ID is an identifier that Google has to uniquely represent the document. So each document that Google finds on the web and indexes has this unique document. And it's generated in part from the URL, so sometimes we'll associate documents with the user by associating the URL with the user ID. Sometimes it will be the document ID associated with the user ID.

Q. And let me turn to slide 33. And can you identify on the left portion here the Q and the RC information that is part of PTX-373, what that data is?

A. Yes. So, again, this is data from the [redacted] It's an address of the document that is associated with the user ID. You store it in the database by [redacted]

Q. And in Google Search, what is the document?

A. The document is the document on the website, like the Wikipedia website, and the identifier is stored in Google's databases.

MR. NELSON: And let me have the next slide, please.

BY MR. NELSON:

Q. And can you just explain what this slide is intended to show?

A. Yes. This slide depicts how you associate the user with the document by means of the document ID. The document is something out there on the web. Google's database has an identifier for that document. It stores that identifier with the user identifier to associate the user with that document.

Q. And so what is the user ID a represent here?

A. Well, that would be this [redacted] or the Gaia ID. The document ID would be one of those numbers or the address, and then the document would be the document out on the web.

Q. And how does Google Systems create a set of documents associated with the user?

A. It stores associated with the user ID a set of documents, for example, in the [redacted] There's also a web results column that shows the web impressions. That's another association. There are some others as well. You'll see them in a minute.

Q. So the URLs themselves aren't the documents; is that right?

A. No. The URLs are the address of the document, but, again, Google has analyzed that document, understands the content, can retrieve that address by the content of the document, and then using that content, construct a search results page so the user could click on that URL and get to the document.

Q. And let me turn your attention to -- let me have the next slide, please. So this is a portion, then, of PTX-375. Let me have the pull out.

Can you explain what's going on in this slide?

A. Yes. This is another part that we have not discussed yet of Kansas. Kansas has a [redacted]

Q. And just for the record, the pullout is PGLPUM11643.

A. So these documents are also associated with that ID and in that big binder.

Q. This is another portion of the same document, GGLPUM114940. Can you explain what's going on here?

A. Yes. [redacted], has the dates that this was done, on July 1st of 2010.

Q. And let me turn to slide 37. And this is Mr. Horling from yesterday. What is Mr. Horling saying?

A. Well, the quote is, does Kansas -- the way the system currently works, does Kansas use two types of user identifiers; one is a Gaia ID and one is a [redacted]?

And he confirmed, yes, those two user identifiers are used in Kansas.

MR. NELSON: And let's turn to Search Ads next. Can I get slide 39, please?

BY MR. NELSON:

Q. This is a document we have seen before, PTX-395. What is this document tell you about the updating user specific data files?

A. This is where Search Ads stores the user specific data and associates it with the user ID. And, again, it's the queries, the ad clicks, result clicks, and ad impressions that get stored.

MR. NELSON: And let me turn to slide 40.

BY MR. NELSON:

Q. And what did Mr. Gopalratnam say about this?

A. He is describing updating the Kansas database:

How often does Kansas update the information associated with the user ID?

[redacted]

And then you asked: Each time?

[redacted]

MR. NELSON: And let's go back. Let's go to slide 41.

BY MR. NELSON:

Q. And so this is again part of PTX-375. What is going on in this slide?

A. So this is the [redacted] So far, we've only been looking at the [redacted]

MR. NELSON: Let me turn to the next slide, please.

BY MR. NELSON:

Q. So this is the Court's definition of "document." Can you tell the jury that again?

A. Yes. "Document" is "an electronic file including text or any type of media."

MR. VERHOEVEN: Your Honor?

THE COURT: Yes.

MR. VERHOEVEN: We have an objection to the next two slides. And we've talked about it briefly. I don't think it has been resolved; and I respectfully request a short sidebar.

THE COURT: All right we'll have a sidebar.

(Sidebar conference held.)

THE COURT: All right. So what is the objection?

MR. VERHOEVEN: I apologize, Your Honor. We alluded to this previously but they have been going along with this fine. But now they're going to interpret your construction with more claim construction interpretation, the terminology "document," and then this is the one you have seen before with what a "file" is, Your Honor.

We object. This is essentially in our view, you issued a claim construction ruling on "document" and now they're construing the claim construction and you used the word "file" and now they're trying to construe the word

"file" within it and we would submit it is inappropriate for an expert witness to tell the jury what these meanings are.

And, in fact, we think that there is no need for this. The witness has already said he thinks the document element is met. And it's not appropriate for him to go and then talk about the meaning of the words of your construction to support that. He can say factually what he wants or alternatively, Your Honor, if you don't want to proceed that way, then we think that it's a matter for the Court to decide what a file is, not two experts fighting over it.

THE COURT: What is your position?

MR. NELSON: Well, first of all, our position is this objection has been waived. We had correspondence with Google last night as to what remained objectionable on Dr. Pazzani's slide and this wasn't it. It was very clear that the correspondence was limited to what Mr. Perlson presented this morning: The two letters and also --

THE COURT: We did talk about this before, but I don't think I ruled. You're saying subsequent to this, they did something to waive their objection?

MR. NELSON: Yes, Your Honor. We sent an e-mail last night I think in a summary of what was left in Dr. Pazzani's slides that were objectionable? And what was sent back was the two letters and the deposition exhibit. That

was it.

THE COURT: Assuming it's not waived, what is your position?

MR. NELSON: Our position is that this is clearly in the expert report. They've had their own expert had an opportunity to opine back on it. They had a chance to take Dr. Pazzani's deposition on it. They can cross him on it. And albeit on the claim construction, law expert testimony isn't necessarily the -- it is fairly low on the overall hierarchy. This is perfectly fine testimony for him to give.

If they want to cross, depending if this is in Dr. Fox's report on it or not, they can put something on assuming it's in his report, but that they've been on notice since the time of Dr. Pazzani's report that there was a dispute, there was a disagreement as to what the word "file" meant.

THE COURT: Do you think I need to construe it then?

MR. NELSON: I don't know if you need to construe it or not, Your Honor. I think that it's a word, the plain and ordinary meaning provides aspects of that. And if they wanted this construed, they could have asked for it to be construed later.

THE COURT: Is there anything further?

MR. VERHOEVEN: Yes, we did ask for a document to be construed and we got a construction. They're unhappy with the construction. Now they're construing the construction, Your Honor. This is an invitation by them in my opinion to violate *O_2Micro* and its progeny.

And as to the point that expert testimony has not a lot of relevance, a little bit of relevance to claim construction, that misses the point that I was making which is that is for the Court, it's not for the jury. Claim construction is for the Court.

THE COURT: Here is what we're going to do. I'm going to overrule the objection.

First off, on waiver, it has not been proven to me that the objection was waived. So I'm going to reach the merits of the objection but I'm going to overrule and permit the testimony from the plaintiff's expert provided, and I assume this will be the case, that he will say that he is applying the Court's claim construction on those terms that we did construe.

I will give similar leeway to defendants on cross as well as to present testimony from their expert consistent with our claim construction. And I reserve the right, if need be, to construe any term in dispute and to instruct the jury accordingly, which, of course, may be inconsistent in the end with what any expert may have

testified to as being his or her understanding of "file." But that is the ruling.

Any questions about that?

MR. NELSON: No, Your Honor.

MR. VERHOEVEN: No, Your Honor.

THE COURT: Okay.

(Sidebar conference ends.)

THE COURT: You can continue when you are ready.

MR. NELSON: Thank you, Your Honor.

BY MR. NELSON:

Q. So, Dr. Pazzani, can you read the jury's construction again -- or, no. Let me start over. Can you read the Court's construction to the jury?

A. Yes. The Court has defined the "document" to be "an electronic file including text or any type of media."

Q. And let me have you look at PTX-357 in your notebook.

A. 357 is a definition from the Random House Webster's Unabridged Dictionary.

MR. NELSON: And I want to move 357 into evidence.

MR. VERHOEVEN: Subject to the sidebar, Your Honor, no objection.

THE COURT: It's admitted.

(PTX-357 is admitted into evidence.)

MR. NELSON: Can you put up a slide 43, please?

Can you put up the slide of the Random House Dictionary?

BY MR. NELSON:

Q. And can you tell what is this slide?

A. This slide is a definition of the word "file" from the Random House Dictionary.

It says: A file is a folder, a cabinet or other container in which papers, letters, et cetera, are arranged in convenient order for storage or reference.

Then it goes on to give the computer definition of that: A collection of related data or program records on some input, output, auxiliary storage medium.

Q. Let me have you look in your notebook to PTX-1113, please.

MR. VERHOEVEN: What was the number?

MR. NELSON: 1113.

THE WITNESS: 1113 is the Users-Based Ad Quality.

BY MR. NELSON:

Q. Is it a Google document?

A. Yes, it is a Google document.

MR. NELSON: I want to offer Exhibit 1113 into evidence.

MR. VERHOEVEN: No, I have no objection, Your Honor, except my copy is illegible so if we can get a

legible copy?

THE COURT: I'm sure one can be provided.

MR. NELSON: Yes. I'm not sure the one we have is a lot better, which you will see in a minute.

THE COURT: All right. Well, it's admitted and you will give him the best copy you have.

(PTX-1113 is admitted into evidence.)

MR. NELSON: Can I have slide 46, please?

And can you blow up the portion on the left, please?

BY MR. NELSON:

Q. All right.

A. I think it's the animation that has it.

Q. Yes. What we're going to be talking about here is the portion here that we have retyped.

A. Okay. I can read it, sort of.

MR. NELSON: So can I have the blowup portion of the slide now?

BY MR. NELSON:

Q. And can you tell me what this document says?

A. Yes. This document describes Google ads, and a Google ad has several elements. It's a headline, that's the text you see on the top of the ad. The lines of text, it's also called the creative. That's the few lines of text that describe the ad. A display URL, that's the website that it

is from, like Amazon or eBay. And the destination URL, that's the place that you will go to if you click on the ad.

Q. Let me have you turn to PTX-399, please.

A. (Witness complies.) 399 is a Google document, SmartAds for Smarties.

MR. NELSON: I'd like to offer Exhibit 399 into evidence.

MR. VERHOEVEN: No objection, Your Honor.

THE COURT: It's admitted.

(PTX-339 is admitted into evidence.)

MR. NELSON: Can you put Exhibit 399 up, please?

BY MR. NELSON:

Q. And so what is the Find a Job portion up in the upper right box?

A. The Find a Job is the headline. And then the text, Find a Job: Search job listing by location, industry or keyword is what is called the ad text.

The www.hotjobs.com is the visible URL. And there, the components of the ads, so ads have identifiers. You can think of them as being stored in a file cabinet and associated with that ad identifier are these components, the visible URL, the ad text, the headline, and also the destination URL that is now depicted here.

Q. And this is an electronic system; is that right?

A. That's correct.

Q. And so these ads, is there something that glues them together?

A. Yes, the ad identifier is how you tell one ad from another ad. It's how Google tells one ad from another ad.

Q. And so, in your opinion, are ads electronic files according to the Court's definition?

A. Yes, they are.

Q. And let's talk a little bit more about that. So let me turn your attention to PTX-356.

A. 356 is from Microsoft's Computer Dictionary, the Fourth Edition.

MR. NELSON: I'd like to ask that PTX-356 be moved into evidence.

MR. VERHOEVEN: This is subject to the same issue, Your Honor. Subject to that, no objection.

THE COURT: Okay. Given that reservation of rights, it is admitted. You may proceed.

(PTX-356 is admitted into evidence.)

MR. NELSON: Can we have slide 48 please?

BY THE WITNESS:

A. 48 is Microsoft's definition of a "file." It's a complete named collection of information, such as a program, a set of data used by a program, or a user-created document. A file is the basic unit of storage that enables a computer to distinguish one set of information from another.

Q. And in your view, does an ad meet that -- meet the Court's definition?

A. Yes. So there is a unit of storage, the ad identifier, and that ad identifier has ads associated with it and only it. [redacted]

MR. NELSON: Let me go back for a second. I skipped a portion here that I wanted to, I wanted to talk about first.

Can I get slide 42 back up again?

BY MR. NELSON:

Q. So that is the Court's definition of "document," correct?

A. Correct.

Q. And so may I have you look in your folders to PTX-401, please?

A. Yes.

Q. And what is PTX-401?

A. PTX-401 is a Google document. It's called High Roller Large Auction Ad Targeting.

MR. NELSON: I want to move Exhibit 401 into evidence.

MR. VERHOEVEN: No objection.

THE COURT: It's admitted.

(PTX-401 is admitted into evidence.)

MR. NELSON: Can I get slide 43, please.

BY MR. NELSON:

Q. So what is -- this is terminology of PTX-401. What is Google -- well, what is this document say about documents?

A. Well, this document defines --

MR. VERHOEVEN: For the record, Your Honor, same objection. Reservation to that.

THE COURT: Fine. Go ahead. You can answer.

BY THE WITNESS:

A. Okay. So this is a Google definition of "document" that is used by the SmartAds system. That is the system that judges the probability the user would be interested in the document.

And it says: A document is the content associated with a single ad. For instance, its customer ID, it's creative, it's landing page. The creative is the text of the ad.

And we haven't talked about it yesterday but the customer ID is the Google customer, the advertiser who pays Google to put that ad there. And, of course, you would want to associate that with the ad as well so Google can charge that customer.

MR. VERHOEVEN: Objection to that testimony as inconsistent with the Court's claim construction.

THE COURT: Okay.

MR. NELSON: Disagree.

BY MR. NELSON:

Q. What does Google say a document is in the Search Ad system?

A. So let me read it again. Document: The content associated with a single ad.

THE COURT: The objection is overruled.

BY MR. NELSON:

Q. And in your opinion, is an ad a document according to the Court's construction?

A. Yes. An ad is the content associated with a single ad. A document is the content associated with a single ad.

Q. And it's my understanding that Google takes a different position that an ad isn't a document. Is that your understanding as well?

A. I have heard that argument, yes. I think we saw it in the opening argument.

Q. Do you agree with it?

A. No, I don't. It's pretty clear here.

Q. Let's just say we give them the benefit of the doubt. Do you have an opinion as to whether ads are equivalent to documents?

A. Yes, I do.

Q. And what is that you opinion?

A. Yes, they are equivalent.

Q. Why is that?

A. Can I show the slide?

Q. Yes. Let me put up slide 49.

And go ahead and give your opinion.

A. So there is a test for equivalence. And ads are not substantially different from documents. They're equivalent to documents. They function substantially the same way as electronic files in substantially the same way -- I'm sorry. They function substantially as electronic files in substantially the same way to achieve substantially the same result.

So, again, ads are substantially the same as documents. They are indexed and stored electronically. So we saw that Google has databases that store ads. Google has databases that store web documents, the contents of web documents.

Ads are identified by their identifiers. Google identifies the properties of ads. They'll be categories associated with ads.

Google estimates a user's interest in them. And Google retrieves them, ranks them, and provides them to the user.

Q. And is that opinion the same with respect to ads in the Content Ad system?

A. Yes, both Content Ads and Search Ads really use about the same ads. Advertisers can specify one system or another but there is not really a different way of. Usually, advertisers let both of them happen.

Q. Is that opinion the same for this related claim element in the '276 patent?

A. Yes, it is, where a document is used in '276 as well.

Q. So let me have you turn to PTX-220.

A. Okay. It's a Google document entitled Content Ads Also Known As Adsense.

MR. NELSON: I want to move for PTX-220 to be admitted.

MR. VERHOEVEN: No objection.

THE COURT: It's admitted.

(PTX-220 is admitted into evidence.)

MR. NELSON: Can you put up the next slide.

BY MR. NELSON:

Q. What does those document tell you about how ads are treated in Google systems?

A. It talks about the [redacted] So earlier we talked a little bit about how [redacted] has the document IDs for documents on the web. Well, [redacted]

[redacted]

Q. And let's talk, let's go to the next slide, please. And talk about the Content Ad system briefly. May I have you look at PTX-403, please. And what is Exhibit 403? What is PTX-403?

A. Oh, PTX-403 is Google's response to the plaintiff's second set of requests for admission.

MR. NELSON: And I want to move PTX-403 into evidence.

MR. VERHOEVEN: No objection, Your Honor.

THE COURT: It's admit.

(PTX-403 was admitted into evidence.)

BY MR. NELSON:

Q. And so are these answers that Google gave us to, gave PUM to questions that PUM asked?

A. Yes, they are.

Q. And let me have you focus on response to request for admission 6.

What does Google say about the Content Ads element?

A. Well, for a CUBAQ, the Content Ad Backlogging System, Google stores data associated with a DoubleClick cookie regarding [redacted]

So when you have a web page like the Los Angeles Times that displays Content Ads from the Los Angeles Times site, it asks the Google site to put ads in there and that's called the ad request.

Q. And let me direct your attention to PTX-408 in your notebook.

A. Okay.

Q. And what is that document?

A. It is a document entitled overview, which describes the Google AdSense System.

MR. NELSON: I want to move PTX-408 into evidence.

MR. VERHOEVEN: No objection.

THE COURT: It's admitted.

(PTX-408 was admitted into evidence.)

BY MR. NELSON:

Q. Slide 403. What does this document say?

A. That talks about part of the Content Ads, part of the Kansas infrastructure and what it stores. And it says that it stores clicks, [redacted] And they are stored in the Kansas infrastructure. That's updating the user-specific files associated in this case with the DoubleClick cookie.

Q. And let me put up the next slide, please. And this

is Mr. Zamir from yesterday. Can you just summarize what he said?

A. Yes. He confirmed that the Content Ads updates [redacted]

Q. And let me have PTX-401 again. And so this is the document we had up earlier.

What does Google say is document is in the Content Ad system?

A. A document --

MR. VERHOEVEN: Same objection, Your Honor.

THE COURT: The objection is noted.

THE WITNESS: A document again is the content associated with a single ad, and so you would identify that content by an ad ID -

Q. Can you turn in your notebook to PTX-409, please?

A. Yes.

Q. And --

A. It is a Google document entitled audience/interest-based advertising, subtitled Kansas use in the [redacted]

Q. And can you put --

MR. NELSON: I'd like to move that Exhibit 409 be admitted into evidence.

MR. VERHOEVEN: No objection.

THE COURT: It's admitted.

(PTX-409 was admitted into evidence.)

BY MR. NELSON:

Q. And so what does this document indicate?

A. It describes how the updates at Kansas are done and [redacted] Basically helps write to the Kansas database.

Q. And for search, Search Ads and Content Ads as well as YouTube Content Ads, are the user-specific data files updated?

A. Yes. The Kansas data files contain the [redacted] for instance, in all cases.

Q. And let me turn to slide 58, please. And can you tell me, can you summarize your opinions with respect to whether Google's search, Search Ads, Content Ads and YouTube content ads practice claim element 1(b) of the '040 patent?

A. Yes. So each of them stores information in Kansas and updates them as the user uses the Google System.

Q. Thank you.

Now getting ready to turn onto Element C. I'm not sure when the lunch break is.

THE COURT: Do you think you need more than 15 minutes for 1(c)?

MR. NELSON: Yes.

THE COURT: All right. Then let's take a lunch break now. I know lunch is here for the ladies and gentlemen of the jury.

No talking about the case during the break and we'll bring you back in about a half-hour.

(The jury was excused for a luncheon recess.)

THE COURT: Before we break, when we come back from lunch, is it possible, I have a couple questions about the Twersky deposition designation objection, so if you can have whoever is able to speak to that here, we may have a few questions for you. But we'll take a recess.

(Luncheon recess taken.)

- - -

Afternoon Session - 12:53 p.m.

THE COURT: Before we bring the jury in, just one quick question on Twersky. At the designation at page 451, I guess it's Google's argument that the counter-designations proposed by PUM is untimely and improper. I just wanted to briefly understand that better. So first from Google.

MR. PERLSON: Well, I actually -- I know most of these, but that was the one that I wasn't involved in. I know all the substantive stuff.

THE COURT: Right.

MR. PERLSON: I think that there was -- it was

just too late.

THE COURT: The argument, I guess, is, it wasn't timely, consistent with the whole procedure for disclosing to one another?

MR. PERLSON: Yes. That's my understanding. I don't know why it's timely.

THE COURT: All right. Let me see what PUM has to say.

MS. MURPHY: Good afternoon, Your Honor. Regina Murphy for PUM.

So, yes. In terms of our exchange procedure, it was untimely after the meet and confer to try to address what we understood were Google's objections. And to withdraw our objections, we proposed we could counter-designate that portion. But we did do it after the time to disclose originally.

THE COURT: Okay. All right. That's all I needed to know.

MS. MURPHY: Thank you.

THE COURT: I will get you my rulings later today, but I do want to bring the jury in and pick up where we left off. We'll get the jury and ask Dr. Pazzani to return to the stand.

(The jury entered the courtroom.)

THE COURT: Welcome back. Mr. Nelson, you may

continue.

MR. NELSON: Thank you, your Honor.

May I get slide 59, please.

BY MR. NELSON:

Q. So let's turn to the next element of claim 1, the estimating parameters of a learning machine element, and it continues on.

A. Okay.

MR. NELSON: Can I get slide 60, please?

BY MR. NELSON:

Q. And this is the pull out. So this is Element C of the '040 patent. Can you read that element to the jury?

A. Yes, I can. Estimating parameters of a learning machine, wherein the parameters define a user model specific to the user and wherein the parameters are estimated in part from the user-specific data files.

Q. And let's kind of break that apart a little bit here. So let me have slide 61.

And so can you read the Court's definitions of some of the claim terms?

A. Yes. A parameter is a value or a weight and estimating parameters of a learning machine is estimating parameters of the variables of a learning machine.

Q. And let me turn to slide 62, please.

And can you sort of illustrate, or explain what

you're trying to illustrate here.

A. Yes. So in this case, what we're trying to do is, we have the user-specific data in Kansas. These are things like [redacted] and you're trying to create the link profile or the [redacted] from that. So here we can see what the profile is. Maybe we can zoom in a little bit, but this is the [redacted]

So what we're trying to do is figure out which categories of interest to the user, like living things or, et cetera. Thanks.

Q. And what are the IDs there on this slide?

A. [redacted]

Q. And so this PTX-34, this is a Google document; is that correct?

A. Yes. That's part of the [redacted], that large stack that was blocking your view before.

Q. And let's turn to the next slide, please. And can we zoom in -- well, first of all, can you explain what this

is?

A. Yes. So this is a different profile. So, again, I'm going to tell you about five different learning machines: wink, dilip, rephil, and then two that weren't, those are [redacted], your session profiles.

And this is just one other one. This is the rephil profile. And now if we zoom in, we can see it's associated with [redacted] and that there's [redacted]

Q. So is there a parameter shown on this slide?

A. Yes. So this one shows the parameter is [redacted] here, or [redacted] et cetera. [redacted]

Q. Is that parameter estimated?

A. [redacted]

Q. And can you explain, can you explain that?

A. Sure. So let's imagine you see ten documents and you click on five.

MR. VERHOEVEN: Objection.

THE COURT: What's your objection?

MR. VERHOEVEN: The last question and answer and this question, outside the scope of his report.

THE COURT: Tell me where it is.

MR. NELSON: It's in all of the same paragraphs that you referenced before, Your Honor. Let me find the particulars.

So it begins at Paragraph 163 and goes on to paragraph 197.

THE COURT: Give me a more specific example.

MR. NELSON: Paragraph 166, beginning estimating parameters.

THE COURT: Right. I'm reading it. Thank you.

(Pause.)

THE COURT: Mr. Verhoeven, I'm not sure I understand what you are objecting to.

MR. VERHOEVEN: Thank you, your Honor. It's very simple. We don't believe in this paragraph that the expert answers the question why there's an estimate, which is the question that was posited.

And if you read this, there's no explanation of that, and we had --

THE COURT: As to why it's an estimate?

MR. VERHOEVEN: Yes.

THE COURT: All right. Do you want to direct me to somewhere elsewhere he says why this is an estimate?

MR. NELSON: Well, I think it's clear, he's very clear why it's an estimate in here.

THE COURT: All right. So if it's in 166. Is that right?

MR. NELSON: He --

THE COURT: I don't want you to get into all the substance of it, but is that where I look?

MR. NELSON: You can look there, Your Honor. You can also look at his deposition where he was asked this question.

THE COURT: Tell me where.

MR. NELSON: On page 93, 12 through 25. We may need to sidebar on this, too, Your Honor.

THE COURT: All right. Let me look at the lines you called out first. 93. What lines, please?

MR. NELSON: 12 through 25.

THE COURT: All right. Thank you.

(Pause.)

THE COURT: Mr. Verhoeven, do you stand by your objection?

MR. VERHOEVEN: To the extent your Honor's rules of the road are if it's in the deposition and not in the report, it's okay, we concede that it's in the deposition, Your Honor.

THE COURT: Okay.

MR. VERHOEVEN: So if that's the rules of the road, then we withdraw it.

THE COURT: Okay. I am going to make those the rules of the road going forward and I do believe that the deposition adequately discloses it and the objection is overruled.

BY MR. NELSON:

Q. Okay. So let's go back to where we were here. Can you enlarge [redacted] And so can you again tell the jury what one of the parameters is listed there?

A. Yes. [redacted]

Q. And why is that an estimation or an estimate?

A. Well, what you'd like to have is a very accurate representation of a probability. If you saw a million examples, you might be able to figure out what that probability is, but if you just see three or four examples, it's really hard to get the probabilities right.

For instance, my mother had four children, three boys, one girl. Three-quarters of them are boys, so you might assume three-quarters of all people are boys. But that's not the case. If you look at all the people in the world, you might get the 50/50. And I actually think it's about 51 or 50.5 to 49.5. But any time you look at a small amount of data and try to extrapolate to the large amount of data, it's just an estimate.

Q. Let me ask a question again slightly differently.

Why is this an estimate of a parameter?

A. Well, the --

Q. So it's -- is it a rough calculation of how interested ?

A. Well, in some ways, it's an extremely precise calculation, but that precise calculation is just an approximation of a probability.

Q. And let's go back to the previous slide, 63. And could we get this one blown up?

And this is the link profile. And what is the parameter in the link profile?

A. Well, here,

Q. And can you explain how is an estimate of that parameter?

A. Yes. So from -- what we're trying to do is figure out those things that

[redacted]

Q. And so how are these category interests represented in Google's system?

A. Well, there is a number that is associated with the [redacted]

Q. And can you explain a little bit more how the categories are chosen to be contained or not contained in the link profile?

A. Well, there's code, and I think we're going to see it in a minute, that estimates the user's interest in that category, and then all of those things in which the user is 20 percent or more interested in get put in that category. So there's some threshold, and once you achieve that threshold, it gets stored in your profile.

Q. And let's turn to slide 65, please. And so can you

read the Court's definition of learning machine and then of user model specific to the user?

A. Yes. So a learning machine is a mathematical function or model used to make a prediction, that attempts to improve its predictive ability over time by altering the values or weights given to its variables, depending on a variety of knowledge sources, including monitored user interactions with data and a set of documents associated with the user.

Q. And can you read the definition of "user model specific to the user?"

A. Yes. "A user model specific to the user" is "an implementation of a learning machine updated in part by data specific to the user."

MR. NELSON: And let me have slide 67, please.

BY MR. NELSON:

Q. And so can you identify the learning machines that you found for Google Search?

A. Yes. So the learning machines are these abstract mathematical models:

It's the link profiler plus part of the Kaltix Twiddler. Or,

It's the dilip and it's the dilip profiler and the Kaltix twiddler.

And the rephil profiler and the Kaltix twiddler.

There is a Category NavBoost profiler and the Kaltix twiddler.

And a session category profiler and the Kaltix twiddler.

[redacted]

Q. And just explain how they relate to the graphic there on the lower left.

A. The lower left depicts the abstract learning machine, the part over here, as the profiler. That's the thing that creates the weights on the variables.

Then the Kaltix Twiddler is the thing that

[redacted]

Q. And can you explain to the jury what the user model specific to the user is in Google's system or the user models specific to the user is in Google's system?

A. Yes. So once there is user specific data, the

learning machine can operate. And then it creates what is called a user model. So in this case, the learning machine is, where the user model is the link profile, plus this information, or the dilip profile plus this (indicating).

So, in essence, it become substantiated. It's no longer an abstract mathematical model. It's [redacted]

Q. What makes it [redacted]?

A. [redacted]

Q. And is it specific to [redacted] at that point?

A. Yes, it's [redacted] And that is why there are two binders: [redacted]

Q. And let's talk now about each of these in each of these five in a little bit of detail.

A. Okay.

MR. NELSON: Let's first put up PTX-222. It's the next slide.

BY MR. NELSON:

Q. This is the drawing that we referred to earlier in the day. Can you identify on the drawing what the learning machine is in Google's system?

A. Well, the part of the learning machine that does the training is the part circled in red. So it takes the user's

history from Kansas, makes some extractions from it, learns some parameters, and then it stores the profile back in Kansas. That's for three of the profilers. The long term profiles.

Q. And what about the short time profiles?

A. The short term profiles operate very similarly but there is no need to store them in Kansas. They just stay around for a shorter period of time.

Q. And let's turn to some Google documents to discuss this further. Can you look in your notebook to PTX-770?

A. I can.

Q. Can you identify that document?

A. Yes. This is the profiler, profile factory infrastructure. It's a Google document, yes.

MR. NELSON: I'd like to move PTX-770 into Federal Defender.

MR. VERHOEVEN: No objection, Your Honor.

THE COURT: It's admitted.

(PTX-770 is admitted into evidence.)

MR. NELSON: Can you put up the next slide, please?

BY MR. NELSON:

Q. Can you tell me what this document says about profilers?

A. Well, this is a general description of profilers.

And I think the underlying part is the important part.

It says we use a number of profiles -- profilers to compute profiles for a given user. So there is not just one, there is five different profiles of the user categorizing documents in different ways, or categorizing long and short term interests.

[redacted]

Q. Let me have you turn to PTX-376.

A. (Witness complies.)

Q. Can you identify that document?

A. Yes, I can. It is a Google document entitled Generic Components Used in P Search. P Search stands for Personalized Search.

MR. NELSON: I'd like to move 376 into evidence.

MR. VERHOEVEN: No objection, Your Honor.

THE COURT: It's admitted.

(PTX-376 is admitted into evidence.)

MR. NELSON: Can you put up slide 70, please?

BY MR. NELSON:

Q. And can you tell me what this document says about profilers?

A. Yes. This document describes in general the profilers, and they have several components. One component

looks over the items associated with the user. For instance, these are the clicked URL or the documents the user has clicked on.

Then it looks up [redacted] for those. For instance, it finds the link categories associated with those documents.

Then it aggregates those [redacted]. It forms some weighted combination of the [redacted]

Then it writes the profiler back into Kansas in some known form like the link profile we saw on the screen.

Q. And are the profilers -- let me start over here.

MR. NELSON: Let's turn to the next slide. Let's first talk about, are these the five different profiles we're going to discuss?

A. Yes, they are.

Q. Let's first talk about the link profile. Can you look at PTX-30 in your binder?

A. Yes, I can.

Q. And what is that?

A. I don't think PTX-30 is in my binder. Perhaps it has been admitted before. Oh, I found it. I'm sorry. I'm just not counting well.

Q. Okay. There is a lot of things in those binders.
A. Yes. Yes.
Q. Can you tell me what PTX-30 is?
A. PTX-30 is Google's Supplemental Objections and Responses to Plaintiff's Fourth Set of Interrogatories to Google. So it's essentially Google's answers to PUM's questions.

MR. NELSON: I'd like to move PTX-30 into evidence I.

MR. VERHOEVEN: No objection.

THE COURT: It's admitted.

(PTX-30 is admitted into evidence.)

MR. NELSON: Can you put up slide 72, please.

BY MR. NELSON:
Q. Can you tell me what Google's answer to our Question 24 is?
A. Yes. It says: The data used to derive the link profile is [redacted]

I basically have been saying the same thing over the past hour.

And it says: [redacted]

And it goes on to say that Google uses a

Bayesian normalization function, which is really just a way of doing Bayesian estimation.

MR. NELSON: And let me have you put up the next slide, please.

BY MR. NELSON:

Q. Tell me what Glen Jeh said about the link profiler or profile.

A. Yes. So Jeh said that the category will appear in the link profile if [redacted]

I described earlier that threshold and whether you get above that or not.

Q. And did you look at Google's source code regarding these issues?

A. Yes, I looked at the source code through the link profiler, for instance.

Q. Let me direct your attention to PTX-76 and ask you what that is.

A. PTX-76 is a header file for the link profiler. It's BMRC Katz profiler. The header file describes what is inside the computer code but it's not quite the computer code itself.

MR. NELSON: And let me ask the Court to admit PTX-76.

MR. VERHOEVEN: No objection.

THE COURT: It's admitted.

(PTX-76 is admitted into evidence.)

MR. NELSON: Can you put PTX-76 on the screen, please?

BY MR. NELSON:

Q. Can you tell me what this tells you about --

A. Yes.

Q. -- the profile?

A. Yes. So these --

THE COURT: Dr. Pazzani, just another reminder. Wait to answer the question until it's done.

THE WITNESS: I want to go home.

THE COURT: No comment on that, but go ahead and answer the question when it's done.

THE WITNESS: Sure.

BY THE WITNESS:

A. So these are the comments that a programmer has put into this file. The comments start with "//" and they're used for the programmer to describe what it does. So that when other programmers look at the file, they can understand it. [redacted]

[redacted]

MR. NELSON: And let me turn to the next slide. We've already done a little bit of this. This is PTX-33.

BY MR. NELSON:

Q. And so can you explain what this shows?

A. Yes. So these are the top interests in two different associated with two different Gaia IDs. One is the [redacted]

[redacted]

Q. So are these basically pictures of [redacted] from Google's computers?

A. Yes. So we obtain these from Google, and they printed them out for us, and we put them in those binders.

Q. Let's talk about the next profile, the dilip profile. Can you turn in your exhibit book to PTX-379?

A. Yes.

Q. And tell me what that is.

A. That is a letter from Quinn Emanuel, Google's attorneys to I guess SNR Denton, PUM's attorneys.

MR. NELSON: I'd like to move PTX-379 be admitted.

MR. VERHOEVEN: Your Honor, this also subject to this morning.

THE COURT: What we discussed.

MR. VERHOEVEN: We have not jet seen the revised version, but subject to it being revised according to the way it was set up this morning, we have no objection.

THE COURT: You are working on that revision; correct?

MR. NELSON: Correct, Your Honor.

THE COURT: It's admitted subject to that revision we discussed.

(PTX-379 is admitted into evidence.)

MR. NELSON: And can you put up slide 77, please? And blow it up.

BY MR. NELSON:

Q. And can you tell me what this says about the code used to create the link profile?

A. This code, this comment describes the dilip profile actually for the Gaia IDs, and it says it's in the [redacted]

Q. And did you look at that code?

A. Yes, I did.

Q. Can you turn in your notebook to PTX-98?

A. Yes, I can.

Yes, now I have it.

Q. And can you tell me what PTX-98 is?

A. PTX-98 is the [redacted]

MR. NELSON: I move that PTX-98 be admitted into evidence.

MR. VERHOEVEN: No objection, Your Honor.

THE COURT: It's admitted.

(PTX-98 is admitted into evidence.)

MR. NELSON: Can you put the next slide on the board.

BY MR. NELSON:

Q. And is this the code that you just identified for the dilip profile?

A. Yes, this is just a little bit of source code. I'm not going to go into a lot of detail, but, for instance, it contains things like [redacted]

MR. NELSON: Let me just put up PTX-25. This has already been admitted. And the next slide.

BY MR. NELSON:

Q. Is this an example of a dilip profile?

A. Yes. So internal Google documents used by the personalization team, Uygar listed his dilip profile. And you can see that he is interested in things like references, Wikipedia and about.com, and he is also interested at the bottom in the programming language Java, which is a good thing for a Google employee to be interested in.

MR. NELSON: And can you turn to slide 80?

BY MR. NELSON:

Q. And this is Mr. Haveliwala from yesterday. What did Mr. Haveliwala say about the creation of the dilip profile?

A. So did the different dilip categories that were in the user's dilip profile have weights?

Yes.

And what did those weights represent?

[redacted]

Then the question was: So I mean, generally the

[redacted]

And he replied: Yes.

MR. NELSON: And let's turn next to the rephil profile, slide 81.

And can you turn in your notebook to PTX-30?

Actually that has already been admitted. Let's just put up slide 82, please.

BY MR. NELSON:

Q. Can you tell me what Google said with relation to what creates the rephil profile?

A. Well, the rephil profile has [redacted]

Q. And with respect to both the link or all of the link, dilip and rephil profiles, does the information contained in those profiles change over time?

A. [redacted]

Q. And what is the purpose of changing this stuff, these weights and values over time?

A. To form a more accurate model of the user's interest by using more data.

Q. And what does the Google system do with that more accurate picture of the user's interest?

A. Well, it updates and stores it back in Kansas. And the next time the Google user uses the system, it predicts

probabilities more accurately.

Q. Did you look at the code that creates the rephil profile?

A. Yes, I did.

Q. Can you look at PTX-69?

A. Okay.

Q. And identify that, please?

A. PTX-69 is Google source code. It's the source code for [redacted].

MR. NELSON: I'd like to move Exhibit 69 into evidence.

MR. VERHOEVEN: No objection, Your Honor.

THE COURT: It's admitted.

(PTX-69 is admitted into evidence.)

MR. NELSON: Please put up slide 83.

BY MR. NELSON:

Q. And tell me a little bit about what this code discusses.

A. Well, this code is discussing how the rephil -- or declaring, if you like, how the rephil profiler works. There is a general way of doing profiles, and this is specific to rephil. [redacted]

[redacted]

MR. NELSON: And let me put up slide 84, please.

BY MR. NELSON:

Q. So this is a portion of PTX-34, GGL-PUM0119002. What does this slide represent?

A. Again, this is the rephil profile that is stored in the [redacted] associated with the Gaia ID of this account.

Q. And let me turn your attention to PTX-37.

A. Okay. PTX-37 is a Google e-mail.

MR. NELSON: I move that PTX-37 be admitted into evidence.

MR. VERHOEVEN: No objection.

THE COURT: It's admitted.

(PTX-37 is admitted into evidence.)

MR. NELSON: Can you put up PTX-37, please?

BY MR. NELSON:

Q. Can you tell me what this e-mail is?

A. Oh, yes. This e-mail is from Bryan Horling, one of the Google engineers. He was head of the search engine, the search personalization team. And this is actually Bryan Horling's personal profile he mailed to others on the Google

Search team just to give them an example of what it could do.

It shows, for example, that [redacted]

Q. And let me have slide 86, please?

A. And then the numbers there represent [redacted]

MR. NELSON: Let me have slide 86, please.

BY MR. NELSON:

Q. So let's turn about the two other categories here, category NavBoost and session. Can you explain those?

A. Yes. Category NavBoost is a short-term profile. What we've been discussing so far, [redacted]

So, for example, when I arrived in Wilmington recently, I was interested in getting a cheese steak. I typed "cheese steak" into Google and learned a little bit about my interest just that day over the next two hours. If I typed cheese steak every day, every week for a few weeks, it gets into my long-term profile, but I have a short-term profile that represents my temporary, my

short-term interests in the last two hours.

Q. And do the values and weights in the short-term profile change over that two-hour period?

A. Yes. So with the first query you type, I learned a little bit about you, that you like cheese steak. Perhaps with the second query it learns that I like spicy food and it wants to send me to a place that has spicy cheese steak.

Q. And what's the purpose within that [redacted] of keeping that information and using it?

A. The purpose of keeping that information is to learn a little bit about what your needs are just right then and there, but then it actually does forget about those unless you keep doing it. But that's okay. Today I don't want a cheese steak. I want a pizza and I don't want a cheese steak pizza.

Q. And during this session window, does Google System attempt to improve the predictive ability, to improve the predictive ability by changing the weight?

A. Definitely so. If you see five queries and five search results, it learns a little bit more about you than if you just had two queries and two search results.

Q. And let me turn your attention back to PTX-30. Why don't we put that one back up on the board and the next one.

And what does this tell you about the category

NavBoost profile and how it's created?

A. Okay. This says, by temporarily storing information about a particular cookie ID in Kansas, [redacted] Google uses this information to infer link categories or dilip category cluster preferences for that cookie in a manner similar to that described above, where above it described the long term profiles link and dilip.

Q. And let me turn to the next slide. And this is again part of PTX-30. What code is used to -- well, tell me what PTX-30, pages 12 and 13, say.

A. So it says that the code that implements this profiler is in a file called [redacted], and then it goes on to describe things like look up the session queries categories that help implement that.

Q. And let me turn your attention to PTX-38. It's already admitted. You can just put up the next slide, please.

And did Google provide an example of a short-term profile?

A. Yes. This was the example we saw earlier, where just after typing one query, Google has learned a little bit about the user. That this user right now is interested in Boston. Perhaps they're visiting.

Q. And what -- so let's talk next about the Session Category profile. And you see it says rephil below it. What does that mean?

A. Really, it's the same as category NavBoost except it uses the rephil categories instead of the link or dilip categories.

Q. And let's turn to the next slide, 91. And this is more of Google's answers to PUM's questions.

What did Google say about the creation of a Session Category profile?

A. It says, [redacted]

Q. And for each of these linked dilip, rephil, category NavBoost and category session profilers as well as the respective Kaltix twiddler, are they a mathematical model or function?

A. Yes. They are a mathematical model or function that estimates the parameters of a learning machine.

Q. And do they do so based on user-specific data?

A. Yes. They get the data from Kansas specific to that Gaia ID or [redacted]

Q. All right. And in doing so, is the user model the

implementation of a learning machine, is that made specific to the user?

A. Yes. [redacted]

Q. And let's turn to slide 92, please. And what did Mr. Horling say about the session, category NavBoost and session profilers -- profiles?

A. He said that [redacted]

Q. Let's turn to the next slide, please. And let's now talk about the Search Ads system.

A. Okay.

Q. And let me direct your attention to PTX-112, and in your notebooks?

And can you identify PTX-112?

A. Yes. PTX-112 is a document, a Google document, entitled UBAQ in 15 minutes, user-based.

MR. NELSON: I want to move PTX-112 into evidence.

MR. VERHOEVEN: No objection.

THE COURT: It's admitted.

(PTX-112 was admitted into evidence.)

BY MR. NELSON:

Q. What are [redacted]?

A. [redacted]

MR. NELSON: And let me have the next slide, slide 96.

BY MR. NELSON:

Q. And what is the learning machine in the Search Ads, in the Search Ads product?

A. The learning machine in the Search Ads product is the UBAQ profiler together with the SmartAds System. That's the general system that computes the probability the -- the probability the user will click on an ad, PCTR.

Q. And what is the, what is the model specific to the user in the Search Ads product?

A. That would be the profiler plus SmartAds plus the UBAQ profile. So after it has learned a little bit about the user, it knows, for instance, [redacted]

Q. Yes. And we can blow up the bottom part here. So on the graphic on the left, can you just explain what that graphic is intended to represent?

A. Yes. If I -- actually, the graphic on the left is the abstract learning machine and then the one on the right that I'd love to see is, is the user model specific to the user. And there's where you can see that [redacted]

Q. And how is [redacted] in this, in improving predictability?

A. [redacted]

Q. And let me have you look at PTX-397 in your notebooks.

A. Yes. Yes. 397 is a Google document entitled user-based ads quality.

MR. NELSON: I'd like to move Exhibit 397 into evidence.

MR. VERHOEVEN: No objection, Your Honor.

THE COURT: It's admitted.

(PTX-397 was admitted into evidence.)

MR. NELSON: Can you put up slide 97, please.

BY MR. NELSON:

Q. And what is this document showing?

A. This shows how the [redacted] is calculated by Google. [redacted]

Q. And what is the parameter in this case?

A. The parameter is the [redacted]. There's an [redacted]

Q. And how is that estimated?

A. It's estimated from a small amount of data. So if you've seen thousands and thousands of ads, [redacted]

[redacted]

Q. And does that estimate change over time?

A. Yes, it does.

Q. Okay. It moves from one bucket to another?

A. Yes. [redacted]

Q. Now let me turn your attention to PTX-398 in your notebooks.

A. Okay.

Q. Can you identify that?

A. Yes, I can. 398 is an e-mail between Google and --

MR. NELSON: I'd like to move 398 into evidence.

MR. VERHOEVEN: No objection, Your Honor.

MR. NELSON: Can you put up the next slide, please?

BY MR. NELSON:

Q. What does this document tell you?

A. It basically describes how the [redacted] is done in Google and it says it's based on the [redacted] So if you run the profile and it uses the same profile that's already there, it does not update, but if the profile is changed, then it updates.

Q. And the [redacted]

[redacted]

A. Yes. [redacted]

Q. And together is this system a mathematical function or model?

A. Yes. There's a mathematical model that gets instantiated for the user.

Q. And let me direct your attention to PTX-869. Go ahead and look at that in your notebook and tell me what it is.

A. 869 is the [redacted] It's Google code that implements the [redacted]

MR. NELSON: I'd like to move PTX-869 into evidence.

MR. VERHOEVEN: No objection, Your Honor.

THE COURT: It's admitted.

(PTX-869 was admitted into evidence.)

MR. NELSON: Can you put up the next slide, please?

BY MR. NELSON:

Q. Can you describe the code?

A. Yes. So this is portions of the code. So, for instance, it says that they'll look at your [redacted]

[redacted] in order to use -- user data in computing the profile. And then it says it looks at the [redacted]

Q. And let me direct your attention to a different portion of PTX. So that is 100474. Let me direct your attention to the next slide. 100, please. Pull that up. That's part of the same exhibit, page 478.

What does this portion of the code talk about?

A. [redacted]

Q. And let me direct your attention in your notebook -- let me have you put up the next slide, PTX-113. This is user-based ad quality.

MR. NELSON: Can you go back on the animation? Next one.

BY MR. NELSON:

Q. Can you just explain what this drawing is?

A. Yes. This is a drawing contained within a Google document. It is a hand-done drawing. Not sure who drew it. It was within the document itself.

But basically this looks -- this describes Kansas, which is the database, and then there's various --

well, the most important part here is this, [redacted] So that shows how the profile is stored in Kansas, associated with the domain eBay.com, and it's [redacted]

Q. And is there then a user shown on this document?

A. Yes. So this is the data for user 1 (indicating.)

Q. And this drawing, this is a Google drawing; right? This isn't something we did?

A. That's right. This is a Google drawing.

Q. Let me -- so the [redacted], the [redacted] in the Smart Ads System or the Search Ad System, how does this become user specific?

A. Well, it becomes user specific when it looks at the [redacted]

Q. Let's turn next to the Content Ad System now, slide 102, and why don't we just jump ahead to slide 104.

What is the learning machine in the Content Ad system?

A. So the learning machine in the Content Ad system, I didn't hear a specific name for the profiler, so I will just call it the Content Ads profiler. And the parts of SmartAds that predicts the, that looks at the user specific portion of -- of the data, of the user data from Kansas

takes that into account in computing the estimated click-through rate.

Q. And so what is the user model specific to the user?

A. The user model specific to the user is instantiated with the user data. These are a set of categories, [redacted] These are things that have been in the ads that you've seen recently.

Q. And why don't we just zoom in on the right side of it. Can you explain this further?

A. So here they're just numbers, if you like, and these [redacted]

Q. And the face in there, what's that intended to represent?

A. The face is a model of a user. In this case, it's a user who likes animals or animal ads.

Q. And does the Content Ad system attempt to improve its predictability over time?

A. Yes, it does.

Q. And how does it do that?

A. It does that by actually learning a profile with each -- with each -- each time it's about to show you an ad,

[redacted]

Q. And do those short-term phil clusters have weights associated with them?

A. [redacted]

Q. [redacted]

A. [redacted]

Q. [redacted]

A. [redacted]

Q. And is it, when it's updated with the different [redacted] where does that update come from? Does it come from Kansas again?

A. I believe the session data is stored not in Kansas, but in the short-term memory of Google, where the short-term profile is.

Q. And is this also, in the Content Ad system also involves a portion of the SmartAds system?

A. Yes. SmartAds does the auction for Content Ads as well.

Q. And together, is the profiler and profile and SmartAds system a mathematical function for model?

A. Yes.

Q. And let's take a look at PTX-223, the next slide, please. And what does this slide say about the user profile in the Content Ad system?

A. This slide shows cue back, the profiler -- it shows that CUBAQ builds a profile from the person's history, and again that user profile is related [redacted]

Q. Let me ask you to go back to the last slide, 104 for a minute. And can you zoom in on the right side?

And what are the parameters here?

A. The parameters are the weights associated with the rephil clusters that were derived from the ads.

Q. And are they, are they estimated?

A. Definitely.

Q. And how is that?

A. Well, you only look at a small amount of data, so you don't have accurate models of user's interest. It's just a sample, a small sample.

Q. And so the number that is the weight of the parameter, what does that represent?

A. [redacted]

Q. [redacted]

A. That's right.

MR. NELSON: Could I get slide 106, please.

BY MR. NELSON:

Q. And let's talk -- this is Mr. Zamir who spoke yesterday. What did Mr. Zamir say about the content ad system?

A. So he described the user cookie-based signals, that they're [redacted] or he was asked that. He answered if that was the case. And then you asked if they were short-term rephil clusters. And he said, yes, they were.

Q. Let me direct your attention in the notebooks -- actually, go to slide 107, please.

And what does this portion of PTX-404 show?

A. This is a document that describes the way Google calculates weight on these [redacted]

Q. And let me turn to slide 108, please. And can you please summarize your opinion whether Google performs each of the Google Search Ads, search and Content Ads YouTube System meets Element 1(c), estimating parameters of a learning machine wherein the parameters are estimated to

create a user model based on, in part on user-specific data files?

MR. VERHOEVEN: Objection, Your Honor. It is now the afternoon. We were informed this would be fixed yesterday, this morning. It's still not fixed. I'm going to object to the slide.

THE COURT: I will overrule the objection. It will be corrected, I trust, by tomorrow.

MR. NELSON: Apparently -- thank you, Your Honor. It is fixed. If we can get online for a minute, we can load it; otherwise we can just keep going and do it on a break.

THE COURT: We'll do it on a break. You can answer the question.

MR. NELSON: Let me restate the question.

BY MR. NELSON:

Q. Can you summarize your opinion, whether the Google Search, Search Ads and Content Ads and YouTube practice Element 1(c) of the '040 patent?

A. Yes, they do.

Q. And they practice each aspect of that element; correct?

A. That's correct, although there are summaries there in my analysis, went into painstaking detail for each of those analyses.

Q. And that's for both the link, dilip, rephil, Category NavBoost and Session Category Profile Search; is that correct?

A. Yes, it is. And the UBAQ profile of Search Ads and the short-term phil clusters and Content Ads.

Q. Let's turn to the next slide, please. Let's talk about analyzing a document.

MR. NELSON: Can I have slide 100, please, or 110, and the blow up.

BY MR. NELSON:

Q. Can you read that element to the jury?

A. Yes. Analyzing a Document D to identify properties of the document.

Q. And let me have slide 111. And let's talk first about the three link, dilip and rephil portions that we've been discussing before.

MR. NELSON: May I have slide 112, please, and the pullout.

BY MR. NELSON:

Q. And can you tell me what this, what this document is about?

A. Yes.

Q. This is PTX-202.

A. This document describes the [redacted] that's associated with the link profile. And, again, this shows

that Google [redacted]

[redacted]

Q. And let me have PTX-25, the next slide. And we put these up earlier.

Is that an example of that analysis?

A. Yes. That web page is in the Dungeons and Dragons category, for example.

Q. And let me have slide 114. What did Mr. Horling say about this analysis? This is not a dilip. What did Mr. Horling say about the dilip analysis?

A. Well, he agreed there was another form of categorization called dilip, and [redacted]

[redacted]

Q. Let me have the next slide, PTX-115. And this is an example of a dilip categorization?

A. Yes, it is.

Q. And let me have the next slide, PTX-30. And this is category NavBoost, a portion of Google's answers to our questions.

Can you tell me what that says about the creation of the category NavBoost or the analysis in category NavBoost?

A. Yes. It says that category NavBoost uses the link category or dilip cluster preferences. So it uses that document analysis.

Q. Let's turn to the next slide. Actually, take that one down. You can turn in your notebook first to PTX-24. What is PTX-24?

A. PTX-24 is another set of interrogatories, the fourth set of interrogatories to Google and their responses.

MR. NELSON: I move that PTX-24 be admitted if it hasn't already.

MR. VERHOEVEN: No objection.

THE COURT: All right. It's admitted.

(PTX-24 was admitted into evidence.)

MR. NELSON: Can you put up slide 117, please.

BY MR. NELSON:

Q. And what does this say about whether Google analyzes documents in the context of rephil?

A. It says that [redacted]

Q. All right. And let me turn your -- turn to slide 118. And is this just an example, this is PTX-25 of the rephil profile?

A. Yes. This is an example of a type of rephil profile associated with this web page.

Q. And let me turn to PTX-30. And let's talk about the Session Category analysis. Just look at slide 119. This is in evidence.

What does this tell you about the Session Category analysis?

A. Well, I think the most important part is that the general approach is very similar to the rephil long-term category except instead of looking at the long-term data, it's just looking at the short-term data, but certainly this uses rephil, because it's called [redacted]

Q. And let me have you turn in your notebook to PTX-17. And can you identify that document?

A. Yes. This document is a Google document called web search overview, or the life of the query.

MR. NELSON: I move that PTX-17 be admitted into evidence.

MR. VERHOEVEN: No objection, Your Honor.

THE COURT: It's admitted.

(PTX-17 was admitted into evidence.)

MR. NELSON: Thank you. Pull that up.

BY MR. NELSON:

Q. Now, does Google analyze documents in other ways as well as we just discussed?

A. Yes. So Google, one of the most important things

Google does is it indexes the content of what's in individual web pages. So it looks at the web pages and finds the words in them, so later on when you type those words as a query, it can find the documents.

So it stores this information about those pages in an index that maps words or phrases to these documents so Google can find them.

Q. Now let's talk about the analyzing a document aspect of Search Ad.

MR. NELSON: And let me have slide -- let me have slide 122, please.

Go ahead and put the other one up. Blow it up.

BY MR. NELSON:

Q. What is up on the top?

A. Up on the top is an example of an ad.

Q. Can you explain the different parts?

A. Well, the most important part here that Google does for analysis in Search Ads is it figures out what the [redacted] So an ad has a number of components, and one form of analysis is to break things into their constituent components. [redacted]

Q. And let me have you turn in your notebook to PTX-402.

A. (Witness complies.)

Q. What is PTX-402?

A. PTX-402 is a Google document, Ads Quality. SmartAds Model Overview.

MR. NELSON: And move that Exhibit 402 be admitted into evidence.

MR. VERHOEVEN: No objection.

THE COURT: It's admitted.

(PTX-402 is admitted into evidence.)

MR. NELSON: Can you put up slide 123, please.

BY MR. NELSON:

Q. What does this tell you about the analyzing of documents for Search Ads?

A. Well, there are [redacted] that are used in the SmartAds system. And this shows that it uses the results of this analysis by finding [redacted].

MR. NELSON: Let's turn next to the Content Ad system and puts up slide 125, please.

BY MR. NELSON:

Q. This is Exhibit 403. So what does this document tell you about whether Content Ads analyzes documents?

A. Yes. Google admits that Content Ads are associated with [redacted] phil is the earlier version of rephil.

Q. How does that speak to the analysis of documents?

A. Well, that shows that the ads have been analyzed so

that they can be associated with phil clusters.

Q. Let me have you turn in your notebook to PTX-411.

A. (Witness complies.)

Q. What is PTX-411?

A. PTX-411 is a Google document entitled AdGroupRephilGenerator.

Q. And what is that document?

MR. NELSON: Can you put up slide 126, please? Oops. Let me move 411 into evidence.

MR. VERHOEVEN: No objection.

THE COURT: It's admitted.

(PTX-411 is admitted into evidence.)

MR. NELSON: Put up the next slide, please.

BY MR. NELSON:

Q. What does this document tell you about analysis?

A. Well, it says that Google has a tool called the [redacted]

MR. NELSON: Let me turn to the next slide, please.

BY MR. NELSON:

Q. Can you summarize your opinion whether Google's Search Ads, Search and Content Ads, and YouTube practice Element 1(d), analyzing a document step?

A. Yes, each of them do.

MR. NELSON: Let's turn to Element 1(e), estimating a probability. Can you put the claim up on the slides, please?

THE WITNESS: I'm not sure if it would be possible to take a break at this point.

THE COURT: Sure. It is possible.

THE WITNESS: I have to use the restroom.

THE COURT: Not a problem.

Ladies and gentlemen of the jury, we'll take a break. No talking about the case during the break. We'll get you back shortly.

(Jury left courtroom.)

THE COURT: Okay. We will be in recess.

(Brief recess taken.)

* * *

(Proceedings reconvened after recess.)

THE COURT: Are you okay to continue?

THE WITNESS: Fine.

THE COURT: We'll bring the jury in.

(Jury returned.)

THE COURT: Ladies and gentlemen of the jury, we are ready to continue.

Mr. Nelson, you may proceed.

BY MR. NELSON:

Q. Are you feeling better, Dr. Pazzani?
A. Yes, I am. Well rested.
Q. So let's talk about element 1(e) or step 1(e) of the '040 patent, the estimating of probability step.
A. Sure.
MR. NELSON: Can I get the next slide, please.
BY MR. NELSON:
Q. Can you read the jury the claim element 1(e)?
A. It's estimating a probability that an unseen document d is of interest to the user wherein the probability is estimated by applying the identified properties of the document to the learning machine having the parameters defined by the user model.
Q. And did you prepare an animation or illustration to sort of visually demonstrate what this element is about?
A. Yes, I did.
MR. NELSON: Can I get the next slide, please.
BY MR. NELSON:
Q. Can you explain?
A. Yes. So what you see here is a user model, and this was created by the learning machine. And here, the user model has a number of categories, animals, sports, music, computers, and associated with those categories are levels of interest. So this particular one is the animal lover and has a high weight for animals.

Then there are a set of documents that the user may potentially be of interest to him. And you look at the properties of those documents. The user model looks at them and it estimates the probability that the user would be interested in that in part by looking at the properties of the documents. In this case, like the topics.

Q. Is that the right-hand portion of the learning machine?

A. Yes. The estimating part is in the right-hand portion of the learning machine. That's really what we saw before about predicting whether something was an apple. Here, we're predicting whether [redacted] likes it.

Q. In the Google Search system, can you explain how this works at a high level with respect to web pages that the system would have, going back, as part of the search result?

A. Sure. So at a very high level, the user types a query. Google looks in [redacted] its document database and finds documents that contain the words in that query.

Then it has a collection of possible documents.

[redacted]

Then it estimates the probability of interest by looking at each document in the top few and sees if the user would be interested by examining the properties. So the

link profiler looks at the link categories of the documents and link profiler of the user.

The rephil profiler does similarly.

Q. And then what portion of the code then does the actual comparison of the document profile -- the document properties in the web documents with the profile?

A. That is part of the Kaltix Twiddler. So it does two things: One is it estimates the probability the user is interested in the document, and [redacted]

MR. NELSON: Okay. Now let's break this down into kind of its components parts. Can I get slide 131, please?

BY MR. NELSON:

Q. Can you tell me what the Court-defined "probability" would be?

A. Yes. The Court defined "probability" as "a numerical degree of belief or likelihood."

Q. I don't know if I asked you this before, but in forming your opinion, did you rely on the Court's construction?

A. Yes. So the Court construed the claims before I issued my opinions and I relied on them heavily.

MR. NELSON: So let's turn to slide 132.

BY MR. NELSON:

Q. Can you explain what this slide is intended to show?

A. Yes. So since we're here near Atlantic City, I thought I would use a blackjack example to describe odds. Odds are another form of likelihood. So far we've been talking about probabilities between 0 and 1 but odds are just another way of expressing a probability.

So imagine you are playing blackjack and you have cards that sum to 12. You don't want to go over 21 so you don't want to get a 10. So what are the odds you don't get a 10? So if you look at the complete deck of cards, there are 36 cards less than 10, and then the face cards and the 10 are equal to 10 in blackjack. So your odds are 36 to 16 that you won't get a 10 or 9 to 4 or better than 2 to 1 odds in your favor. So ou might want to think about drawing that card because the orders are 2 to 1 in your favor.

Q. And let me turn to the next slide.

A. The next slide.

Q. What does this slide intend to show?

A. Well, what this slide is intended to show is in blackjack, they don't want you to know the odds precisely, so what they do is they actually use five decks of cards and they have some of the cards they're not going to use and that is so you actually can't calculate the odds. You just have to estimate them.

MR. NELSON: Now, let's turn to the next slide.

BY MR. NELSON:

Q. And so can you tell me the Court's definition of "estimating?"

A. Yes. The Court's definition of "estimating" is "approximating or roughly calculating."

Q. And so the next slide, please.

BY MR. NELSON:

Q. And so you can you explain this slide?

A. Yes. This is a package of M&Ms. And let's imagine I want to ask you the question what is the probability you will pull out a yellow M&M when you pull out that box of M&Ms? So in this case, there are 16 M&Ms and so the frequency is 3/16ths, but can you use that to predict what will happen in the next bag of M&Ms? You might have four, you might have five, you might have two yellow M&Ms. So even though you can accurately compute that this is 3/16ths, it's just an estimate what is going to happen in the future.

MR. NELSON: Can I have the next slide?

BY THE WITNESS:

A. If you have a four pound bag of M&Ms, you can do it better but you will never get it perfectly.

Q. So can you tell me the Court's definition of "estimating a probability (p)u(d) that an unseen document d is of interest to the user u?"

A. Yes. It's "approximating or roughly calculating a numerical degree of belief or likelihood that the unseen

document d is of interest to the user given the information that is known about the unseen document."

Q. Let's go through a couple of other Court definitions here. This is the "learning machine" definition we talked about before and the "user model specific to the user" definition. Correct?

A. That's correct.

MR. NELSON: And so let me have slide 138, please. Now we're in the applying phase here.

BY MR. NELSON:

Q. Can you identify what the different learning machines having the parameters defined by the user model in Google's Search?

A. Yes. So in Google Search, there are five profiles we've been talking about, five different ways of estimating the probability that a user is interested in the document. So there is the link profiler, plus the Kaltix twiddler, plus that individual user's link profile. Or, the dilip profiler and the Kaltix twiddler or that individual user's dilip profile. Similarly for rephil, category NavBoost and session category. So each has a different set of parameters specific to that user informed by looking at that user's data.

Q. So just for example, a learning machine having the parameters defined by the user model for the link profile is

the link profiler plus the Kaltix twiddler plus the user's link profile?

A. Yes, I think I said that a couple minutes ago.

Q. Is that what makes it specific to the user?

A. The fact that it has the user's link profile, yes.

MR. NELSON: And let's talk about the individual different ones as quickly as we can here. Let me have PTX -- or slide 139, please.

BY MR. NELSON:

Q. And what does this tell you about what is doing the estimating here?

A. Well, for the link, dilip and rephil and Category NavBoost and Session Category, it's the Kaltix Twiddler that does this estimating.

Q. [redacted]

A. [redacted]

Q. We'll get into that in just a minute.

A. Yes.

MR. NELSON: So let me have slide 140, please. Put that up.

BY MR. NELSON:

Q. Can you identify what you are representing here in

slide 140?

A. Yes. So these are the portions of the Google Search Personalization system that are highlighted in yellow that perform the function of estimating a probability that the user is interested in the document.

Q. And that is PTX-22?

A. Yes.

MR. NELSON: Let me have the next slide, please. Well, let me go back to the first one.

BY MR. NELSON:

Q. So which portions are there -- which portions of the figure from page 465, 345 of PTX-22 shows the learning machine having, using the parameters used by the user model?

A. It's the portions highlighting the profile that comes out of Kansas and goes into the twiddler and the profiler as well, a portion of that. I guess that was left out of the highlighting.

MR. NELSON: Okay. Let's turn to slide 141. And let's talk first about these three: link, dilip and Category NavBoost.

BY MR. NELSON:

Q. What does it mean? What is [redacted] next to it?

A. I think we might have mentioned that briefly before, but [redacted]

[redacted]

MR. NELSON: Let me have PTX-30, slide 143.

BY MR. NELSON:

Q. And what is doing that for the link profile?

A. It's part of the [redacted] that looks at the top end documents that have been retrieved and then estimates the probability of the user interest in each of those.

Q. Turn to the next page. That is 144. Oops. I'm sorry. 143.

A. Yes.

Q. Tell me what this says?

A. 143 is the [redacted]

MR. NELSON: Let me have 144, please.

BY MR. NELSON:

Q. What did Mr. Horling say about this?

A. What are the ranking algorithms used by the Kaltix Twiddler?

There is one that corresponds to the dilip and link profiles.

What is the name of that one?

[redacted] is used for those.

MR. NELSON: That is at 159, 8 through 13.

BY MR. NELSON:

Q. Let me have you turn in your notebook to Exhibit 433, please.

A. 433?

Q. Yes.

A. Yes.

Q. And can you tell me what that document is?

A. It's a Google document called personalized search.

MR. NELSON: And can we move 433 into evidence?

MR. VERHOEVEN: No objection, Your Honor.

THE COURT: It's admitted.

(PTX-433 was admitted into evidence.)

MR. NELSON: Slide 145, please.

BY MR. NELSON:

Q. And so what does this tell you about what's going on to do the estimates of probability?

A. Well, what Brian Horling just mentioned, there's an algorithm called [redacted]

Q. And can you turn your attention -- let me have PTX-729, slide 146. And what does this say about [redacted]?

A. [redacted]

[redacted]

Q. And is this done using logistic regression?

A. Yes. It uses what I would call a log linear model that calculates the log of the odds.

Q. And are you prepared to do sort of -- some mathematical calculations on a white board basically to further teach what logistic regression is?

A. Yes, I would be happy to.

Q. You may step down.

(The witness left the witness stand and approached the easel.)

MR. VERHOEVEN: Permission to approach?

THE COURT: Yes, of course.

THE WITNESS: Is it possible to put the PowerPoint up also?

MR. NELSON: Sure.

THE WITNESS: Anywhere is fine.

MR. VERHOEVEN: Sorry. I can't see.

THE COURT: Let's let them get set up and then you can relocate.

MR. VERHOEVEN: This is fairly heavy.

THE WITNESS: And high.

MR. VERHOEVEN: And high.

THE WITNESS: Okay. All right. I think that will be fine.

MR. NELSON: I will just hold this here for a second.

THE COURT: That's where you want it, Mr. Nelson?

THE WITNESS: That's fine.

MR. NELSON: Is that fine with you, Mr. Pazzani?

THE WITNESS: Yes.

THE COURT: Mr. Verhoeven, will you be able to see it from there?

MR. VERHOEVEN: Yes, I will, Your Honor.

THE WITNESS: Thanks.

So first I'm going to tell you about log linear models. So this is going to take -- I normally do something like this in a few hours in a course. I'm only going to do this for two minutes, but first let's talk about logarithms. Do you remember logarithms from high school, maybe?

So let me give you a few numbers and I will tell you about logarithms.

First we know about the number ten, the number a hundred, the number a thousand, and I'm also going to do one-tenth and let's do one-thousandth also. Okay?

So those are numbers that you encounter every

day. You can rewrite this if you like as ten times ten, or ten squared is the same as a hundred; right? And a thousand is ten times ten times ten or ten to the third.

What you might not know or remember is that one-tenth is actually ten to the minus one and one one-thousandth is ten to the minus three. So it's the number 1,000 same as that, but because it's one-thousandth, we do minus three instead. Okay.

So that's just a quick refresher on exponents. So now what we can do is figure out what the log of each of these numbers is. The log based ten is just the exponent. Okay. So the log ten of a hundred is two. The log ten of one-tenth is minus one. The log ten of one over a thousand is minus three. Okay?

Now I want to describe how these might be used to deal with the log of the odds. If you can just flip that over. Normally, I would just flip this over like this here.

MR. NELSON: We're having a slight problem here.

THE WITNESS: All right. Okay.

MR. NELSON: Will you help me?

THE WITNESS: No, but I will watch.

MR. NELSON: It's falling over.

THE WITNESS: I will grab this and you try to prop this up.

MR. NELSON: We lost a leg here. Let's do this for now. I will get the other one here. Why don't you flip this page over. I will get the other one.

THE WITNESS: Yes. That will last for awhile.

MR. NELSON: It's very heavy. This isn't going to work either.

All right. Continue, Dr. Pazzani.

THE WITNESS: Sure, except I lost my pen. Let's get the green out.

MR. VERHOEVEN: While they're setting up, Your Honor, I would request that we proceed not in narrative teaching fashion, but in Q&A.

THE COURT: That's fine. To the extent that's an objection, that's sustained. Let's ask some questions, Mr. Nelson.

MR. NELSON: Yes.

BY MR. NELSON:

Q. Can you explain that the math you described earlier, how that relates to probabilities?

A. Yes. What I've described so far what logs are and now what I'd like to do is describe what the log of the odds are and now that's used to estimate probabilities.

Q. Go ahead.

A. Do you think it's going to stay? And I'm actually going to start with something, what's the probability

someone gets lung cancer? Okay. I don't want to talk about something like that, but we use these things in medicine very often.

And let's just assume the probability that one, or the odds that one gets lung cancer is one in a thousand. So one way to represent that, one in a thousand, remember, is the log of that is minus three. So I'm going to say that's the prior probability or the base.

If we know nothing about you, there's a one-in-a-thousand chance you have lung cancer. Unfortunately, it's actually a little bit higher. I'm just doing this to make the numbers kind of round.

Now, if you smoke, unfortunately, your odds of getting lung cancer increase by a factor of ten. You have to remember, ten to the one is one way of representing ten, so I would add a one there and I'd have a variable S. That variable will be zero if you smoke -- I'm sorry. Zero if you don't smoke and one if you smoke.

So now if you are a smoker, this equation produces two, which is the log of the odds or, really, ten to the minus two.

So now instead of there being a one in a thousand chance that you smoke, there's -- I'm sorry, that you have cancer, there's a one in a hundred chance that you have cancer because this increased it by a factor of ten.

Now let me tell you something lucky. If you live in Hawaii, there's a 50-percent less chance you have lung cancer. The air is really clean there. There's not that many cars. It's in the middle of the ocean. The log of half is minus .301. That's the only one that I remembered. Okay.

So then we'll have another variable, minus .301 times H. So if you live in Hawaii, that takes on a one and your odds decrease. Okay. If you don't live in Hawaii, that's a zero and then your odds are the same.

So if you can combine each of these, and there are many, many more variables you can think about. If you've been exposed to asbestos, you're more likely to have cancer. If you have been exposed to radon, you're more likely to have cancer. If your parents smoked, you're more likely to have lung cancer. So this equation can keep going on and on.

Q. Can you relate that to the estimated probability in a Google system?

A. Yes. I will do so in just one minute, but I actually want to explain one other thing first.

So these are what we call indicator variables. They're either zero or one. Either you smoke or you don't. But it turns out that the amount that you smoke affects the probability that you have lung cancer. If you smoke just a

little bit, you're less likely to have lung cancer, and if you smoke a lot, you're more likely to have lung cancer.

So one way is to have a variable not S that's either zero or one, but to have a variable C that represents on average the number of cigarettes you smoke a day.

So now instead of that, the equation might be minus three plus one-twentieth times C. There are 20 cigarettes in a pack, so if you smoke one pack a day, your odds of getting lung cancer increase by a factor of ten.

MR. VERHOEVEN: Excuse me, Your Honor. I'm going to object as a narrative. It's not even responsive to the question.

THE COURT: Sustained. Dr. Pazzani, let's answer the question that counsel asked.

BY MR. NELSON:

Q. Can you relate this to the estimated probability of Google Systems?

A. Exactly. Let me do that now. So now we're trying to predict the probability that you are going to click on a document as to the probability that you might have that one might get lung cancer. So there would be a similar equation like this.

Let's just imagine there's a one-in-ten chance that one clicks on a document in Google. So that

would be, we'd start with minus one, which is ten to the minus one is one-tenth. And then there will be factors that increase or decrease that.

So, for instance, we saw the log linear equation before. If you have overlaps between your dilip categories and your profile and the dilip categories and the document, that increases the chances one will click on it.

So let's add a little bit, and I will just say it's .2. I don't know what this number is. I will add a little bit times the number of dilip categories you have.

And so that's saying the odds increase of clicking on a document if there's an overlap between the dilip category and the dilip categories in the documents. And there's also an odds that will increase, I will say that's .3. Again, I don't know what these numbers are in Google in particular, but they don't matter. The important number is D. That comes from your profile.

THE COURT: All right. Let me stop you there, Mr. Nelson. I need you to ask questions because this is becoming too much of a narrative.

MR. NELSON: Okay. That's fine. I think we're probably done with this. Are you done with this demonstration?

THE WITNESS: I think I've probably illustrated enough, but this is the general idea. I might have to

come back and add one or two things perhaps on cross-examination.

MR. NELSON: Thank you. Go ahead.

THE COURT: All right.

MR. NELSON: I'd like to mark this as a plaintiff's exhibit.

THE COURT: As a demonstrative exhibit or substantive?

MR. NELSON: Well, a demonstrative exhibit, I guess. Well, a substantive exhibit as well. I mean, he has talked about it and summarized his testimony.

THE COURT: Mr. Verhoeven?

MR. VERHOEVEN: Your Honor, we would consider this a demonstrative exhibit. We have no objection to it being marked as a demonstrative exhibit, but obviously we object to its being admitted.

THE COURT: We'll mark it as a demonstrative exhibit. To the extent it's being offered into admission, it's not being admitted.

MR. VERHOEVEN: Thank you, Your Honor.

THE COURT: For the record, you'll need to make up a number for it.

MR. NELSON: Oh, let's call it Demonstrative Exhibit 1.

THE COURT: Demonstrative Exhibit 1. Okay.

(Demonstrative Exhibit No. 1 was marked for identification.)

MR. VERHOEVEN: Your Honor, I apologize. I just realized none of these slides have been marked with demonstrative numbers either, so we'll need to take care of that.

THE COURT: Right. Okay. I will leave it to you all to do that sometime before we're done.

MR. NELSON: We'll do that.

BY MR. NELSON:

Q. Let's continue.

A. Can I go back to the prior slide?

Q. Yes. Go back to slide 146, please, PTX-729.

A. Okay. So now I hope with that --

THE COURT: Hold on. There's no question pending.

Do you have a question, Mr. Nelson?

MR. NELSON: Yes, I do.

BY MR. NELSON:

Q. So can you explain how the [redacted] relates to the demonstration that you just did?

A. Yes. So now what you see here is that there's a log linear model, that's one of those equations that I was drawing out, to predict the long-term probability based on a number of [redacted] such as [redacted]

[redacted]

So each of those will have a multiplier effect. You're more likely to click on it [redacted]

[redacted]

You're also more likely to click on it based on other factors, such as the [redacted] if the document really [redacted]. That's independent of the user. But the two that are underlined are the dependent parts, and those are important parts of estimating the probability that the user is of interest -- that the document is of interest to the user.

Q. Earlier in I think opening, Google mentioned sort -- some of these systems work on aggregate data. Can you explain how this equation relates to those statements?

A. Yes. [redacted]

[redacted]

[redacted]

[redacted] There are some components of this that are true for all users, how likely you are to click on something if it's in the first position versus the tenth position. [redacted]

[redacted]

[redacted]

[redacted]

Q. Okay. And is this used for link dilip and category

NavBoost?

A. Yes, that's correct.

Q. And let me have you look in your notebook at PTX-200. And can you identify PTX-200?

A. Yes. PTX-200 is the code, the computer code for the [redacted]

MR. NELSON: I'd like to move PTX-200 into evidence.

MR. VERHOEVEN: No objection, Your Honor.

THE COURT: It's admitted.

(PTX-200 was admitted into evidence.)

MR. NELSON: Let's put up PTX-200 on the board and Mr. Horling's testimony about it.

BY MR. NELSON:

Q. And can you just read what Mr. Horling said about PTX-200?

A. Yes. You asked him to turn to 99938 of the document. Fortunately, you won't have to see the beginning. And look at the code on the bottom of line 508.

And it says, [redacted]

MR. NELSON: Can you pull that out of the slide?

THE WITNESS: I think it's the next -- next

animation.

MR. NELSON: The next slide.

THE WITNESS: Yes, I think it is the next slide.

So what was being referred to in the questioning is these particular lines of code. Now, I don't want to go through all the details, but you can read the English. [redacted].

Q. And can you look at PTX-97 in your notebook and tell me what that is?

A. PTX-97 is the header file for Kaltix pending servlet.

MR. NELSON: I'd like to move PTX-97 into evidence.

MR. VERHOEVEN: Just one second.

(Pause while counsel conferred.)

MR. NELSON: The next slide, please.

MR. VERHOEVEN: I'm sorry. What was the number?

MR. NELSON: 97.

(Pause.)

MR. VERHOEVEN: No objection, Your Honor.

THE COURT: It's admitted.

(PTX-97 was admitted into evidence.)

BY MR. NELSON:

Q. Can you tell me what PTX-97 is?

A. Yes. PTX-97, the part that we're looking at is just [redacted]. We saw a Google document describe this. This is the computer code that describes it. It says, [redacted]

Q. Okay. Can I have you look in your notebook at PTX-382.

MR. NELSON: Can you take the slide down.

THE WITNESS: Yes. PTX-382 is a Google e-mail.

MR. NELSON: I move PTX-382 into evidence.

MR. VERHOEVEN: No objection, Your Honor.

THE COURT: It's admitted.

(PTX-382 was admitted into evidence.)

MR. NELSON: And let's put up slide 151. The next one, next one, next one.

BY MR. NELSON:

Q. What is this one? And what does this indicate?

A. Well, I think what we're getting at here is what does it mean [redacted]

Q. And what does Mr. Horling say about this? The next slide, please.

A. [redacted]

So what that's really getting at, if there's [redacted]

Q. And so what is the estimated probability for the respective link dilip and category NavBoost profile that is being estimated in this element?

A. It's the part of the [redacted]

MR. NELSON: Let's go to slide 153. And let's talk about the rephil and session category.

And may I have slide 154, please. It's PTX-154.

BY MR. NELSON:

Q. What does this say about the rephil profile?

A. It talks about the rephil profile, and it uses some [redacted], and it describes in a little bit more detail about how it works. Fortunately I'm not going to go through the math of this.

But essentially [redacted]

MR. NELSON: Can I have slide 155, another piece of PTX-24.

BY MR. NELSON:

Q. What is this document, sir?

A. This goes into a little bit more detail about rephil, and it says: [redacted]

Basically, [redacted] -- I'm sorry, [redacted]

So actually if you go to the Alvarado example that Konig used earlier, his wife was interested in elementary schools. [redacted]

Q. Let me have you look in your notebook to PTX-730.

A. PTX-730. Yes.

Q. And what is that document?

A. It's a Google document entitled Languages and Personalized Search.

MR. NELSON: I will move to admit 730.

MR. VERHOEVEN: No objection.

THE COURT: It's admitted.

(PTX-730 is admitted into evidence.)

MR. NELSON: Pull up slide 156, please.

BY MR. NELSON:

Q. What does this document say?

A. It discusses an experiment that was run at Google; and essentially what it says is that the [redacted]

MR. NELSON: Let me pull up slide 157 which is part of PTX-24.

BY MR. NELSON:

Q. What does this tell you about the algorithm that does the estimating probability for the session category profile?

A. Yes, the session category is our fifth and final profiler, and it uses the same algorithms as the rephil

except it looks at the short term, the session-based profile instead of the long term profile. So that is looking at things you have just done in [redacted]

Q. And what is the estimated probability of the session category profile and the rephil profile?

A. What I described earlier, it's [redacted]

MR. NELSON: And let me look at Bryan Horling's testimony, the next slide, 158.

BY MR. NELSON:

Q. What does Mr. Horling say about this?

A. Well, how does the Kaltix Twiddler apply the session category profile -- the session category user profile to the group of documents?

And it says: [redacted]

MR. NELSON: May I have the next slide, please.

BY MR. NELSON:

Q. And what did the Court define as unseen document to be?

A. It's a document the user has not previously seen.

MR. NELSON: Let me have slide 160, please.

BY MR. NELSON:

Q. And how many web pages does Google currently have?

A. According to a recent Google website, there are 60 trillion individual web pages.

Q. And what does that tell you about how many documents -- the probabilities estimated for being unseen by the user?

A. Well, hopefully there is a lot of unseen documents since most people don't seen even one trillion or a billion.

MR. NELSON: Let me put up PTX-17.

BY MR. NELSON:

Q. And this is a portion of -- what is this figure from Google's PTX-17?

A. It shows the number of documents of various categories. There are some documents like news websites that it updates [redacted] and others [redacted] And it shows sort of a hierarchy of documents. There are [redacted] in one category. And there is fewer documents that are saying news-related documents that are updated [redacted]

MR. NELSON: Let's now turn to Search Ads and talk about the estimating a probability that an unseen document is of interest to a user. And let's go to PTX-115, slide 163. And can you pull it up?

BY MR. NELSON:

Q. And can you explain where the estimated probability is here and how it is used?

A. Yes. So it happens in the SmartAds system that is circled, and [redacted]

Q. What portion does that? That little genie guy on the bottom?

A. Well, [redacted]

MR. NELSON: And let me direct your attention, let me pull up PTX-402, slide 164.

BY MR. NELSON:

Q. So what is the SmartAds system?

A. Well, it says that SmartAds is one of the most important systems for maintaining and improving the quality of ads that Google serves.

MR. NELSON: Let me turn to slide 166.

BY MR. NELSON:

Q. Can you explain, the portion going back to our learning machine, user model, what portion of the SmartAds

or what portion of the Search Ad system performs Element 1(e)?

A. Yes. So you may recall the [redacted]

MR. NELSON: Can you pull up PTX-401? And the pullout.

BY MR. NELSON:

Q. What does this portion of PTX-401 tell you about the estimating a probability?

A. It uses an [redacted]. That is that type of regression equation that I showed earlier, the log linear model. [redacted]

So in some ways, [redacted]

MR. NELSON: Let me have slide 168, PTX-402.

BY MR. NELSON:

Q. Can you explain [redacted] a little further?

A. This goes on to describe that logistic regression is used, and it predicts the probability of the click-through rate, and these have these 0s and 1s. And I think you saw as I was drawling those equations, if [redacted]

MR. NELSON: Let me have PTX-397, please. The slide and just the pullout as well.

BY MR. NELSON:

Q. And what is this?

A. [redacted]

Q. And this element talks about predicting, estimating a probability that an unseen document is of interest to the user. How is this doing that when it's looking at [redacted]

A. It's still calculating the [redacted]. In this case, it's just a lower [redacted].

Q. Let me have you look in your notebook at Exhibit 942.

A. 942. Okay.

Q. What is that?

A. This is a Google document humorously titled The UBAQ Virtuous Pumpkin.

MR. NELSON: I move that 942 be admitted into evidence.

MR. VERHOEVEN: No objection.

THE COURT: It's admitted.

(PTX-9432is admitted into evidence.)

MR. NELSON: Can I have slide 170, with PTX-942 on it.

BY MR. NELSON:

Q. What is Exhibit 942?

A. 942 describes some [redacted].

Q. What [redacted] are described?

A. They are the [redacted].

Q. And how many ads are currently in the system, in the ad system?

A. I think I saw something about [redacted]

MR. NELSON: Let me put up PTX-400. The next. I think it's this graphic from PTX-400 says 20.

BY MR. NELSON:

Q. So what leads you to conclude that Google's system shows the ads that are unseen by the user?

A. Well, the fact that hopefully you have not seen [redacted] You have seen a fewer number of that.

MR. NELSON: Let's turn to the Content Ads element here. The next slide please, PTX-222.

BY MR. NELSON:

Q. So let's talk about the Content Ads. What is the estimating a probability of Content Ads?

A. Again, there is a log linear regression equation that estimates the probability the user will click on a document, and part of that equation is the probability the user is interested in that document. In this case, the document is an ad. And that is based on the short term phil clusters. So if you have recently clicked on Volkswagen ads, it will show you more Volkswagen ads.

Q. Is that also done by a portion of the SmartAds system?

A. [redacted]

MR. NELSON: Let's go to slide 176. Next slide. 176.

BY MR. NELSON:

Q. And so what is the learning machine having parameters estimated or defined by the user model in the Content Ad system?

A. Well, here, the ads are the documents and the parameters are the rephil clusters associated with [redacted]

[redacted]

Q. Let me just skip a little bit ahead here to PTX-413, slide 179. Actually, what is in your notebook? What is PTX-413 first?

A. PTX-14 (sic) is a Google document called CUBAQ Update.

MR. NELSON: I move that 413 be admitted into evidence.

MR. VERHOEVEN: No objection, Your Honor.

THE COURT: It's admitted.

(PTX-413 is admitted into evidence.)

MR. NELSON: Can you put up slide 179, please? And the pullout.

BY MR. NELSON:

Q. And what does this document tell you?

A. This document talks about the CUBAQ profiler and how it is used to estimate the probability a user is interested in a document. And essentially [redacted]

[redacted]

Q. Let me have you turn to Exhibits 1468 -- or 1458 and 1462 in your notebook.

A. 1462.

Q. I'll do them at the same time and just ask you to tell me what they are.

A. 1458 and 1462.

Q. Correct.

A. They explain what certain numbers in the Google system means. These numbers are the numbers associated with rephil categories, and they explain in English what these numbers mean.

MR. NELSON: Move that those two exhibits be admitted into evidence.

MR. VERHOEVEN: No objection, Your Honor.

THE COURT: Okay.

MR. NELSON: Can I have slide 180.

THE COURT: You need me to say for the record those are both admitted.

MR. NELSON: Thanks.

(PTX-1458 and PTX-1462 are admitted into evidence.)

MR. NELSON: Let me have the next slide.

BY MR. NELSON:

Q. Can you explain what is on slide 180?

A. Yes. On slide 180, there is a number 24001. I'm not

sure if you can zoom in on that at the top (indicating).

And it says, that corresponds to the concept of making money and earning money, and things of that sort.

Q. Is that a short term phil cluster?

A. Well, it's a phil cluster which could be in someone's short term profile. [redacted]

Q. Let me have you turn to Exhibit 1457 in your notebook.

A. Okay.

Q. And what is that document?

A. 1457 is a document that Google provided to PUM's attorney which explains the coefficients associated with a regression equation.

MR. NELSON: And I would move that 1457 be admitted into evidence.

MR. VERHOEVEN: No objection, Your Honor.

THE COURT: It's admitted.

(PTX-1457 is admitted into evidence.)

MR. NELSON: Let me have the next slide, 181.

BY MR. NELSON:

Q. Can you explain what this is?

Can you zoom this in?

And then, Dr. Pazzani, can you explain what is being shown here?

A. Yes. So what this is saying, the title, the top, at the top, it was the ad phil cluster and the short term phil cluster.

So what this is basically saying is if you have this category in your short term profile and the ad is of this category, then it's more likely that you will click on the ad. And then there is another ad category here that if it's in your profile, you are less likely to click on an ad of that category.

I know there are lots of numbers. We wanted to be able to show the names as they were on the previous slide.

Q. And is the .1469, is that the estimated probability?

A. No, that is not the estimated probability. That would be a portion of the data used for it. That is true of all the users. [redacted]

MR. NELSON: Let me have the next slide, 182.

BY MR. NELSON:

Q. And does the Content Ad system also provide estimated ads, probabilities for ads that are unseen by the users?

A. Yes, it does. Again, there is [redacted], some

of which are unseen.

MR. NELSON: Let me have slide 188.

Oops. I'm sorry. 182 -- or 183. I got ahead of myself.

BY MR. NELSON:

Q. And in your opinion, does each of Google Search, Search Ads and YouTube, Content Ads and YouTube practice each of the aspects of Step 1(e)?

A. Yes, they do. Each of them has an estimates the probability that a document is of interest to a particular user. And I'll read the rest but it's kind of small, but each of them does.

MR. NELSON: We should be able to move through the rest of this hopefully more quickly.

So let's go to Element 1(f) of the '040 patent.

THE COURT: I guess for the record, we now have the proper chart up; correct?

MR. NELSON: Correct, Your Honor.

THE COURT: Okay. Thank you.

MR. VERHOEVEN: Thank you, Your Honor.

MR. NELSON: So let me get the claim language for, on slide 185.

BY MR. NELSON:

Q. Can you read Element 1(f)?

A. Yes. Using the estimated probability to provide automatic, personalized information services to the user.

Q. And is this done, for Search Ads, Content Ads and Search, is this all done automatically?

A. Yes.

Q. And the same with YouTube?

A. Yes.

Q. And so let's look at slide 186. Can you explain that animation?

A. Yes. So here are the possible documents of interest to the user. And there is a user whose profile we know. And this is showing that that user has selected a subset of those documents based on the probability the user is interested in those documents. That's the process that we call -- that Google calls [redacted]

MR. NELSON: Let me have slide 187, PTX-44.

BY MR. NELSON:

Q. What is the Kaltix Twiddler?

A. [redacted]

Q. And let me have -- look in your notebook at PTX-39.

A. Yes.

Q. And what is PTX-39?

A. PTX-39 is a declaration of Craig Sosin.

Q. And who is Craig Sosin?

A. He's a software engineer at Google.

MR. NELSON: And I move that Exhibit 39 be admitted into evidence.

MR. VERHOEVEN: No objection, Your Honor.

THE COURT: It's admitted.

(PTX-39 was admitted into evidence.)

MR. NELSON: Let me have slide 188.

BY MR. NELSON:

Q. And what does Mr. Sosin and Google say about the operation of the Kaltix twiddler?

A. Okay. He's describing in a little detail how it works. So for any particular web page search result, the Kaltix twiddler does several things. [redacted]

Q. And let's go to the next slide, 189, and talk about the link, dilip and category NavBoost aspects of this.

So what twiddler is responsible for applying the

probability for these three, these three elements?

A. Well, the twiddler is called the Kaltix twiddler, but the parts that are used [redacted]

Q. Let me have you turn in your notebook -- actually, let me put up slide 190, please, and pull out, this is PTX-200. And what is this code?

A. This is part of the Kaltix twiddler, and this actually describes how it works, and it's -- what it's basically saying is, for a -- [redacted]

So we ask what would happen if [redacted]

Q. And let's talk next about, let me have slide 191. Let's talk about the rephil and session categories, slide

192, please.

And what does Mr. Sosin say about this?

A. I'm sorry. Could you repeat the question?

Q. Yes. I just asked, this is a repeat of the slide we had before. I guess really I'm just asking if the twiddling aspect works the same?

A. Yes. The twiddling aspect works the same for rephil profiles as well as link and dilip profiles. [redacted]

Q. And let me have slide 193, please.

And what does Mr. Horling say about the operation of the Kaltix twiddler?

A. [redacted]

Q. And could I have slide 194, please. Can you just walk through now by each element how Google's search practices claim 1 of the '040 patent?

A. Yes. So first we saw transparently monitoring. That's like recording the queries and the search result

clicks that you clicked on. Then there's updating the user-specific data files. That's storing in Kansas the data associated with an individual user associated with their ID.

[redacted]

Then you estimate the parameters of the learning machine. That's the user interest in the categories of the documents that are in the user-specific data files.

In order to figure out those categories, you have to have analyzed them. And then you can estimate the probability based on the user model that the user is interested in a particular document. And then you use that, for instance, to reorder the search results presented to the user, so that different orders for different users based on their profile, which is based on [redacted]

[redacted]

Q. And let's turn now to Search Ads and Content Ads together. So let's talk about, let me have PTX-403, please. And this is a response to a request for admission. What does this say about how search and Content Ads are a high probability?

A. Okay. Google admits that the probability of the click-through rate as adjusted by UBAQ is used in the auction that determines the ranking of candidate ads in Google's AdWords system.

Q. And let me have you refer in your notebook to PTX-110. And what is that document?

A. PTX-110 is a document entitled Google AdRank. It's a Google document.

MR. NELSON: I move that Exhibit 110 be admitted into evidence.

MR. VERHOEVEN: No objection, your Honor.

THE COURT: It's admitted.

(PTX-110 was admitted into evidence.)

MR. NELSON: May I have 197 on the board, please?

BY MR. NELSON:

Q. This is PTX-110, so what does this tell you?

A. This talks about the auction that decides which ads are shown to the user and ads are displayed in the order of [redacted], highest at the top, lowest at the bottom. And [redacted]

Q. And how is the estimated probability that's associated with the step 1(e) used in Search Ads?

A. Well, all things being equal, those the users are more likely to click on are more towards the top, but this can be affected by the bid as well.

Q. In this case, it's the opposite because we're talking about Search Ads, the ads that the user isn't interested are

less likely to be shown; is that right?

A. Yes. So the Amazon ads might be on top and the eBay ads on the bottom, for instance.

Q. Let me have slide 198, please. Can you tell me what Mr. Gopalratnam said about this?

A. Yes. When asked how the ad rate is termed, he said [redacted]

Q. And how is this done in Content Ads?

A. In Content Ads, it's based on [redacted]

Q. And let me have PTX -- slide 199. And is this also the calculation used?

A. Yes. Uses the same auction. It's just a different way of computing the click-through rate based on the user model.

Q. And let me have slide 200.

And can you summarize your opinions regarding whether Element 1(f) is practiced by Search, Search Ads, Content Ads and YouTube?

A. Yes. To estimate the probabilities in each case RE used to provide automatic personalization to the user.

Q. And let's go on to dependent claim 22. Can I get slide 201, please. Is this dependent claim 22?

A. Yes, it is.

Q. You have already given your opinion that -- well, tell the jury what a dependent claim is.

A. So a dependent claim depends on another claim. In this case, it depends on claim 1, so it has to do everything that is in claim 1, the preamble steps A, B, C, D, E, but also has to do this, where the monitored user interactions include a sequence of interaction times.

So all we have to talk about this here, because we've discussed this previously, is does Google use the sequence of interaction times.

Q. Let me have slide 204, please, the next one. And this is part of Exhibit PTX-1268. Can you explain what's going on here?

A. Yes. This is part of a web history. I think this is for [redacted] Could I ask you to zoom in on this part?

Okay. [redacted]

Q. And let me have slide 205. And can you pull up --

and what is, what is this? This is part of PTX-373. Can you explain what's shown here?

A. Yes. So this is a further example of how Google keeps track of [redacted]

Q. And let me have you turn in your notebook to PTX-35. And what is PTX-35?

A. It's Google's supplemental responses, objections and responses to the plaintiff's amended notice of Rule 30(b)(6), deposition of Google.

MR. NELSON: I move that Exhibit 20 -- PTX-35 be admitted into evidence.

MR. VERHOEVEN: No objection, Your Honor.

THE COURT: It's admitted.

(PTX- 35 was admitted into evidence.)

MR. NELSON: So can you put that up?

BY MR. NELSON:

Q. And what is being shown here?

A. What is being shown here is explanation, discussing a little bit more the details of that, what we just saw.

So, for instance, if we can zoom in, [redacted]. And we've asked what this number means (indicating), and that number is the [redacted]. So that's a computer way of saying [redacted], in essence.

Q. And this is a statement by Google essentially explaining [redacted]?

A. That's correct.

MR. VERHOEVEN: Objection, leading.

MR. NELSON: Can I continue?

THE COURT: Could you hear that?

MR. NELSON: Yes.

THE COURT: I wasn't sure. Is that an objection?

MR. VERHOEVEN: I objected leading, but the answer came out.

THE COURT: The objection is overruled because it's moot, but it was leading. Let's refrain from the leading.

MR. NELSON: Okay.

BY MR. NELSON:

Q. Let me have you turn in your notebook to PTX-378. I will ask you, is that a Google document?

A. Yes. It's a Google document.

MR. NELSON: I move that PTX-378 be admitted.

MR. VERHOEVEN: No objection, Your Honor, with the caveat that my copy is partially legible. We'd request a legible copy.

THE COURT: All right. Provide the better copy if you haven't already. Otherwise, it's admitted.

(PTX-378 was admitted into evidence.)

MR. NELSON: Pull up the pullup, please.

BY MR. NELSON:

Q. And so what does this slide tell you about how the [redacted] are used?

A. [redacted], and I'm sure you don't remember, but about an hour ago I discussed how the rephil profile worked [redacted]

So what's that really saying in English rather than mathematics, [redacted]

[redacted]

Q. Let's talk about Search Ads now. Can I get slide 209?

And can you tell me what this document is?

A. Yes. This is part of a web history, and it shows something called the sponsored links, which is over there (indicating). And the sponsored links are the ads that you clicked on in Google so it can display them to you.

Q. This is also part of PTX-278. Let me have -- or 1268, I should say. Let me have slide 210. And is this -- can you tell me what's on PTX-373, page 1143717 with respect to timestamps?

A. [redacted]

Q. And how are these used in Google Search Ads?

A. Well, one way is that if you -- one thing that it can do is [redacted] and that is important to something Google calls a [redacted]

Q. And let's turn to, let's turn to Content Ads, slide 212, please.

And can you speak about, this is Google's response to our request for admission. What does this tell you with respect to [redacted]?

A. Well, it says that Google predicts whether [redacted]

Q. And let me show you slide 213, PTX-404.

A. So why that's useful is sometimes [redacted]

Q. Thank you, Dr. Pazzani.

Let me show you what is on PTX-404 and ask what this tells you about the use of [redacted] in Content Ads.

A. Yes. So this talks about how it computes [redacted]

Q. And let me have PTX-406, please and the pull out.

And what is this -- this talks about the [redacted]. What does this say?

A. This is the [redacted] the Google Content Ads. We saw this document before and essentially it [redacted]

[redacted]

Q. Can I have the next slide, please, slide 215.

Can you summarize your opinion regarding whether Search, Search Ads, Content Ads and YouTube infringe claim 22?

A. Yes. By the use of storing [redacted] in Kansas or storing [redacted] associated with user data, then you can derive a sequence of [redacted]

Q. Okay. Let's turn now to the other patent at issue, the '276 patent.

A. Okay.

Q. And this should go quite a bit quicker.

Let me have slide 219, please. And can you tell me what is shown on this slide?

A. Yes. This is comparing the '040 patent and the '276 patent. There are many similarities between the two, but there are also some parts that are different.

Q. And take a look at the non-colored portion first, the preamble. What are the differences in the preamble or the difference in the preamble? Focus on the word "automatic."

A. Yes. So the word "automatic" is not there, so that's one difference.

Q. Do you have, is your opinion with respect to infringement the preamble of the claim 1 of the '276 the same as for the '040?

A. Well, '276 is more general. It does not require automatic, but if things were automatic, it still infringes.

Q. And otherwise your opinion is the same?

A. Yes.

Q. And so let's look at the next, the next slide here, which let's go to -- let's go to 223, actually.

So here we talked about users a lot in the preamble. What is this slide?

A. This slide just summarizes the evidence that we used earlier for the preamble of claim 1 of the '040 patent and all this is saying is, the evidence there is exactly the same as the evidence here. We don't need to go over it again, but the Gaia ID, the [redacted] the DoubleClick cookie and the PrefID are used in exactly the same way and infringe in exactly the same way.

Q. So relying in part on PTX-576, 1312, 0113, 1312, 0365, 407 and 406?

A. I think you left 1312 out, but, yes.

Q. Can you go to the next slide?

And can you summarize your opinions whether Google Search, Search Ads, Content Ads and YouTube practice the preamble of the '276 patent?

A. Yes, they do.

MR. NELSON: Let's turn to the next element, the transparently monitoring element. Can I have the next slide, 226.

BY MR. NELSON:

Q. Those are the two elements together. Now, the '276 says "normal use of a browser program" instead of "normal use of a computer." Is there any difference there?

A. Well, there is a difference but not a significant difference with respect to the infringement because everything we discussed earlier was happening within a web browser. The user accessing the Google website, clicking on ads, et cetera.

MR. NELSON: Let me go to slide 227.

BY MR. NELSON:

Q. And does this slide summarize -- let me just read it in -- summarize the evidence you relied on in your testimony for the '040 patent. Let me start over.

What is on this slide?

A. This slide shows the evidence used on claim 1(a) of the '040 patent. And that evidence can be used for claim 1(a) of the '276 patent. So Exhibits 11, 370 of the Horling deposition, 395 for the Google Gopalratnam deposition, PTX-0404 of the Ponnekanti deposition and the Zamir deposition.

MR. NELSON: Let me have slide 228.

BY MR. NELSON:

Q. In your opinion, does Google Search, Search Ads, Content Ads, and YouTube Content Ads, practice Element 1(a) of the '276 patent?

A. Yes, for the same reasons I cited previously.

MR. NELSON: Let's go to Element 1(b), the next slide.

BY MR. NELSON:

Q. And so what is the difference here between the Element 1(b) of the '040 and the element here doesn't have the letters on the '276.

A. Sure.

Q. The analyzing element.

A. Yes. So one difference is we're determining the documents of interest to the user. And it's less complicated the way we monitor the data, update the user specific data.

MR. NELSON: Let me have slide 231, please.

BY MR. NELSON:

Q. Can you read the Court's definition of "documents of interest to the user."

A. Yes. "Documents of interest to the user are documents (electronic files, including text or any other type of media) for which the user has a positive response."

MR. NELSON: Let me turn to slide 233. This is part of the patent, PTX-1.

BY MR. NELSON:

Q. Can you tell me sort of what a positive response is in the patent?

A. Well, positive response -- I'm sorry. The user creates positive and negative patterns. Positive examples of documents of interest to a user: Search results that are visited following a search query is an example of expressing interest in something.

MR. NELSON: And can we go to slide 234, please? I'll skip 233 for now.

BY MR. NELSON:

Q. And can you just explain what is shown on this slide?

A. Yes. This is going back to some of the [redacted] earlier. And the URLs, [redacted]

MR. NELSON: And let me go to 235. Slide 235.

BY MR. NELSON:

Q. What does Mr. Horling say about analyzing the documents?

Let me ask it this way: Can you tell me what Mr. Horling said about this element?

A. Well, I think he is getting at [redacted]

[redacted]
the search results for the user in the future because Google assumes you have expressed interest in the document.

MR. NELSON: And let's go to the Search Ads portion here.

Let me actually ask you, let's go back to slide 234 for a minute. Never mind. Let's go to Search Ads. Let's go to 237.

BY MR. NELSON:

Q. And this is PTX-375 again. Can you tell me what is shown on this document?

A. Yes. These are the document IDs associated with the [redacted]

(Counsel confer.)

MR. NELSON: Sorry about that.

BY MR. NELSON:

Q. So can you tell me, does Google analyze the monitored data to determine the documents that are of interest to the user?

A. Yes. By monitoring the user's ad clicks or result clicks, it's determining which documents are of interest to the user.

Q. Is that same true for Search? I don't know if I asked you that question for Google Search before so I'm just

re-asking it.

A. Okay. So, yes, the result clicks are a sign of interest on the documents that you have clicked on.

MR. NELSON: And let's turn to the next slide please. Let's turn to Content Ads. And may I have slide 239, please.

BY MR. NELSON:

Q. And this is another Request For Admission that Google answered for us. Can you tell me what this says about analyzing the monitored data to determine documents of interest to the user?

A. Yes. And this is getting back to CUBAQ, the content-based system. Google stores data associated with a DoubleClick cookie [redacted]

Q. And does Google analyze that data to determine documents of interest?

A. Yes, it does. In particular, [redacted]

MR. NELSON: And let me turn to slide 240, Mr. Zamir's testimony.

BY MR. NELSON:

Q. And can you summarize what he said?

A. Yes. He discussed again [redacted]

MR. NELSON: Can I have slide 241, please?

BY MR. NELSON:

Q. And this is Mr. Weinberg from yesterday. What did he say about determining user interest in ads and analyzing data?

A. When asked how does Google know what a cookie is interested in, he said: So I -- [redacted]

MR. NELSON: And can I have slide 242, please.

BY MR. NELSON:

Q. This is Ms. Illowsky's testimony. What did she say about the analyzing the monitored data to determine documents of interest for the user?

A. So she discussed that the ad ID is associated with the ID in the cookie, and that's keeping track of the ads the users has clicked on.

MR. NELSON: Can I have the next slide, please?

BY MR. NELSON:

Q. And can you summarize your opinion whether or not Google Search, Search Ads, Content Ads and YouTube practice Element 1(b) of the '276 patent?

A. 1(c)?

Q. I think it's 1(b). The preamble is 0.

A. Oh, I'm sorry. Yes. So by storing the data in

Kansas and then using this to assume the user's interest in those things the user has clicked on, generating profiles based on those clicks. That shows that Google is monitoring the data to determine documents of interest.

MR. NELSON: Okay. Let's turn to the next element, 1(c). The next claim.

BY MR. NELSON:

Q. So this claim says: Estimating parameters of a user specific learning machine based at least in part of the documents of interest to the user.

Do you see that?

A. Yes.

Q. And this element is fairly similar to the last one. Can you explain what is different?

A. Well, it doesn't mention the user model. It's just talking about a user specific learning machine.

MR. NELSON: Let's go to slide 246 real quick.

BY MR. NELSON:

Q. So this is the Court's definition of "learning machine." The Court also construed "user-specific learning machine." Can you read that definition to the jury?

A. Yes. "A user-specific learning machine is a learning machine (as construed) specific to the user."

Q. Is the learning machine made user specific in '276 -- well, let me ask it differently.

Is the user-specific learning machine in '276 user specific?

A. Yes, it's user specific because it operates on the user's data such as the data stored in Kansas.

Q. The same as for the '040?

A. That's correct. So for each of them, Search Ads, Content Ads, Content Ads in YouTube and Search, the argument is the same.

Q. For each of the different user -- Well, let me go to slide 250, please.

Can you identify what the user-specific learning machine is for this element for each of the five accused Google Search properties?

A. Yes. They're the things we discussed earlier. The link profiler, the Kaltix Twiddler. Or,

A portion of the Kaltix Twiddler plus the user's link profile.

The dilip profiler, portion of the Kaltix Twiddler, and the user's dilip profile.

Similarly, the rephil and the user's rephil.

And the NavBoost, et cetera.

Q. And this element talks about determining or estimating the parameters of the user-specific learning machine based at least in part on the documents of interest to the user. Is that element met in your opinion?

A. Yes, it is.
Q. And is the way that it's met, the evidence you are relying on the same as you relied on for the '040 patent?
A. Yes, the evidence is the same.
MR. NELSON: Let me have slide 251, please.
BY MR. NELSON:
Q. Can you just read into the record the summary of the evidence you are relying on for this element?
A. Yes. So there is each profiler, which is in PTX-0770 and 0376.
And then for link, it's PTX-30, 33, 34, 76 and Glen Jeh's testimony.
And then for dilip, it's 0025, 69, 98, 379.
And for Category NavBoost, it's 0030 and 0038.
Q. Is the data in the [redacted], the document identified as in the [redacted], is that part of the information that is used to estimate the parameters of the user specific learning machine?
MR. VERHOEVEN: Objection, leading.
THE COURT: Sustained.
BY MR. NELSON:
Q. Can you identify the parameters? Can you identify the portion of Kansas data that is used to estimate the parameters of the user specific learning machine?
A. Yes. It's the [redacted]

[redacted]

MR. NELSON: And let me turn to slide 252.

BY MR. NELSON:

Q. Can you summarize your opinion for this element -- well, what evidence did you rely on for your opinion for the rephil and session category profiles as whether they practice this -- whether Google Search rephil and Search session category practice this element?

A. So if you recall, these use the [redacted] and it's PTX-0030, 34, 37, 69.

PTX-0030 and PTX-0069 for session category.

Q. And what column in Kansas is at least in part used to estimate those parameters?

A. Again, it's the [redacted].

MR. NELSON: Let's talk, let's go to Search Ads. And can I get slide 254, please. We'll do Search Ads and Content Ads together.

BY MR. NELSON:

Q. Can you summarize the evidence -- is the evidence you relied on for Search Ads and Content Ads meeting claim 1, element C of the '040 patent, the same evidence you are relying on for meeting this element of the '276 patent?

MR. VERHOEVEN: Objection, leading.

THE COURT: Overruled. You can answer.

BY THE WITNESS:

A. Yes. The same evidence was used for estimating parameters of the learning machine.

In Search Ads, it's PTX-112, 113, 397, 398, and 869.

And in Content Ads, it's 223, 404 and the Zamir deposition.

Q. Can you identify the respective user-specific learning machines for both Search Ads and Content Ads?

A. Well, for Search Ads, the user-specific learning machine is the UBAQ profiler [redacted]

Q. What about for Content Ads?

A. In Content Ads, that profiler wasn't given a name but it's the thing that [redacted]

MR. NELSON: Let me turn to the next slide, please.

BY MR. NELSON:

Q. Does this slide 255 summarize your opinions whether Element 1(c) of the '276 patent meets each of the accused products?

MR. VERHOEVEN: Objection, leading.

THE COURT: Overruled.

BY MR. NELSON:

Q. Go ahead.
A. Yes, it does.
Q. That's what the green checkmarks means on all these charts?
A. That's correct.
THE COURT: Let me see counsel at sidebar, please.
(Sidebar conference held.)
THE COURT: It's just past 4:00 o'clock. Are you expecting to finish your direct before 4:30?
MR. NELSON: I think there is a pretty good chance we will yet. I'm just trying to get through this as quickly a possible.
MR. VERHOEVEN: Just so you know, I forgot what slide you left off on, but we're here (indicating slides remaining in the binder).
MR. NELSON: Was it one that was not fixed?
MR. VERHOEVEN: No, no, no. I'm not complaining about that, but the question. I believe we're around slide 257, and the last slide of the deck is 344.
THE COURT: Are there still approximately 100 slides left?
MR. NELSON: Yes, there are. A lot of these go very fast. There are a couple elements coming up that we have to go through.

THE COURT: Okay.

MR. NELSON: They go very fast.

THE COURT: I thought we should talk. In the event that you are likely to finish around 4:20, 4:25 I was curious what Mr. Verhoeven might want to do but it seems like it's unlikely that you are going to finish even with a few minutes left.

MR. VERHOEVEN: Your Honor, if we only have five minutes left, I don't think that's enough time for me to finish my first cross module. But if we have 15 minutes left, I would request the ability to begin cross.

THE COURT: Okay. So certainly if there is 15 minutes left. If there is 5 to 15 minutes left, what would your request be?

MR. VERHOEVEN: Well, I'd like the ability to, if I start a module, finish it. I think 15 is probably the minimum I would need to do that.

THE COURT: Okay.

MR. VERHOEVEN: But I would be happy to start any time you want. Let me know and I'll start.

THE COURT: You can't start until he is done with his direct.

MR. VERHOEVEN: Right.

MR. FRIEDMAN: You can't start until he says so.

MR. VERHOEVEN: Whatever Your Honor wishes I

will do. My first module is 15 minutes.

THE COURT: I'm not going to make you start with less than 15 minutes unless you tell me that is what you want me to do, and I am hearing you don't want to do that.

MR. VERHOEVEN: I think ...

(Counsel confer.)

MR. VERHOEVEN: Yes. We'll just -- okay. Mr. Horwitz, go ahead and tell them.

MR. HORWITZ: Your Honor, two things. If it's less than 15 minutes, we don't want to have to eat time.

THE COURT: I'm not talking about eating the time. I'm talking about letting the jury go a little bit early and nobody is charged for the time.

MR. HORWITZ: Second, we don't want them to be able to talk to the witness overnight.

THE COURT: Right. You would want it to be essentially the cross has begun and they can't talk.

MR. HORWITZ: Exactly.

THE COURT: I would agree to that as well in light of the circumstances, but this is all, just so we're on the same page, if we finish by 4:15 or earlier with the direct, we'll just go right into cross, but I'll still cut you off about 4:30. If we finish with direct after 4:15, I'm going to cut you off at 4:30, but we won't start the cross until the morning. Okay?

MR. NELSON: That's fine.

MS. JACOBS: Your Honor, given that Dr. Pazzani has been on the stand all day, is it really fair to him to start cross 15 minutes after six and-a-half hours?

THE COURT: If we're done by 4:15 with the direct, we're going to start the cross, fair or not. But I don't think, it doesn't seem very likely but I'm not going to hold them to it.

MR. NELSON: 15 minutes is not going to happen.

THE COURT: I'm not going to slow you down any further. Let's see what happens. Okay.

(Sidebar conference ends.)

THE COURT: You may continue.

MR. NELSON: All right. Can I get slide 257, please?

BY MR. NELSON:

Q. Let's talk about Element 1(d). And this element wasn't in the '040 patent.

Next slide, please. Well, this is receiving a search query.

Could I get slide 259, please. And this is a picture of the Google Search screen. Does Google receive search queries?

A. Yes. The user types search queries into the search box, clicks on search Google and Google receives the search

query.

Q. And let me put up slide 260, and that's shown in PTX-22, that figure?

A. Yes.

Q. And let me also put up PTX -- well, PTX-17 real quick. What does that say?

A. This is a Google document entitled life of the query. It says what we're talking about. The system receives the query.

Q. And let's talk about search address. Can you put up slide 262, which is a portion of 115. And what does this document show?

A. It shows that the system receives the search query from the user. It goes to the Google front end, the Google web server, et cetera.

Q. And let me put up slide 264 and let's talk about the Content Ad system.

What is this document? What are search referral terms?

A. Yes. On content ads, it's actually much more subtle. The user doesn't explicitly type a query into the Google Search box, but if the Google types a query into Bing and goes to the Los Angeles Times, what happens is there's a refer in the HTML and the http, and that refer indicates what query one came from previously, or what website one

came from previously.

So a Bing search result page will contain what's called the search referred term. It's the queries typed to Bing or the queries typed to Google.

And if you go to the L.A. Times, the search referred terms from the search engine that got you there are a part of these search referred terms that are then passed to the Content Ad system.

Q. And let me have you look in your notebook for Exhibit 416.

A. Okay.

Q. And tell me what that document is.

A. 416 is a Google e-mail from Oren Zamir.

MR. NELSON: I ask that that be admitted into evidence.

MR. VERHOEVEN: One minute, Your Honor. No objection.

THE COURT: It's admitted.

(PTX-416 was admitted into evidence.)

MR. NELSON: Can you put up Exhibit 416?

BY MR. NELSON:

Q. What does this document indicate about Content Ads and search queries?

A. Actually, that describes just what I did, that Google, Google queries as well as those from Yahoo, et

cetera, used today, they're added with high weights to the documents they lead to.

Queries from non-Google Search engines are also associated with the DoubleClick cookie and used within [redacted]

Q. What does RPM stand for?

A. I think it's revenue per million.

Q. Let me put up slide 266, please. What did Ms. Illowsky say about referred terms? And just look at the bottom of the slide.

A. So she described what the search referred terms are, and there's a referral URL that says what page it came from. And so some search engines choose to include the query in that, and so the term that was used as the query is in that URL.

Q. And let me turn to the next slide, please.

And can you tell me what this, can you summarize your opinions with respect to whether the accused products practice this element?

A. Yes. So Google Search does and Search Ads through the use of the search box and Google Content Ads does through the use of, use of the search referral terms.

Q. And let's talk about the next element. This is retrieving a plurality of documents based on the search

query.

Do you see that?

A. Yes, I do.

Q. And this one is also not in the '040 patent, so let's talk about this one briefly.

MR. NELSON: Can I have slide 271, please? This is PTX-17.

BY MR. NELSON:

Q. What does this document say?

A. Well, after the system receives the query, it finds matching results, and that's retrieving documents based on the query and then it presents them to the user. I think there's a little more that happens between those two steps.

Q. And let's put up slide 272. Go ahead and -- what does this document say?

A. This is describing the Kaltix twiddler and it says, [redacted] Again, it's discussing these candidate search results where the retrieval of documents based on the query.

Q. And this is PTX-24. Let's go to Search Ads. Can I get PTX-115, slide 274. And does this document show, does PTX-115 show that documents are retrieved?

A. Yes, it does. We have not discussed it a lot, but

[redacted]

Q. And let's put up the next slide, 276, and talk about Content Ads. And can you tell me, we just had this one up, what does this tell you about documents being retrieved in response to a query?

A. Well, it talks a little bit about how the query is added with high weight to the documents they lead to. So let me see if I can explain that. When you have a page on the Los Angeles Times, like about a Chevy Volt, if you got there by typing hybrid Chevy Volt or electric Chevy Volts, or just electric car, then it's as though that page had those search queries, the search query in it.

So the word "electric" would be added to the Los Angeles Times page. And then it would be Googled Content Ads, would retrieve ads related, for instance, to electric cars.

Q. And let me turn to slide 277. And can you tell me what Ms. Illowsky says regarding this topic?

A. Yes. So he describes what I just did. So we parse that out. We find the query. And then we pretend it was found in the page. What do you mean by pretend it was found in a page? It becomes one of the textual signals from the page. Those are the signals used to retrieve ads related to the page.

MR. NELSON: And could I have slide 278, please?

BY MR. NELSON:

Q. And can you summarize your opinion whether the '276 patent, whether each of the accused Google products practices the retrieving of plurality of documents step in the '276 patent?

A. Yes. So having received the search query from the user, it then retrieves documents related, or based on that search query, and Google Search and Search Ads obviously do it in a more subtle way than Google Content Ads do.

Q. Can I have the next slide, 280. And so can you explain what the color coding means on this slide?

A. Yes. So what we see is claims D and E of the '040 patent. And in many ways, claims D and E of the '040 patent are combined to the claim of the '276 patent that's highlighted.

Q. And with respect to the identifying properties of the retrieved documents, is the evidence you relied on the same as you relied on for the analyzing documents step in the '040 patent?

A. Yes. Though these are things like the [redacted]

Q. And let me turn to slide 282. And can you just read into the record the evidence that you relied on that this

element was practiced in the '276 patent as well?
A. Yes. For the link categories, it's PX-0024, PTX-0025, PTX-00 -- I'm sorry. 0443, 037, and Brian Horling's testimony.

For the dilip categories, it's PTX-0025, PTX-0376, and Haveliwala's testimony.

And for category NavBoost, how it uses the link and dilip categories, it's PTX-0030.

Q. And let's turn to slide 284, please, skip this one.

And can you summarize the evidence you relied on with respect to the rephil and Session Category for the identifying -- for identifying the property of the retrieve document aspect of this element of '276?

A. Yes. So both of these profilers use the rephil category system and that's described in PTX-0024, PTX-0025, and PTX-0030.

Q. And let's go to the next -- slide 286. And this is some more evidence with respect to the identifying document properties. Can you just read that into the record?

A. Yes. So rephil and Session Category use PTX-0024, PTX-0876, and PTX-0027.

Q. And the next slide, please. And can we now talk about the applying the identified properties of the of the retrieved documents to the user specific learning machine to estimate a probability stat?

Could I have the next slide, please? And remember, before we were talking about rank by long click probability and these three profiles.

What does this slide represent?

A. [redacted]

Q. And can you read the evidence that you relied on into the record?

A. Yes, I can. PTX-0024, PTX-0097, PTX-0200, Brian Horling's testimony, Glen Jeh's testimony and the Jahr testimony. PTX-0382, PTX-0385, PTX-0433, and PTX-0729.

Q. And is your opinion, regarding the estimation of probability, is your opinion for the '276 estimation any different than your opinion for the '040 step?

A. No, it's not. It's the same.

Q. And let's talk about -- let's go to the next slide, 290. And let's talk about the rephil and the Session Category.

What is your opinion whether there is the, applying the identified properties of the retrieved documents to the user specific learning machine to estimate a probability step is met, or a portion of this step is met for these two profiles?

A. Yes. A Google search estimates that probability by

using [redacted] and the evidence is on the slide there. PTX-0024, PTX-0385, PTX-0730, and Brian Horling's deposition.

Q. And is your opinion on the estimated probability portion any different for the 27 -- these aspects of the '276 patent versus the '040 patent?

A. No. Google infringes for the same reasons.

Q. And let's talk about Search Ads real quick. Can we put up 399 -- 292, please. And we saw this before, just what an ad is.

Is your opinion on the identification of the properties the same for this element as it was for the '040?

A. Yes. So Google Search Ads identifies the properties of the ads. These properties are the [redacted].

Q. And let's skip a little bit. Let's go to slide 295, please. And this is PTX 401.

And what does this slide tell you about the estimation of the probabilities aspect?

A. Well, again, this is discussing [redacted]

Q. And let's turn to slide 296. And what is shown on this slide?

A. There is the evidence that I relied on for the similar claim in '040. It's PTX-0115, PTX-0397, PTX-0400, PTX-0402, and PTX-0942.

Q. And let's go to Content Ads. And can I get PTX-403, please. Next slide.

And what is -- does Content Ad analyze documents or identify properties of documents?

A. Yes. Content Ads are [redacted]

Q. And let's go, let's skip to slide 301. And can you summarize the evidence you relied on for the, applying the identified properties of the retrieved documents to the user-specific learning machine to estimate a probability aspect of this portion of the '276 patent?

A. Yes. Google uses the short-term rephil clusters. And the evidence for that is in PTX-0180, PTX-0222, PTX-0400, PTX-0402, PTX-0408, PTX-0413, 1457, 1458, and 1462.

Q. And let me have slide 302, please.

Can you summarize, is your opinion that each of the accused Google products practice step, Step 1(f), the retrieve document step of the '276 patent?

A. Yes.

Q. Is that what the green checkmark signifies?

A. That's correct.

Q. And so let's talk about another element, slide 304. And this is, in the '276, this is the using the estimated probabilities for the respective plurality of retrieved documents to present at least a portion of the retrieved documents to the user.

Do you see that?

A. Yes, I do.

Q. And let me go to slide 305, please. Can you just orient the jury what this step is about?

A. Yes. This step is about after you've estimated the probability that the user is interested in the document, how you use that probability to show the user things they're interested in.

Q. And are you relying on the evidence, the same evidence that you're relying on for step 1(f) of the '040 patent for this element of the '276 patent?

MR. VERHOEVEN: Objection. Leading.

THE WITNESS: It's --

THE COURT: Hold on, Doctor. I need to rule. I will sustain the question again.

MR. NELSON: I don't remember what the question was.

THE COURT: Try your best.

BY MR. NELSON:

Q. So what -- can you identify what aspects of the

Google Search, how the -- if the estimated probabilities are used?

A. Yes, they are. It's a little different than the earlier case because the estimated probabilities have to be used to present portions of the documents to the user, so the evidence will have, is a little bit different. But, in essence, [redacted]

Q. Right. And I was talking about estimating the probability aspect of it. We'll talk about the presenting to the user here in just a second.

A. Okay.

Q. So let's talk about that. So let's --

A. Okay.

Q. -- let's go to slide 308, please. Let's do 307 first.

So the rest of this element for 276 is -- one back -- is to present at least a portion of the retrieved documents to the user.

Can I have the next slide, please?

And the Court construed present as -- well, tell the jury what the Court construed.

A. To provide or make available.

Q. And could I have slide 309, please. And this is part of PTX-17. What does Google say about this element?

A. So this is part of the life of a query that describes Google's web search system and it says that Google presents them to the user, where then here it refers to the search results.

Q. And how does the present -- does the presentation of the search results make documents available for the user?

A. Yes. So the search results page contains links to the documents on the web and they are made available to the user because before those search results page existed, the user might not have known how to access those documents, but by analyzing the contents of the documents and then displaying it on the search result page, they're now made available to the user.

Q. And let's talk about Search Ads next. And let me go back to slide 306. And can you tell me what evidence you relied on for the, using the estimate probabilities aspect of this claim?

A. Yes. So using the estimated probabilities is the same as the '040 patent and this is Brian Horling's testimony, PTX-0044, PTX-0039, and PTX-0200.

Q. And let me now jump to search address, slide 311, please. And let's talk about the using the estimated probabilities step.

What evidence did you -- first of all, do you

conclude that this portion of the step is met in the '276 patent?

A. Yes. With respect to using the estimated probabilities, that's done the same way as the '040 patent.

For Search Ads, the evidence was PTX-0110, and 0403. And the Gopalratnam deposition.

And for Content Ads it's also PTX-0110, but also PTX-0223.

Q. And just to the extent that not everything that you stated is on these slides, are you also relying on the testimony that you gave previously regarding these elements for the '040 patent?

MR. VERHOEVEN: Objection, leading.

THE COURT: Overruled. You can answer.

BY THE WITNESS:

A. Could you ask the question again?

Q. Sure. To the extent that these slides don't contain every single exhibit or every single aspect of your testimony regarding the '040 patent, are you also relying on that portion of the testimony for the '040 patent that relates to the respective '276 claim elements for part of your opinion, the '276?

A. Yes. I think I rely on the same evidence that was in my earlier testimony or my deposition or my report.

MR. NELSON: So let's turn to the presenting at

least a portion of the retrieved documents to the user aspect. Slide 312, please. That's not really legible. Can we zoom that one up a little bit?

BY MR. NELSON:

Q. This is Part of PTX-17. What is Google say about presenting advertisements to the user?

A. Yes. It says --

MR. VERHOEVEN: Objection to the form of the question.

THE COURT: Counsel?

MR. NELSON: I can rephrase it. That's fine.

BY MR. NELSON:

Q. This is a Google document. What does it say about presenting -- what does it say about ads to the user?

Let me just ask it again. That was kind of garbled.

Is PTX-17 a Google document?

A. Yes, I believe so.

Q. And can you read step 25?

A. Yes. GFE presents the page to the user.

Q. What is the page that is being talked about there?

A. The page is the search results page.

Q. Is it also the advertising page?

A. I'd want to see more of the document.

MR. NELSON: Can you zoom back a little bit?

BY THE WITNESS:

A. Yes, this is the part of the document that is querying the ad server. So the ads and the search results are combined together on the page in step 25.

MR. NELSON: And let's talk about the Content Ads aspect of this element. First, the estimating probabilities. Can I get slide 313, please?

BY MR. NELSON:

Q. And you have seen this slide before. Is this the same evidence, the estimating probability for Content Ads, that you used for the '040 patent?

A. It's the same evidence but we highlighted it so it should be ads are displayed in order of ad rank, highest at the top and lowest at the bottom.

Q. What about the presentation? What about the presentation of ads element of Content Ads? Is it your opinion that that is met in '276 patent?

A. Yes. The ads are displayed on Content page.

Q. How is accomplished?

A. Through some javascript in an I-frame that contains the ads.

MR. NELSON: And let me turn to the next slide, 314.

BY MR. NELSON:

Q. Can you summarize your opinion with respect to

whether Element 1(g) is met by Google Search, Search Ads, Content Ads, and YouTube?

A. Yes, it is.

MR. NELSON: It's a good time to stop. I have three dependent claims yet and I don't think I will finish by 4:30, Your Honor.

MR. VERHOEVEN: May I have a very brief sidebar?

THE COURT: You may.

(Sidebar conference held.)

THE COURT: Mr. Verhoeven.

MR. VERHOEVEN: I don't want to keep the jury late. I was thinking I might ask if he would finish it, but I don't want to keep the jury late.

My request would be that they not talk to the witness about the stuff they have already covered just as if they finished direct. If they want to talk to the witness about the slides they haven't covered, I have no objection to that. And then we'll just pick it up tomorrow, if that is okay.

THE COURT: What is your position?

MR. NELSON: I may need to talk to the witness a little bit because I need to go back through, I've got a list of exhibits that I believe have been entered into evidence, and I've got holes in it.

I've been trying to keep track as closely as I

could as to what got in and what didn't but to the extent there is evidence for Content Ads or Search Ads that there is nothing written there, at least one, if I could figure that out and do that.

MR. VERHOEVEN: There is --

MR. NELSON: Direct is still open.

MR. VERHOEVEN: There is a written transcript, and everything that has been admitted has been admitted. I would submit counsel could do that without counselling the witness.

THE COURT: Well, are you --

MR. NELSON: I'm not done. I'm not asking to be able to coach the witness or something, but direct is still open and I need to go back through and make sure that I have everything I need. I think I do, but if something is up I might need to ask him about that might have been missed. I was trying to check everything off but I don't think it's fair to me to not about able to ask him a question about something that might have been missed on direct that I want to follow-up on.

THE COURT: Is that your request?

MR. VERHOEVEN: My concern, Your Honor, is we're going to get another hour and-a-half when we would have had ten minutes because they're going to go back and work on it again tonight. And whatever Your Honor wants, but I'm

trying to move it along. And I was thinking that if they wanted to talk about what they have left, that I wouldn't object to that.

If all you are going to do is, you represent, just talk about what exhibits you have in or out, you won't talk about any substantive issues, you represent that, then I think --

MR. NELSON: I can't represent that 100 percent.

THE COURT: That's fine. I understand the concern that Mr. Verhoeven is raising but the reality is direct is still open. Plaintiff has used an awful lot of time today.

The jury has been here, been through a lot, so I'm not going to keep the jury for however many minutes are left. He is not going to finish his direct in those remaining minutes anyway. If he comes back with an hour and-a-half on cross tomorrow, I mean more direct, he is going to use an hour and-a-half more, and you are going to have a full opportunity to cross. But the fact is he has used up the whole day on direct, his witness is still on direct. It's just like yesterday. I don't know what they talked about last night but they were free to do so. They're free to do so tonight. And we'll see what happens tomorrow. I understand the concern but the witness is on direct so I'm going to allow him to confer with his client.

MR. VERHOEVEN: Understood, Your Honor.

THE COURT: All right. So we will stop now. I'll tell the jury to go.

MR. NELSON: Thank you, Your Honor.

THE COURT: Okay.

(Sidebar conference ends.)

THE COURT: Ladies and gentlemen, we will let you go at what is maybe three minutes earlier than our deadline.

Of course, no talking about the case while you are gone. Don't do any research or read anything about the case. We expect to start at 9:00 o'clock tomorrow so please be here in time to do that. Have a very good evening.

(Jury left courtroom.)

THE COURT: Doctor, you may to step down. The rest of you can have a seat.

I need to give you ruling on designations which may be played tomorrow.

So first we have objections to the deposition designations of the witness Roy Twersky.

There are some objections from both sides. Some from PUM and some from Google. All of both sides' objections are overruled with the following two exceptions:

First, the Court sustained PUM's objection to Google's designation at page 449 of Mr. Twersky's

deposition. And in the Court's view, there is too great of a risk of that excerpt being misleading to the jury as it suggests I think incorrectly that the witness changed his testimony within just the most recent five minutes before being asked the question when that is not what appears to have happened.

And we also are sustaining Google's objection to PUM's counterdesignation at page 451 given that PUM's counterdesignation is untimely, and there is no reason to allow for that untimely counterdesignation under the circumstances.

Beyond those two sustained objections, the remainder of the objections with respect to Mr. Twersky are overruled. The others we felt at a general level were proper counterdesignations for completeness.

The issue of Mr. Twersky's change of testimony is clearly going to be important to Google's breach of contract claim. The different interpretations as to why he changed his testimony, including his relative role and level of knowledge about the date of conception, compared to his co-inventor Dr. Konig are all relevant to his credibility and won't be unfairly confusing to the jury.

Also, I think it is important to keep in mind that to some extent at least this is a truth-seeking process that we are engaged in and I think it's more likely that the

jury will come to a finding based on the truth if they do hear all of what has been designated, counterdesignated with respect to witness Mr. Twersky other than the two objections that I have sustained.

A few specifics I wanted to comment on. The objections to the designations at pages 122 to 124 and 130 to 131. The dispute as to how recently Mr. Twersky had read his patent and what he thinks of the scope of his invention did not seem to us to be highly probative of anything relevant in this case, but similar questions were asked and answered of co-inventor Dr. Konig live here at trial sometimes even without objection and there are no Rule 403 factors that would favor excluding that testimony.

And with respect to the testimony designated at page 126, Mr. Twersky's recollection as to whether or not he and Dr. Konig had a working system is in the Court's view relevant to the issue of the problem the patentee's thought that they were solving.

So that is the rulings with respect to witness Twersky.

With respect to witness Frank Montes, we have Google's objections to PUM's counterdesignations. Google's objections are sustained. PUM's counterdesignation at page 22 is improper and not necessary for completeness.

The witness's reference to the existence of an

SRI/Google agreement does not make it necessary to counterdesignate testimony about discussions and invoices.

Similarly, PUM's counterdesignations of pages 29 to 30 and 42 is improper and not necessary for completeness. Google's designated portion of the witness is simply testifying there is an agreement that was acceptable to SRI. PUM seeks to use that to counterdesignate about what SRI knew or what SRI did or what Google inquired about and none of that is necessary for completeness and is an improper counterdesignation.

So that is the rulings on I think the issues in front of me.

Is there anything we should talk about from plaintiff's perspective?

MR. NELSON: No, Your Honor.

THE COURT: How about for defendant?

MR. VERHOEVEN: I just need to confer for one second.

THE COURT: I can hope. I can hope.

(Counsel confer.

MR. PERLSON: While you wait, we can deal with the Konig exhibits in the morning? Is that fine?

THE COURT: Right. I'll be available at 8:30 tomorrow morning.

MR. PERLSON: Okay.

THE COURT: And Dr. Konig is not going to be on the stand right away.

MR. PERLSON: It seems like it.

THE COURT: I would be surprised.

Is there an issue?

MR. VERHOEVEN: No, there is not. We've worked it out. We had not received the animations that went with these directs, and we're not going to object that they're waived or anything. We're just trying to get them and I was just told they were being sent to our hotel right now.

THE COURT: I will consider it a nonissue then.

All right. Well, we will look for you at 8:30 tomorrow morning. Have a good night.

(Proceedings adjourn at 4:34 p.m.)

I hereby certify the foregoing is a true and accurate transcript from my stenographic notes in the proceeding.

/s/ Brian P. Gaffigan
Official Court Reporter
U.S. District Court