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Transcript of Loren G. Terveen, Ph.D.

Date: October 21, 2025

Case: Microsoft Corporation -v- X1 Discovery, Inc. (PTAB)

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WORLDWIDE COURT REPORTING & LITIGATION TECHNOLOGY

EX-2021
U.S. Patent 10,552,490

Transcript of Loren G. Terveen, Ph.D.
Conducted on October 21, 2025

1 (1 to 4)

1 UNITED STATES PATENT AND TRADEMARK OFFICE 2 ----- 3 BEFORE THE PATENT TRIAL AND APPEAL BOARD 4 ----- 5 MICROSOFT CORPORATION, 6 Petitioner, 7 v. 8 X1 DISCOVER, INC., 9 Patent Owner. 10 ----- 11 Case No. IPR2025-00253 12 U.S. Patent No. 7,370,035 13 14 DEPOSITION OF LOREN G. TERVEEN, PH.D. 15 APPEARING REMOTELY FROM MINNEAPOLIS, MINNESOTA 16 TUESDAY, OCTOBER 21, 2025 17 10:01 A.M. 18 19 20 Job No.: 605054 21 Pages 1 - 179 22 Reported by: Adrienne M. Mignano, RPR	3 1 A P P E A R A N C E S 2 ON BEHALF OF PETITIONER - MICROSOFT: 3 SAMUEL B. THACKER, ESQUIRE 4 KLARQUIST SPARKMAN, LLP 5 121 SW Salmon Street 6 Suite 1600 7 Portland, Oregon 97204 8 503.595.5300 9 10 ON BEHALF OF PATENT OWNER: 11 CHRISTIE LAROCHELLE, PH.D., ESQUIRE 12 NATASHA DAUGHTREY, ESQUIRE 13 GOODWIN PROCTER LLP 14 100 Northern Avenue 15 Boston, Massachusetts 02210 16 617.570.1000 17 18 ALSO PRESENT: 19 Ben Bederson, Ph.D. 20 21 22
2 1 Deposition of LOREN G. TERVEEN, PH.D., held 2 via Zoom videoconferencing, pursuant to Notice, 3 before Adrienne M. Mignano, a Registered 4 Professional Stenographic Reporter and Notary 5 Public. 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22	4 1 C O N T E N T S 2 EXAMINATION OF LOREN G. TERVEEN, PH.D. PAGE 3 By Dr. Larochelle 6 4 By Mr. Thacker 173 5 6 E X H I B I T S 7 (Attached to the transcript) 8 EXHIBITS PAGE 9 Exhibit 1003 Declaration of 10 10 Loren G. Terveen, Ph.D. 11 Exhibit 2001 Declaration of 42 12 Martin P. Haeberli 13 Exhibit 1 Article titled, "SuggestBot: 47 14 Using Intelligent Task Routing 15 to Help People Find Work in Wikipedia" 16 Exhibit 1001 U.S. Patent 7,370,035 in 47 17 IPR2025-00253, U.S. Patent 18 10,552,490 in IPR2025-00254, and U.S. Patent 9,633,139 in IPR2025-00255 19 Exhibit 1059 Book titled, PC Learning Labs 64 20 Teaches Lotus Notes 3.0 21 Exhibit 1061 Book titled, Lotus Notes R5 64 22 for Dummies

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5 1 Exhibit 1021 Book titled, The Humane Interface: New Directions for Designing Interactive Systems 105 2 3 Exhibit 1004 Book titled Entourage for Macintosh 123 4 5 Exhibit 1009 U.S. Patent 6,112,172 140 6 Exhibit 1023 Book titled, Modern Information Retrieval 174 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22	7 1 9,633,139, respectively. 2 Is that your understanding? 3 A Yes. 4 Q And you provided a declaration in 5 support of the petitions for inter partes review 6 in each of these proceedings, correct? 7 A Yes. 8 Q Is it okay with you if I refer to the 9 patents as the '035, '490 and '139 patents? 10 A Yes. 11 Q Okay. Is there any one in the room 12 with you today? 13 A No. 14 Q Do you have any documents with you? 15 A No. 16 Q Have you been deposed before? 17 A Yes. 18 Q About how many times? 19 A About 15, I suppose. 20 Q So you're pretty familiar with how a 21 deposition goes; is that right? 22 A I'm pretty familiar, yes.
6 1 Whereupon, 2 LOREN G. TERVEEN, Ph.D., 3 being first duly sworn or affirmed to testify to 4 the truth, the whole truth, and nothing but the 5 truth, was examined and testified as follows: 6 EXAMINATION BY COUNSEL FOR THE PATENT OWNER 7 BY DR. LAROCHELLE: 8 Q Good morning, Dr. Terveen. 9 A Good morning. 10 Q Could you please state your full name 11 for the record. 12 A Loren Gilbert Terveen. 13 Q So, Dr. Terveen, my name is Christie 14 Larochelle. I am an attorney with Goodwin 15 Procter. We represent X1 in these IPRs that 16 we're here to talk about today. With me is Emma 17 Murray, also from Goodwin Procter, and John 18 Patzakis from X1. 19 And so you're aware, this is a 20 deposition for three IPR proceedings, 21 IPR2025-00253, 254 and 255, challenging U.S. 22 Patent Numbers 7,370,035, 10,552,490, and	8 1 Q Pretty familiar, okay. So just a few 2 ground rules. I typically break about every 3 hour, but if you need a break before I call for 4 one, you're welcome to ask. I would just ask 5 that if there is a question pending you answer 6 that before we take a break. Is that okay? 7 A Yes. 8 Q Okay. If I ask a question and you 9 don't understand, just ask me for clarification. 10 If you answer my question, I'm going to assume 11 that you understood it. Is that okay? 12 A Yes. 13 Q Is there any reason you cannot give 14 truthful and accurate testimony today? 15 A No. 16 Q What did you do to prepare for your 17 deposition today? 18 A I reviewed relevant materials and I 19 met with counsel for Microsoft. 20 Q And when you say you met with counsel 21 for Microsoft, was that Mr. Thacker? 22 A Mr. Thacker and Mr. Siegel.

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9 1 Q Was anyone else present at your 2 preparation session? 3 A No. 4 Q And how many times did you meet? 5 A I think three times. 6 Q And for about how long? 7 A In total, about six or seven hours. 8 Six or eight hours, somewhere in there. 9 Q And you said you reviewed relevant 10 materials. What relevant materials did you 11 review? 12 A Well, the things I recall most 13 clearly, I reviewed my declarations. I reviewed 14 the prior art that I relied on for my 15 declarations. I reviewed some of the background 16 materials that I referred to. I looked at the 17 patents to some extent. I looked at the -- 18 let's see. I think I took a look at the patent 19 owner's -- at X1's request for discretionary 20 denial. And I looked at the -- at Microsoft's 21 opposition to that. And then I looked at the -- 22 X1's expert's declaration in -- I believe in	11 1 which document I'm referring to? 2 A Yes. Yes. 3 Q Okay. And then for ease of -- well, 4 time management more than ease, I guess, I don't 5 want to have to ask you the same questions three 6 times. You would agree that you used the same 7 prior art references for both grounds in all 8 three of these declarations; is that right? 9 A Yes, I used the same prior art in all 10 of the declarations, yes. 11 Q Okay. And your analysis of the 12 disclosures of those references is the same 13 across the three proceedings? 14 A Yes. 15 Q Okay. And so you would agree that if 16 I ask you a question about something that you 17 say in the '139 declaration, if you've said 18 substantially the same thing in the '035 19 declaration, then your answer applies across the 20 three declarations? Would you agree? 21 A Certainly as regarding my analysis of 22 the prior art. If it comes to the specifics of
10 1 support of the request for discretionary denial. 2 So those are at least the main things that I 3 recall. 4 Q Okay. Did you review the institution 5 decision for these IPRs? 6 A I believe I had seen those earlier, 7 but as I prepared for this deposition, I did not 8 look back at them. 9 (Microsoft Exhibit 1003 previously 10 marked for identification and attached to the 11 transcript.) 12 Q In each of the three IPR proceedings, 13 Exhibit 1003 is titled "Expert Declaration of 14 Loren G. Terveen," and in the upload link we've 15 named them -- because they all have the exhibit 16 number, we've named them the "139 Terveen 17 Declaration," the "035 Terveen Declaration" and 18 "490 Terveen Declaration." So feel free to 19 download all three of those. 20 And while you're doing that, I will 21 ask you -- so, first, if I say "your '139 22 declaration," for example, you'll understand	12 1 the claims, obviously that could be different. 2 Q Sure, understood. I just want to 3 save us from me having to ask you the same 4 question three times. 5 Okay. I'm going to mainly focus my 6 questions on the '139 declaration, but I may ask 7 you questions about the other two as we go 8 along. 9 So if you want to have the '139 10 declaration open throughout the deposition, that 11 would be helpful. 12 A Okay. Well, I've opened it up. 13 Q Okay, great. And you said you 14 reviewed this in preparation for your 15 deposition, right? 16 A I looked at all of my declarations. 17 I actually concentrated on the '490, but, as you 18 said, it is substantially similar. 19 Q Okay. And the opinions and analysis 20 that you present in these three declarations, 21 are those still the opinions that you hold 22 sitting here today?

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13 1 A Yes. Those still reflect the 2 opinions that I have as I'm sitting here today. 3 Q Is there anything that you would like 4 to correct or modify about any of the opinions 5 or your analysis that you express in these 6 declarations? 7 A No. 8 Q So you have the '139 declaration 9 open. Could you please turn to paragraph 1 in 10 that declaration. 11 A Yes. 12 Q And in paragraph 1 you say, "I have 13 been retained as an independent expert on behalf 14 of Microsoft Corporation in connection with the 15 above-captioned Petition for inter partes 16 Review." 17 Do you see that? 18 A Yes. 19 Q When were you retained by Microsoft 20 in connection with these IPRs? 21 A You know, sometime before the 22 petitions and my original declaration were	15 1 would have been the -- Microsoft was the 2 challenger. 3 Q And aside -- well, or even including 4 Microsoft, about how many IPRs have you 5 submitted expert declarations for? 6 A A dozen, 15 maybe. I'm not sure. 7 Q And in -- about how many times have 8 you submitted an IPR declaration on behalf of a 9 patent owner as opposed to a patent challenger? 10 A Let's see. I'm not quite sure -- 11 excuse me, because I realize I've also -- in 12 addition to IPRs, I have done some ex parte 13 re-examination declarations, and I know that 14 several of those were on behalf of the patent 15 owner. And then I had another case -- it was an 16 IPR -- where I was working on behalf of the 17 patent owner, and I definitely worked on their 18 response, but I don't recall if I submitted a 19 declaration. So, you know, counting the EPRs, 20 three or four times maybe. 21 Q Okay. So much more often on behalf 22 of a patent challenger than a patent owner, you
14 1 filed. I don't remember the exact time. 2 Q Okay. Was it a few weeks before they 3 were filed, a few months, approximate time? 4 A It would certainly be a few months. 5 Beyond that, I don't remember how long. 6 Q Who contacted you about acting as an 7 expert witness on behalf of Microsoft? 8 A I guess it would have been Mr. Siegel 9 from Klarquist. 10 Q And had you been retained on behalf 11 of Microsoft prior to these matters? 12 A Yes. 13 Q About how many times have you worked 14 on behalf of Microsoft? 15 A I don't know. Four or five times. I 16 don't know. 17 Q And in all of those times you were 18 representing Microsoft as patent challenger? 19 A There was one case quite a long time 20 ago where I may have been representing them as 21 the patent owner. I would have to refresh my 22 memory, but I think all of the other times they	16 1 would say? 2 MR. THACKER: Objection. Form. 3 A In, collectively, the IPR and EPR 4 cases, I would have submitted more declarations 5 on behalf of the challenger. 6 Q Did you draft your declarations 7 yourself? 8 A I edited them collaboratively with 9 counsel for Microsoft. 10 Q And about how many hours did you 11 spend editing collaboratively, and let's say 12 collectively, across the three declarations? 13 MR. THACKER: Objection. Form. 14 A I mean, that was about a year ago, 15 basically, so I just don't remember. 16 Q Was it, you know, 10 hours, 50 hours, 17 100 hours? Rough estimate? 18 A It's hard to quantify it because 19 certainly, again, as I said, this work was about 20 a year ago. And in addition to actually 21 drafting and writing, obviously I did analysis 22 looking at prior art, looking for prior art, and

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17 1 so to try to at this point quantify how much I 2 spent on it, the drafting itself, I just don't 3 know. 4 Q Now, you said that you did some 5 looking for prior art yourself; is that right? 6 A Yes. 7 Q Just to follow up there, if you turn 8 to paragraph 12 in your '139 declaration, you 9 say, "In preparing this declaration, I have 10 reviewed the following materials," and then 11 there is -- essentially, this is the table of 12 exhibits submitted by Microsoft with the 13 petition. 14 Do you see that? 15 A Yes. 16 Q And so in that list of exhibits, can 17 you identify any that you found during your 18 prior art search? 19 A Well, I think, you know, first of 20 all, many of those, whether even -- ultimately, 21 when they were included, it would have been 22 through a discussion with me and the counsel,	19 1 retrieval of information, so I would use terms 2 related to that to do my search. Of course, at 3 this point I don't recall what terms I used, but 4 that's generally what I did. 5 Q Okay. So did you start with the 6 claim elements and try to find references 7 disclosing those claim elements in the art? 8 A I don't recall that level of 9 specificity. I mean, the patents as well as the 10 claim language describes certain concepts and so 11 I -- as I said, without remembering the exact 12 search terms I used, it would have been based on 13 the -- you know, what the patent talked about 14 and, likely, terms from the claims, but, again, 15 at this point I just don't recall. 16 Q And so aside from the documents 17 listed in this list of exhibits with paragraph 18 12 in your declaration, did you review any other 19 materials that are not listed here in preparing 20 your declaration? 21 A If I reviewed any other documents, 22 they are not -- I would have cited them if I
18 1 but I recall that some of the -- let's see, I 2 think I found reference 1023, the Information 3 Retrieval textbook. I might have found 1021, 4 Raskin, The Humane Interface, but I'm not sure 5 about that. 6 Q Okay, that's fine. You don't need -- 7 A Yeah. 8 Q -- to go through the whole list. 9 When you went about your prior art 10 search, how did you determine what to search 11 for? 12 MR. THACKER: Objection. Form. 13 A Could you be more specific in what 14 you're wondering about there? 15 Q Sure, absolutely. So what was it you 16 were looking for? Like, you have to have a goal 17 when you do a prior art search. Like what was 18 it that you were looking for in the prior art? 19 MR. THACKER: Same objection. 20 A I was looking for topics relevant to 21 the patents. You know, the patents deal with, 22 you know, a particular kind of search and	20 1 were relying on them for my opinions. So any 2 document that I'm relying on to support my 3 opinion, I did cite here. 4 Q And just to confirm, you said that 5 you reviewed X1's patent owner preliminary 6 response, correct? 7 A Yes, yes. 8 Q And you reviewed Mr. Haeberli's 9 expert declaration in support of the preliminary 10 response? 11 A Yes. 12 Q And you did at some point review the 13 institution decision, correct? 14 A Yeah, that is my recollection. That 15 was a while ago, so I believe I did, but I 16 haven't looked at that recently, in any case. 17 Q Did you ever review the petition 18 itself, Microsoft's petition for inter partes 19 review, in any of these three proceedings? 20 A I believe I reviewed the drafts as 21 they were being prepared. 22 Q Okay. So was that before or after

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1 you drafted your declaration, or during? 2 MR. THACKER: Objection. Form. 3 A I don't recall. I think it was -- 4 yeah, I don't recall the chronology there. 5 Q So attached to each of your 6 declarations as Appendix A is your CV. And so 7 in the '139 declaration this is -- starts at 8 page 142 of the document. I'll give you a 9 second to control down there. 10 A Okay. 11 Q And then just to confirm, the 12 Appendix A in your CV is the same for each of 13 the three declarations in the three separate 14 IPRs, correct? 15 A I would assume so. They took place a 16 bit over time and -- but I don't think I would 17 have updated any details, and if so, they would 18 have been minor. 19 Q And these IPRs were submitted about 20 ten months ago, so are there any substantive 21 updates to your CV in those ten months? 22 A I'm not sure what you have in mind by	21 23 1 A Well, I teach in the computer science 2 department, and most of the classes that I teach 3 are user interface design or social computing 4 courses. 5 Q And do you also do research as part 6 of your role as a professor? 7 A Yes. 8 Q And at a high level, what is your 9 area of research focus? 10 A Human-computer interaction and social 11 computing are my main areas of focus, so doing 12 studies of how people use technology, how people 13 do work online together and then developing new 14 systems and user interfaces to help people work 15 more effectively or solve new problems. 16 Q Does any of your research relate to 17 search systems? 18 A Well, information access and 19 searching, browsing and locating information is 20 something that I worked on a lot when I was at 21 AT&T Labs in the 1990s, and it's been a theme 22 that I have returned to in various ways since I
22 1 "substantive updates." 2 Q All right. So -- well, let's start 3 with your professional experience. So you list 4 here that you are a professor at the University 5 of Minnesota, at least as of last December. Is 6 that still correct? 7 A Yes. 8 Q And you have been a professor at the 9 University of Minnesota since 2002, correct? 10 A Yes. 11 Q And 2002 happens to be the priority 12 date for these patents. Is that your 13 understanding? 14 A That sounds right, yes. 15 Q So at the time of invention, you were 16 just starting your career in academia, right? 17 A That's right. 18 Q Okay. Do you teach courses at the 19 University of Minnesota? 20 A Yes. 21 Q And what types of courses do you 22 teach?	24 1 have been at the University of Minnesota as 2 well. 3 Q When you say it is a theme that you 4 have returned to in various ways, can you give 5 me an example of one of those ways? 6 A Sure. I've done various work in the 7 context of a movie recommender, MovieLens, which 8 is a system that's maintained by my lab at the 9 University of Minnesota. And some aspects of 10 the work I've done have involved better ways for 11 people to specify the kinds of movies that they 12 are interested in, the kinds of items that they 13 are interested in, in order to efficiently get 14 recommendations. So in that sense, you're 15 taking input from users, and the system is 16 computing a response that involves, at a high 17 level, processing or searching through a 18 database of information. 19 Q So you mentioned that before joining 20 the faculty at the University of Minnesota, you 21 were at AT&T Bell Labs. Did I remember that 22 right?

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25 1 A Yeah. It's slightly complicated. I 2 joined Bell Labs, and then there was a split of 3 AT&T into AT&T and Lucent, and at that point I 4 became part of AT&T Labs. So, yeah. 5 Q Understood. And so while you were at 6 either Bell Labs or AT&T Labs during -- how long 7 was that, total? 8 A 11 years. 9 Q 11 years, okay. And so during those 10 11 years, what was your role, or multiple roles, 11 if it may have changed? 12 A I think my title changed slightly, 13 but I think -- I was a researcher there, and I 14 think our title -- the title I had and almost 15 all of the research staff had was, like, member 16 of technical staff. Maybe it became member of 17 research staff. But it was something like that. 18 Q Okay. And in that role, what were 19 you responsible for? What types of projects did 20 you work on? 21 A Well, various projects where we would 22 either work with someone in AT&T's business or	27 1 to both browse and search through that 2 information to find things of interest to them. 3 So yeah, I did that sort of thing in 4 several projects at AT&T. 5 Q Okay. And so your contribution to 6 that was the user interface; is that right? 7 A Well, for those systems my 8 contribution typically spanned all aspects of 9 it, from, you know, designing it to implementing 10 it to designing the user interface. 11 Q Okay. And when you say "designing 12 it, implementing it, designing the user 13 interface," are we talking about the actual 14 search functionality or something else? 15 A Well, I'm talking about all aspects 16 of the system. 17 Q Okay. I want to follow up on the 18 movie -- how did you describe it? Movie 19 matching or finding movie recommendations? Is 20 that -- 21 A Movie recommendations system, yeah. 22 Q So I just want to follow up on that.
26 1 be inspired by problems that were going on 2 around us, and we would typically then -- I 3 would typically lead the development of a new 4 system, and then we would try out the system 5 through some type of empirical evaluation, 6 whether we'd have people try it out in practice 7 or do sort of controlled studies of it. So that 8 was the type of work that I did. 9 Q Have you ever during your time at 10 AT&T or at the University of Minnesota designed 11 a computer search system? 12 A Well, at AT&T, a lot of the systems 13 or -- a lot -- several of the systems that I 14 worked on had to do with helping people locate 15 information on the World Wide Web that they were 16 interested in. And those systems had -- behind 17 the scenes they were gathering information from 18 the web through search techniques, through both 19 text-based and link-based search techniques to 20 gather information. And then, once we gathered 21 that information and created a database and a 22 user interface to that, then users would be able	28 1 You -- can you tell me a little more 2 about how that system works. 3 MR. THACKER: Objection. Form. 4 A Well, the system is -- just for ease 5 of reference, the system is named MovieLens, and 6 my colleagues created it over 25 years ago. And 7 after I got to the University of Minnesota, I 8 have done a number of projects working with it. 9 So to give an overview of MovieLens, 10 people come to MovieLens and they are able to 11 enter ratings of movies, like think of it on a 12 scale of 1 to 5 of movies, and then, based on 13 that, the system is able to give them 14 recommendations of other movies that match their 15 interests that they may like. 16 But, in addition to that, we have 17 added and experimentally tried out many features 18 over the years, including ways for people to 19 associate tags with movies, you know, keyword 20 tags, and then search for movies that have 21 certain tags. 22 We also allowed people to search for

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29 1 movies using movie metadata, like the movie 2 rating or who the director was or what actor had 3 been in it. We tried out many other features, 4 and some of them stuck around, some of them 5 didn't, like adding the ability for users to 6 enter reviews of movies, so ... 7 So there was a lot of features that 8 have been included in MovieLens over the years, 9 but I think that gave you a highlight of the 10 core features as well as some of the other 11 things that have been added on. 12 Q And so you said that your colleagues 13 had started this before you came to the 14 University of Minnesota, right? 15 A That's correct, the original system, 16 yes. 17 Q Have you ever written a code for a 18 computer search system yourself? 19 A I'm sorry, you asked have I ever 20 written code for -- 21 Q Code for a search system. 22 A Yeah. Particularly while I was at	31 1 paragraph 7 of your '139 declaration? 2 (Witness reviewing document.) 3 A Yes, yes. 4 Q Let's look to paragraph 25 on page 18 5 of your '139 declaration. 6 A Okay. 7 Q You say here that "The '139 patent 8 generally relates to incremental (i.e., 9 character-by-character) searching where search 10 results are displayed as the user types their 11 search query, rather than waiting for the user 12 to complete their query and press the 'Enter' 13 key or click a search button, as in a delimited 14 search." 15 Is this statement consistent with 16 your understanding of incremental search as 17 described in the '035, '139 and '490 patents? 18 A Yes. 19 Q Have you ever designed or coded a 20 computer search system that performs incremental 21 searches? 22 A Not that I recall.
30 1 AT&T Labs, our -- I wrote either wholly or in 2 part code for our systems that searched the 3 Internet to find websites that were relevant to 4 a particular topic and we would search -- we 5 essentially wrote our search engine that would 6 do the searching and indexing of those sites 7 based on a combination of the links between 8 sites as well as keywords in the websites. 9 And, again, for those systems then, 10 once we had created a database of that 11 information on our servers, we made it possible 12 for users to access that information through a 13 web-based user interface. And in that web-based 14 user interface, people could search for websites 15 that they are interested in using our database. 16 And I would have written some or all of the code 17 for that aspect as well. 18 Q For the actual searching? 19 A For the searching that users did, 20 yeah. 21 Q And is -- what you just described, is 22 that the project that you describe in	32 1 Q Sorry to make you flip again, but I 2 would like to go to your CV again, starting at 3 the bottom of page 145 of your '139 declaration, 4 and this is in Appendix A, your CV. 5 A Okay. 6 Q This is -- at least a list of your 7 publications begins at the bottom of page 145 8 and continues through the top of page 155. So 9 this is a significant number of publications. 10 Are any of these publications 11 directed to the design of computer search 12 systems? 13 MR. THACKER: Objection. Form. 14 A Well, as you said, there is ten pages 15 here I guess. So -- 16 Q If you don't know off the top of your 17 head, that's fine. 18 A No, the answer certainly is yes 19 because, at the very least, the systems that I 20 was describing generally and alluding to in 21 paragraph 7 of my declaration that you pointed 22 me to would be listed here. I would have to

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33 1 scroll back and find those, and then that would 2 be straightforward, but then I would have to 3 remind myself of other citations to see which 4 ones had to do with search systems. 5 Q Okay. Understood. So without going 6 through and identifying individually, your 7 understanding is that there are a number of 8 publications here that relate to search systems? 9 A Yes. 10 Q Are any of them related to search 11 systems that perform searches incrementally? 12 MR. THACKER: Objection. Form. 13 A Well, it depends on what you mean by 14 "related." Some of the -- some of my papers 15 might have at least referred to and described 16 that technique even if they may not have been 17 implementing it, but -- in that sense they could 18 have been related to it, but I don't know. I 19 would have to refresh my memory. 20 Q Okay. Understood. So let's look at 21 one. I'm just going to -- I'm not going to go 22 through every one of your articles. Let's just	35 1 A Yes, that's right. 2 Q And you recognize this article? 3 A Yes. 4 Q And you're one of the authors of this 5 article? 6 A Yes. 7 Q And the publication date of this 8 article is 2007; is that correct? 9 A Yes. 10 Q If you could turn to page 6 of the 11 PDF -- and you'll have to go to the PDF page 6. 12 There are no numbers on these pages. 13 A Okay. 14 Q Okay. And on page 6 there is a 15 paragraph with the heading "Text similarity." 16 Do you see that? 17 A Yes. 18 Q And here the reference reads, "The 19 text similarity recommender creates a keyword 20 query by concatenating the titles of articles in 21 the user's profile and removing stop words. It 22 uses MySQL 4.1's built-in full-text search
34 1 pull one of them up. 2 So if you look in the exhibit 3 repository, I'm looking for -- the title is 4 "Terveen SuggestBot." So if you could pull that 5 document up. 6 A Okay. Let's see. I clicked on it. 7 I'm not sure if that downloads it or if 8 something else happened. Okay, let me try again 9 here. SuggestBot, okay. 10 DR. LAROCHELLE: And for the 11 transcript, this is an article titled, 12 "SuggestBot: Using Intelligent Task Routing to 13 Help People Find Work in Wikipedia." 14 A Okay, I've got it open. 15 Q And for further reference, this is 16 listed as -- and you can confirm if you would 17 like. This is reference number 94, which 18 appears on page 151 of your CV as attached to 19 the '139 declaration. 20 A Let's see. What is the number again, 21 just to make sure I've got that right? 22 Q Sure, 94.	36 1 against the full text of articles to retrieve a 2 list of recommended titles. We chose this text 3 search engine mainly for convenience." 4 And then the last sentence of this 5 section says, "To improve performance, we built 6 a reduced version of the index, eliminating 7 common and very uncommon terms, and used article 8 titles as queries instead of the full text of 9 articles." 10 Do you see that? 11 A Yes. 12 Q In what way did reducing the size of 13 the index improve performance? 14 MR. THACKER: Objection. Form. 15 A Let's see. Well, the -- it simply 16 reduces the size of the number of terms you have 17 to search for, just as it says here, by 18 "eliminating common and very uncommon terms." 19 So the idea is that searching for 20 terms that are very, very common doesn't really 21 distinguish one article from another because 22 they are likely to occur in many, many articles

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37 1 of all types. And searching for very uncommon 2 terms isn't likely to get you much. So by 3 eliminating both common and very uncommon terms, 4 you produce a smaller index, which thus means 5 you have -- your index is smaller, which means 6 you don't have as much to search through. 7 Q So the size of the index is related 8 to the speed of the search? Is that what you're 9 saying? 10 A It can be -- 11 MR. THACKER: Object to the form. 12 A -- yes. It can be. And in this 13 case, I have to admit, I guess this was 18 years 14 ago. And, you know, as we say here, MediaWiki 15 uses MySQL to do the -- to do the searching. 16 And I don't recall the details of how its 17 indexing worked or -- yeah, I don't recall the 18 specifics of how its index worked and, 19 therefore, why this particular thing would have 20 made the searching more index -- or more 21 efficient in the MySQL 4.1 system. Yeah, I just 22 don't recall those details at this point.	39 1 lead to little or no increase in search time. 2 So, you know, there are factors that 3 you would have to consider to really answer that 4 question precisely. 5 Q So I asked about the amount of memory 6 that is used, and your answer -- sorry, I'm 7 looking at the realtime. Your answer was about 8 increasing the time to search, and so I just 9 want to make sure you understand the question 10 that I'm asking. Talking about RAM, like 11 computer memory, increasing the size of the 12 index, you would agree that that increases the 13 amount of memory used; is that right? 14 A Yes. I'm sorry I misunderstood your 15 question. Literally, if you add more 16 information, you will be taking more memory. So 17 yes, that is accurate. 18 Q So -- and we agree that this article 19 was written in -- this was 2007, right? 20 A Yes. 21 Q So in 2007 you recognize that the 22 size of the index was important to performance
38 1 Q But you would agree that, in general, 2 increasing the size of an index would make a 3 search system slower? 4 MR. THACKER: Objection. Form. 5 A It depends on how you're using the 6 index and the type of index, but, for example, 7 if you would be using an index that indexed 8 words to documents that they occurred and if you 9 had to, for example, search that index step by 10 step linearly, then making the index smaller 11 would be more efficient, in general. 12 Q Would you also agree that increasing 13 the size of an index increases the amount of 14 memory that is used? 15 MR. THACKER: Objection. Form. 16 A Well, assuming -- with the assumption 17 that you hold everything else equal, that you 18 have an index and you simply make that index 19 larger, it could increase the time it took to 20 search it, but it would also depend on how that 21 index is structured. So there could be 22 increases in size that you would make that would	40 1 of the system; is that right? 2 MR. THACKER: Objection. Form. 3 A Well, as -- I mean, just as -- to be 4 careful, just as we wrote in this article, "To 5 improve performance, we built a reduced version 6 of the index, which eliminated common and very 7 uncommon terms." So we did reduce the size of 8 the index and we said that this improved 9 performance. 10 Q You can close that document. I don't 11 think we'll return to that. 12 Going back to your CV, starting at 13 page 157 in the '139 declaration, you have a 14 number of patents listed here. Do you see that? 15 A Yes. 16 Q And these are all patents that you 17 are a named inventor on; is that right? 18 A That's correct. 19 Q Are any of these patents directed to 20 search systems? 21 MR. THACKER: Objection. Form. 22 A Well, I guess we spoke earlier about

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41 1 work I did at AT&T on the web search system or 2 web search systems that I worked on, and I think 3 the -- two of these patents directly relate to 4 that. They would be 6,029,192, "System and 5 method for locating resources on a network using 6 resource evaluations derived from electronic 7 messages," and then 6,256,648, "System and 8 method for selecting and displaying hyperlinked 9 information resources." 10 So those related to the systems that 11 I alluded to in paragraph 7 of my declaration. 12 And I don't recall the details of some of these 13 other patents as well to know if they might have 14 touched on search systems. 15 Q Understood. 16 Okay. I'd like to now flip back to 17 the body of your declaration all the way back to 18 paragraph 30. It is on page 21. Just let me 19 know when you get there. 20 A Okay. 21 Q In paragraph 30 you provide your 22 opinion as to the level of ordinary skill in the	43 1 the '139 Haeberli declaration if you would like 2 to pull that up, and I -- somewhere I have -- 3 sorry, I did not write down what paragraph you 4 can look at. Just give me a sec. 5 MR. THACKER: It's paragraph 26, I 6 believe. 7 DR. LAROCHELLE: Thank you. 8 Q So paragraph 26 in the '139 Haeberli 9 declaration is where -- well, that's where it 10 starts. So the actual opinion about the level 11 of skill is in paragraph 29 of the Haeberli 12 declaration. And so could you just take a 13 minute and review that and let me know when 14 you're ready for a question. 15 (Witness reviewing document.) 16 A Okay. 17 Q Okay. And are you also aware that 18 the panel in its institution decision adopted 19 Mr. Haeberli's definition of a POSITA? 20 A I do not recall that. 21 Q If you would like, you can review the 22 institution decision, which is also in the
42 1 art; is that right? 2 A Yes. 3 Q And just for clarity, you provide the 4 same level of skill for all three of your 5 declarations across the three IPRs; is that 6 right? 7 A Yes. 8 Q Now, you told me earlier that you 9 reviewed Mr. Haeberli's declaration in the 10 support of X1's patent owner preliminary 11 response. Do you remember that? 12 A Yes. 13 Q And so you're aware that X1's expert, 14 Mr. Haeberli, provided a different opinion as to 15 the level of skill of a POSITA; is that right? 16 MR. THACKER: Objection to form. 17 A I don't recall what his definition 18 was. 19 (Microsoft Exhibit 2001 previously 20 marked for identification and attached to the 21 transcript.) 22 Q Okay. So in the repository I have	44 1 repository, the '139 institution decision. 2 A Okay. Is there a particular 3 paragraph I should look at or are you just 4 asking -- 5 Q Yes, I'm going to give you a page 6 number. 7 A Page number, yeah. 8 Q Give me a sec and I'll give you a 9 page number. So page 8. 10 A Okay. 11 Q It says, "We find Mr. Haeberli's 12 formulation to be consistent with the evidence 13 of record at this stage at this stage in the 14 proceeding ... We adopt and apply that 15 definition for the purposes of this Decision." 16 A Okay, I see that. 17 Q Do you agree with Mr. Haeberli's 18 definition? 19 A Well, I see what Mr. Haeberli wrote 20 in paragraph 31 of his report, where he says, "I 21 believe Dr. Terveen's definition is not 22 meaningfully different from my definition of a

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45 1 POSITA. My opinion would not change regardless 2 of which definition of POSITA is applied." 3 And I would say, analogously, I 4 believe his definition is not meaningfully 5 different from mine and my opinions would not 6 change regardless of whether I applied my 7 definition or Mr. Haerberli's definition. 8 Q Okay, perfect. And are you a POSITA 9 under Microsoft's definition of a POSITA, your 10 definition? 11 A Yes. 12 Q And you were at the time of the 13 invention as well, correct? 14 A Yes. 15 Q And is the same true under X1's 16 definition? 17 A Yes. 18 Q Okay. Were you familiar with the 19 patent owner, X1 Discovery, prior to your work 20 on these IPRs? 21 A Not that I recall. 22 Q So prior to your work on these IPRs,	47 1 evidence. And so that was the article titled, 2 "SuggestBot: Using Intelligence Task Routing to 3 Help People Find Work in Wikipedia," and should 4 be marked as Exhibit 1 to the deposition. 5 (Terveen Exhibit 1 marked for 6 identification and attached to the transcript.) 7 BY DR. LAROCHELLE: 8 Q Okay. With that cleared up, I'd like 9 to enter into the deposition the three patents, 10 the '139, '035 and '490 patent, and I will focus 11 primarily on the '139 patent. So you can 12 download that one and have it open. And each of 13 these patents is Exhibit 1001 to its respective 14 IPR proceeding. 15 (Microsoft Exhibit 1001 previously 16 marked for identification and attached to the 17 transcript.) 18 Q Just let me know when you have the 19 '139 patent up. 20 A Okay. I've got it up. 21 Q Okay. And you said -- you told me 22 earlier that you reviewed the patents in
46 1 you had never used the X1 search software? 2 A Not that I recall. 3 Q Have you used the X1 search software 4 since starting your work on these IPRs? 5 A I don't think I have. 6 DR. LAROCHELLE: Okay. I would like 7 to -- well, let me ask. I'm going to switch 8 gears a little bit here so if you want to take a 9 break now, this might be a good time. 10 THE WITNESS: Sure, that's fine. 11 DR. LAROCHELLE: Five minutes, ten 12 minutes? What do you like? Five minutes? 13 THE WITNESS: Five minutes is good. 14 DR. LAROCHELLE: Okay, great. Let's 15 take a five-minute break. 16 (A recess was taken.) 17 DR. LAROCHELLE: I have one point to 18 clean up. I neglected to mark the one exhibit 19 that is not already in evidence in the IPR. And 20 so the SuggestBot article that I asked 21 Dr. Terveen about should be marked as Exhibit 1 22 to this deposition as that is not yet in	48 1 preparation for your deposition? 2 A Yes. 3 Q All right. I'm looking back. Give 4 me just a second. 5 So earlier I asked you about 6 paragraph 25 of your '139 declaration where you 7 describe the incremental search. Do you 8 remember that? 9 A Yes. 10 Q And you agreed that the description 11 you give here is consistent with how the patents 12 describe incremental search. Do you remember 13 that? 14 A Yes. 15 MR. THACKER: Objection. Form. 16 A I do remember that. 17 Q Okay. And so just to refresh our 18 memory, what you say here is that the "search 19 results are displayed as the user types their 20 search query, rather than waiting for the user 21 to complete the query." 22 And so you would agree, based on this

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49 1 understanding of incremental search, that if a 2 search takes a long time to return results so 3 that the user is able to enter additional 4 characters before they get search results, that 5 search is no longer incremental. Would you 6 agree with that? 7 MR. THACKER: Objection to form. 8 A Could you ask that again. That got 9 kind of -- 10 Q Absolutely. 11 A -- complicated. 12 Q Yeah, there is a lot going on there. 13 So let's say a user is typing and is 14 able to type in many characters before any 15 search results are returned so that you're not 16 getting search results with each character. 17 That is no longer incremental search. Would you 18 agree with that? 19 MR. THACKER: Objection. Form. 20 A I think I'm trying to understand what 21 you're describing, the situation you're 22 describing. Are you saying that if the system	51 1 can't keep up, that it still is incremental 2 search even if it's not performing 3 incrementally? 4 MR. THACKER: Objection. Form. 5 A Well, I think I would -- I think at 6 this point I would have to be careful and look 7 at how the patent describes incremental search 8 specifically to see whether this kind of 9 situation would tip the system over a boundary 10 into not being incremental search or not. 11 Q In paragraph 33 of your '139 12 declaration, you state that "Incremental 13 searching was well-known long before the 14 patent's alleged 2002 priority date." 15 Do you see that? 16 A Yes. 17 Q So I'm trying to understand why you 18 feel that you need to see what the patent says 19 if incremental search was so well-known? 20 MR. THACKER: Objection. Form. 21 A Well, when you asked whether a system 22 that can't keep up with character-by-character
50 1 is too slow to keep up with the typing character 2 by character -- 3 Q Sure. Yes. 4 A -- it's no longer incremental search? 5 I think that's -- it's a little hard 6 for me to know how to answer that because one 7 could see this as a case where you have a bad 8 implementation or maybe it is running on slow 9 hardware and if you just ran the same code on 10 faster hardware, it would keep up. And so I 11 don't know how to describe that situation as to 12 whether it is or is not incremental search. You 13 could say it is intended to be incremental 14 search, but the engineering of the system is 15 such that it can't quite keep up, and so it is 16 sort of incremental search. 17 So I think it is just hard to answer 18 that question in such a black-and-white term -- 19 terminology. 20 Q So -- I'm trying to understand your 21 response here. Are you saying that if it is 22 intended to be incremental search but the system	52 1 typing is not incremental search, I think to 2 answer that carefully would require first 3 knowing are you talking about incremental search 4 as the patent defines it or are you talking 5 about the general notion of incremental search 6 as was well-known in the prior art. 7 And then I think the complicated 8 thing is I could have a system that does 9 incremental search and it works perfectly fine, 10 and then if my system lags because there's other 11 jobs running and it doesn't keep up, instead of 12 giving results back after one character is 13 typed, it takes two or three before it can catch 14 up, it would be hard to say that that's not 15 incremental search because of that even 16 temporary, perhaps, performance issue. 17 So I think the way you phrased the 18 question or even -- yeah, the way that question 19 is phrased, it is just hard to answer it. 20 Q Okay. So while you have the '139 21 patent up, let's just look at claim 1 for a 22 moment --

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53 1 A Okay. 2 Q -- if you could flip to claim 1. 3 A Uh-huh. 4 Q Let's make sure that we have the same 5 understanding of the scope of claim 1 before I 6 ask you specific questions. So claim 1 is 7 directed to a method of performing a search, 8 right? 9 A Yes. 10 Q And that method involves receiving a 11 first and a second partial search string in one 12 search field. Would you agree with that? 13 A Yes. 14 Q And those partial search strings must 15 be separated by a string separator character? 16 A Yes. 17 Q And then the system, the search 18 system searches a set of documents to identify 19 documents that contain both of the search 20 strings. Is that correct in your understanding? 21 MR. THACKER: Objection. Form. 22 A Let's see. You -- I mean, you sort	55 1 DR. LAROCHELLE: Strike that. I'm 2 not going to ask that question. Let's move on. 3 Q So I have one question about claim 4 construction before we get into your grounds. 5 And that is in claim 1 we talked about how the 6 first and second partial search strings need to 7 be separated by a string separator character. 8 Do you remember that? 9 A Yes. I see that. 10 Q And in your '139 declaration at 11 paragraph 52 -- 12 A 52, did you say? 13 Q Yes, paragraph 52. 14 A Okay. 15 Q So paragraph 52 is in your Claim 16 Construction section, and you say that you 17 "apply the plain and ordinary meaning of all 18 claim terms" in this declaration; is that right? 19 A Yes. 20 Q Okay. And so then if you turn to 21 paragraph 80 of your '139 declaration, at the 22 end of paragraph 80 -- are you there?
54 1 of summarized the last number of limitations -- 2 Q Yeah. 3 A -- but it is accurate to say that the 4 system is going to search a set of documents to 5 find search results, and the search results will 6 ultimately include documents that satisfy -- 7 that include both the first partial search 8 string and the second partial search string. 9 Q And the search results are updated 10 incrementally or as each successive character is 11 received. Is that your understanding? 12 A Yes. There is a limitation that 13 says, "updating the search results of each 14 successive character of the first partial search 15 string and the second partial search string is 16 received." 17 Q Okay. So -- and the other patents 18 have similar -- not identical, but similar 19 limitations -- there may be some slight 20 differences in language, locating, identifying 21 documents, but would you agree that, generally 22 speaking, the method of claim 1 --	56 1 A Yes. 2 Q Okay. At the end of paragraph 80, 3 you say -- it's the very end of the paragraph. 4 You say, "separated by a string separator 5 character (e.g., a comma and/or a Boolean AND 6 operator)." 7 Do you see that? 8 A Yes. 9 Q So here is it your opinion, as stated 10 here, that a Boolean AND operator is a string 11 separator character? 12 A Well, I think I -- let me just check. 13 I think I write about that in my declaration so 14 I wanted to just verify what I said about that. 15 Q Take your time. 16 (Witness reviewing document.) 17 A So my opinion is, clearly, it's an 18 obviousness opinion, so it's based on the 19 teaching of the prior art. And so if I -- what 20 the prior art shows expressly is the use of a 21 comma as a string separator character and the 22 Boolean AND operator. And I think I talk a bit

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57 1 later in my declaration that the Boolean AND 2 operator is often implemented with a single 3 character, such as the plus sign, and so -- for 4 example, the plus sign. 5 And so it would be obvious to a 6 person of ordinary skill in the art that the 7 Boolean AND operator could be a single character 8 like the plus sign. So I think that's what I 9 was getting at here in, I guess, a somewhat 10 telegraphic way of conveying that. 11 Q Okay. So but I'm asking you about 12 claim construction and the interpretation of the 13 specific term "string separator character." I'm 14 not asking you about your obviousness opinion. 15 Do you understand that? 16 A Yes. 17 Q Okay. And so in terms of construing 18 the claim "string separator character," is it 19 your opinion that the Boolean AND operator, the 20 word "AND," is a string separator character? 21 MR. THACKER: Objection. Form. 22 A Well, I made it clear, I think -- a	59 1 just wrote -- or what I just read. 2 Q Okay. Is this still your opinion 3 today? 4 A Yes. 5 Q And are you aware that in the 6 institution decision the panel provided a 7 construction of string separator character? 8 A I did not recall that right offhand. 9 Q Okay. If you still have that open, 10 the '139 institution decision at page 10 is 11 where you will find the panel's discussion of 12 claim construction. 13 A Okay. 14 Q Okay. And this is -- the end of 15 their analysis is on page 10, so the last 16 paragraph before the subsection C. "We 17 determine that the only term we need to 18 expressly construe at this stage of the 19 proceeding is the term 'string separator 20 character.' For the purposes of this Decision, 21 we preliminarily construe this term to mean 'a 22 single-character string separator.'"
58 1 little bit more clear in the next paragraph 2 where I'm saying, "To the extent the Boolean AND 3 operator is not consider a string separator 4 character (which I don't agree with), it would 5 have been obvious to a POSITA when implementing 6 Raskin's teachings to perform the search 7 incrementally to use a single-character string 8 character instead of the three-character Boolean 9 AND operator." 10 So -- I mean, so that's the basis of 11 my opinion right there. So I wasn't trying 12 to -- you know, as I said, I'm using the plain 13 and ordinary meaning of the claim terms for my 14 opinions. 15 Q Okay. And so at the time you drafted 16 this declaration, your opinion was that the 17 plain and ordinary meaning of string separator 18 character encompassed the three-letter A-N-D 19 Boolean AND operator; is that correct? 20 MR. THACKER: Objection to form. 21 A I mean, I'm just going to stay with 22 what I wrote in my declaration, including what I	60 1 Do you see that? 2 A Yes. 3 Q Do you agree with the panel's 4 construction? 5 A Well, I note it is their preliminary 6 construction. "The parties are invited to 7 address it in future briefing." But I have -- I 8 don't disagree with it. And my opinion, as I 9 said, is consistent with that because I show 10 that the prior art that I rely on for my opinion 11 does teach a -- as the board put it, "a 12 single-character string separator." 13 Q Right. And, again, I think that 14 you're leaning back on your obviousness opinion, 15 whereas I really wanted to focus on the 16 construction issue, but I think as I -- I think 17 I understand your answer. So we can move on 18 from that. 19 So I'd like to ask you some questions 20 about your opinion that you present for -- we'll 21 start with Ground 1. And in Ground 1, for each 22 of the three IPRs, the basis of your Ground 1

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61 1 combination is a set of two Lotus Note 2 references, Raskin and Wu. 3 Does that ring a bell for you? 4 A Yes. 5 Q So let's start with claims 4 and 5 of 6 the '139 patent and your opinion on obviousness 7 under Ground 1. 8 So do you still have the '139 patent 9 up? 10 A I'm sure I do. Let me find the 11 window. Yes. Yes, I've got it. 12 Q And so I'm going to ask you some 13 questions about claims 4 and 5. And let's start 14 with claim 3 because claim 4 depends from 15 claim 3. So claim 3 says, "The method of 16 claim 1, further comprising displaying in a user 17 interface an indication of the identified one or 18 more documents included in the first one or more 19 documents and the second one or more documents." 20 And then claim 4 says, "The method of 21 claim 3, further comprising displaying via the 22 user interface a portion of the selected	63 1 of the text between the searched strings." 2 So based on this sentence, is it 3 correct to say that your opinion is that you're 4 relying only on disclosures from the Lotus Notes 5 references and not disclosures from Raskin or Wu 6 to meet claims 4 and 5? 7 MR. THACKER: Objection. Form. 8 A Well, I -- claims 4 and 5 depend on 9 claim 3 which depends on claim 1. And so I used 10 the Lotus Notes+Raskin+Wu combination for the 11 independent claim, claim 1, so obviously all the 12 dependent claims are still using the same 13 combination. 14 Q Understood. So before the additional 15 limitations found in claims 4 and 5, you only 16 rely on Lotus Notes references for that; is that 17 right? 18 A Just looking in my paragraph 97 here, 19 I'm only referring -- I say that "The Lotus 20 Notes+Raskin+Wu combination renders these claims 21 obvious at least because the Lotus Notes 22 references disclose displaying," et cetera.
62 1 identified document." 2 And then claim 5 further depends 3 from 4, "further comprising highlighting a 4 plurality of occurrences of the first and second 5 partial search strings in the selected document 6 while not highlighting portions of the text 7 between occurrences of the first and second 8 partial strings in the selected documents." 9 Does that refresh your recollection 10 as to what these claims are directed to? 11 A These dependent claims, yes, it does. 12 Q Okay. And so in your '139 13 declaration, you address claims 4 and 5 for 14 Ground 1 at paragraph 97. And that's on page 62 15 of your '139 declaration. 16 A Okay. 17 Q So in paragraph 97, you say, "The 18 Lotus Notes+Raskin+Wu combination renders these 19 claims obvious at least because the Lotus Notes 20 references disclose displaying a portion of the 21 selected document and highlighting occurrences 22 of only one of the searched strings and not any	64 1 So I'm only referring to the Lotus 2 Notes references for the additional limitations 3 of claims 4 and 5 in this paragraph. 4 Q Okay. And in this sentence you say, 5 "at least because the Lotus Notes references 6 disclose" -- 7 DR. LAROCHELLE: Actually, strike 8 that. I already asked you that. 9 (Microsoft Exhibit 1059 previously 10 marked for identification and attached to the 11 transcript.) 12 (Microsoft Exhibit 1061 previously 13 marked for identification and attached to the 14 transcript.) 15 Q Let's actually look at the two Lotus 16 Notes references. So those are in the 17 repository. These are Microsoft's Exhibits 1059 18 and 1061 in each of the three proceedings, and 19 1059 is the Wilcox reference, 1061 is the 20 Londergan reference. And they should both be in 21 the repository, if you look under "Londergan" 22 and "Wilcox."

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65 1 A Okay. I've found them and I'm 2 downloading now. 3 Q Okay. 4 And when you have them, we'll start 5 with 1059, which is the Wilcox reference. 6 A Sorry, something happened, and it 7 didn't download. Let me try again. 8 Q Take your time and just let me know 9 when you have it. 10 (Pause) 11 A I have got a lot of windows open here 12 so -- okay, I have got both of those files open. 13 Which one did you say to start with? 14 Q Let's start with Wilcox, 1059. 15 A Okay. 16 Q And so I want to look at the 17 citations that you provide as support for your 18 opinion here. So for Exhibit 1059 you point to 19 page 164. Let's -- sorry, now I don't have it 20 open. 21 A Okay. 22 Q Okay. So on page 164 the text that	67 1 my citations here are talking about the general 2 teachings of the Lotus Notes references, both 3 Wilcox and Londergan. And so, you know, my 4 opinion is based on what a person of ordinary 5 skill in the art would understand the teachings 6 of the Lotus Notes references to be in general 7 and in combination. 8 So that, I think, is the foundation 9 for my opinion rather than any particular 10 implementation within either Wilcox or 11 Londergan. 12 Q So you said "what a person of 13 ordinary skill in the art would understand the 14 teachings ... to be in general and in 15 combination." 16 Where do you find teachings in Wilcox 17 that disclose this limitation, "displaying via 18 the user interface a portion of a selected 19 identified document"? 20 MR. THACKER: Objection. Form. 21 A Well, for starters, I do not recall 22 everything in my declaration, and so I would
66 1 you quote appears, I believe, in point number 7. 2 Is that right? 3 A Yes. 4 Q And so point number 7 says -- I'm 5 going to read the full paragraph 7 since you 6 only quoted part of it. Paragraph 7 here 7 starts, "Open the first document listed in the 8 view. The found text Full time is indicated by 9 a red box," and that's the portion that you 10 quoted here. 11 So would you agree that in order to 12 view the document and see the highlighting or 13 the red box, you have to actually open the 14 document, according to Wilcox? 15 Would you agree with that? 16 A Yes, that's the express disclosure in 17 Wilcox. 18 Q Okay. And so where in this 19 disclosure do you find the limitation for claim 20 4, which is, "displaying via the user interface 21 a portion of a selected identified document"? 22 A Well, I think, if you go on, all of	68 1 have to review to see more of what I wrote. And 2 so -- actually, and then can you ask that 3 question again. I think I will be able to 4 answer it better if I have that specific 5 question in mind. 6 Q Sure. And just to be clear, your 7 entire opinion about claims 4 and 5 under 8 Ground 1 appears within paragraph 97; is that 9 right? 10 A Well, with the proviso that obviously 11 since it is 4 and 5, 5 depends on 4, 4 depends 12 on 3 and 3 depends on 1, I guess, that, you 13 know, all of my opinions from the claims that 14 they depend on also do apply here. 15 DR. LAROCHELLE: Okay. So let me 16 rephrase. 17 Q So all of your opinions as to the 18 unique limitations added by claims 4 and 5 are 19 contained within paragraph 97? 20 A Yes. 21 Q Okay. All right. So let me repeat 22 my question for you from before.

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69 1 Where do you find teachings in Wilcox 2 that disclose the limitation in claim 4, 3 "displaying via the user interface a portion of 4 a selected identified document"? 5 A Well, I think the answer is I didn't 6 cite to Wilcox for that. So if I look at -- if 7 I look at the top of page 63, which is still in 8 paragraph 97, I cite to -- let me just make sure 9 I've got the numbers right. I cite to Londergan 10 and say to -- and I give the quotation from 11 Londergan. "Notes shows you the document and 12 highlights the text that you want to find." 13 So for the Lotus Notes -- again, for 14 the Lotus Notes combination, I was here 15 referring to Londergan. 16 Q Okay. So let's actually open up 17 Londergan, which is Microsoft's Exhibit 1061 to 18 each of these IPRs, and let's turn to the pages 19 that you cite, which are 145 and 146, correct? 20 A Yes. 21 Q And I believe that the portion that 22 you quote here that you just read actually	71 1 highlights. Would you agree with that? 2 A That's what this express disclosure 3 says. And, again, as I've mentioned, you know, 4 my opinion is based on what would be obvious to 5 a person of ordinary skill in the art based on 6 these disclosures. 7 Q Okay. So, to be clear, you agree 8 that Londergan does not expressly disclose 9 displaying a portion of a selected document in 10 the user interface? 11 MR. THACKER: Objection. Form. 12 A I'm not sure I understood that. 13 Londergan -- 14 Q Does not expressly disclose 15 displaying a portion of a selected document in 16 the user interface. 17 A Well, if Londergan discloses that a 18 user can open a document from a search and then 19 it gets displayed in the user interface -- I'm 20 not sure if I'm understanding what you're 21 getting at, but yeah. Certainly users can, as 22 it says -- as Londergan says, users, or you, can
70 1 appears on page 146. 2 A Okay. I'm still getting there. 3 Q Yeah, take your time. Let me know 4 when you're there. 5 A Okay. I'm looking at 145 now, and 6 then I can move -- 7 Q Yeah, let's go to 146 because I think 8 that's where your quoted text actually appears. 9 A Okay. 10 Q And so where I'm looking is in the 11 paragraph that begins with "You open a 12 document." 13 A Okay. 14 Q Okay. "You open a document uncovered 15 by a search the same way you would open any 16 other document: Double-click it or select it 17 with your mouse and press Enter. Notes then 18 shows you the document and highlights the text 19 that you wanted to find." 20 So you would agree that this 21 disclosure also indicates that you need to open 22 the document to see the document and to see the	72 1 "open a document uncovered by a search the same 2 way you open any other document." And then it 3 would be -- "Then Notes shows you the document 4 and highlights the text that you wanted to 5 find." 6 Q Sorry, I'm looking at the realtime. 7 I want to make sure I get clear exactly what you 8 said. 9 So previously I asked you, "You would 10 agree that this disclosure indicates that you 11 need to open the document to see the document 12 and see the highlights. Would you agree with 13 that?" And you said, "That is what this express 14 disclosure says. And, again, as I've mentioned, 15 you know, my opinion is based on what would be 16 obvious to a person of ordinary skill in the art 17 based on these disclosures." 18 Do you remember that? 19 A Yes. 20 Q Okay. So we agree that in order to 21 view the document and the highlights, you need 22 to actually open the document, correct?

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73 1 MR. THACKER: Objection to form. 2 A That is the direct or express 3 disclosure in Londergan. And, again, since my 4 opinion is an obviousness argument, as I say 5 explicitly, I – in the first sentence in 6 paragraph 97, I say what would be obvious to a 7 person of ordinary skill in the art based on 8 Lotus Notes references. 9 Q Okay. And so then let's look at that 10 last sentence of this paragraph. You say, 11 "Moreover, a POSITA would have understood or at 12 least found it obvious to highlight a plurality 13 of occurrences of the search strings to point 14 the user to more relevant portions of the 15 document." 16 So when you say "a POSITA would have 17 understood or found it obvious," and then you 18 end with "as was well-known in the art," so when 19 you say "as was well-known in the art," you're 20 talking about the knowledge of a POSITA as of 21 the time of invention? 22 MR. THACKER: Objection. Form.	75 1 quite right. So the first sentence says that 2 "The Lotus Notes+Raskin+Wu combination renders 3 these claims obvious at least because the Lotus 4 Notes references disclose displaying a portion 5 of a selected document and highlighting 6 occurrences of only the searched strings and not 7 only the text between the searched strings." 8 So that's saying that this is -- 9 these claims are obvious based on Lotus Notes. 10 And then the last sentence, "Moreover, a POSITA 11 would have understood or at least found it 12 obvious to highlight a plurality of occurrences 13 of the search strings to point the user to more 14 (for example, all) of the relevant portions of 15 the document." I'm saying that that was 16 well-known in the art so that would be obvious 17 based on the knowledge of a POSITA. 18 Q Okay, right. So I'm going to repeat 19 my question. To the extent this limitation is 20 not expressly disclosed in the Lotus Notes 21 references, you're relying on knowledge of a 22 POSITA to meet the limitation; is that correct?
74 1 A Yes. That sentence says, "a POSITA 2 would have understood or at least found it 3 obvious to highlight a plurality of occurrences 4 of the search strings to point the user to more 5 (for example, all) of the relevant portions of 6 the document." 7 So I am saying that this would be 8 obvious to a POSITA based on their knowledge, 9 based on the knowledge of a POSITA. And then I 10 refer back to what was well-known in the art as 11 a way to substantiate the knowledge that a 12 POSITA would have. 13 Q Okay. So to the extent this 14 limitation is not expressly disclosed -- and 15 when I say "this limitation," I mean both of the 16 limitations in 4 and 5, displaying via the user 17 interface and highlighting. 18 So to the extent those limitations 19 are not expressly disclosed in the Lotus Notes 20 references, you're relying on the knowledge of a 21 POSITA to meet these limitations? 22 A Well, I say -- I think that's not	76 1 A Well, I'm saying it is obvious based 2 on the Lotus Notes references, and I'm saying it 3 is -- and that certainly is -- you know, 4 obviousness is always from the point of view of 5 a POSITA. 6 Q Okay. I'm trying to understand your 7 answer. I don't think that you're answering my 8 question. And I'm trying to think of a way to 9 rephrase this so that you can understand my 10 question. 11 So is it your opinion that the Lotus 12 Notes references expressly disclose the 13 limitations in both claims 4 and 5. Is that 14 your opinion? 15 A Let me just -- I'm going to give you 16 an answer to that based on reading the first 17 sentence of paragraph 97. I say, "The Lotus 18 Notes references disclose displaying a portion 19 of a selected document and highlighting 20 occurrences of only the searched strings and not 21 any of the text between the searched strings." 22 And that is -- what I say the Lotus

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77 1 Notes references disclose are the limitations of 2 claims 4 and 5, displaying a portion of a 3 selected identified document and highlighting 4 occurrences of only the searched strings and not 5 any of the text between them. So I'm saying 6 that the Lotus Notes references disclose 7 those -- disclose those limitations. That's 8 what my first sentence in paragraph 97 is 9 saying. 10 Q Okay. So, to be clear, your opinion 11 is that the Lotus Notes references expressly 12 disclose displaying via the user interface a 13 portion of a selected identified document. 14 MR. THACKER: Objection. Form. 15 A I am saying that the Lotus Notes 16 references disclose that, just as I wrote. 17 Q Okay. But we agreed earlier that the 18 references require you to double-click and open 19 the document before you can see any portion of 20 the document or the highlighting; is that right? 21 A The particular quote that we looked 22 at from Londergan described a particular express	79 1 Q Take your time. Before you dig into 2 that, do you reference that section in this 3 section -- paragraph 97 about claims 4 and 5? 4 A Let's see. 5 (Witness reviewing document.) 6 I -- let's see. I don't think so, 7 but, you know, my -- and I perhaps misspoke 8 before because obviously anything about my 9 combination of the Lotus Notes references and 10 the Lotus Notes references with Wu and Raskin 11 would apply here. You know that's the whole of 12 my opinion. So I -- so perhaps I need to 13 clarify that. But, in any case, I'm going to 14 take a look at what I wrote earlier. 15 (Witness reviewing document.) 16 Okay. I'm ready for you to ask your 17 question again. 18 Q Okay. So you -- can you tell me what 19 you reviewed just now, what paragraphs? 20 A I generally skimmed through -- 21 skimmed through from, let's see -- yeah, 22 generally skimmed through starting at paragraph
78 1 disclosure in the Lotus Notes references. And, 2 again, what I'm talking about in the first 3 sentence of paragraph 97 is what the Lotus Notes 4 references -- what the Lotus Notes references 5 collectively disclose. So I'm looking at the 6 teachings of the Lotus Notes references in 7 combination. 8 Q Okay. I understand that. So but I'm 9 just trying to understand where in those 10 references you find a disclosure of displaying 11 via the user interface a portion of the selected 12 identified document. And we looked at 13 everything that you cited in this paragraph, 14 which you also told me is the full opinion as to 15 the unique limitations of claims 4 and 5 in 16 Ground 1. So -- 17 A I have an earlier section where I 18 talk about my combination in general. So let me 19 review that and see if there is something there 20 that is, you know, the relevant background since 21 that is where I described the combination 22 generally. So I'm going to review that quickly.	80 1 55 and coming up to claims 4 and 5. 2 Q Okay. And so my question was where 3 in these references, meaning Wilcox and 4 Londergan, 1059 and 1061, where in those 5 references you find the disclosure of displaying 6 via the user interface a portion of the selected 7 identified document? 8 A Well, in -- so in paragraph '95, 9 which has to do with claim 3, I have 10 citations -- there is a citation that reads, 11 "Click Search and wait for the proper documents 12 to appear." There is another quote, "Notes 13 lists the documents that match your criteria in 14 order of their relevance," and then in paragraph 15 97 a quote that I had already included, "Notes 16 shows you the document and highlights the text 17 that you wanted to find." 18 So, collectively, what I'm saying is 19 Notes -- or, yeah, Lotus Notes expressly 20 discloses showing search results, a user can 21 select a search result to see the document and 22 have the text highlighted, and that based on

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81 1 these express teachings, it would be obvious to 2 a person of ordinary skill in the art to -- I 3 think what you're getting at -- automatically to 4 display via the user interface a portion of a 5 selected identified document and then highlight 6 the plurality of occurrences of the first and 7 second partial search strings. 8 And I think, again, that's -- to me, 9 that's exactly what I said in the first 10 paragraph of paragraph 97 -- excuse me, in the 11 first sentence of paragraph 97. 12 Q Okay. I want to be clear, though, 13 that you agree that Lotus Notes does not 14 expressly disclose displaying via the user 15 interface a portion of a selected identified 16 document. 17 A Correct. 18 Q I understand your opinion on 19 obviousness. I just want to -- I want to be 20 clear that you agree that there is no express 21 disclosure of this in the Lotus Notes 22 references.	83 1 and you address this in paragraphs 72 to 78 of 2 your '139 declaration. So could you flip -- 3 A Okay. 4 Q -- to paragraph 72, okay? 5 A Sure. 6 Q So in these paragraphs you talk about 7 motivation to combine the two Lotus Notes 8 references Raskin and Wu, correct? 9 A Yes. 10 Q And so first you talk -- in 11 paragraphs 73 and 74, you focus on combining the 12 two Lotus Notes references; is that right? 13 A Yes. 14 Q And in paragraph 74 you talk about 15 reasonable expectation of "success in combining 16 the two references' complementary teachings on 17 Lotus Notes' search functionality at least 18 because the references describe using the same 19 search tool (Lotus Notes' Search bar)." 20 Do you see that? 21 A Yes. 22 Q Okay. Now, when you say "Lotus
82 1 MR. THACKER: Objection. Form. 2 A Well, I think you're defining that a 3 little differently. Just to be clear, Lotus 4 Notes expressly discloses displaying a portion 5 of a selected document upon a user clicking on 6 it or selecting it. 7 Q Okay. So to open it. You have to 8 open the document to see the document. 9 A The user has to open it, which you 10 would open it by selecting it, by clicking on 11 it, yes. 12 DR. LAROCHELLE: Okay. I am going to 13 move to a new topic now, so I don't know if you 14 want to take a quick break and then we can 15 reconvene, since it's been about an hour? 16 THE WITNESS: Sure. Yeah, okay. 17 DR. LAROCHELLE: Let's take five 18 minutes. 19 (A recess was taken.) 20 BY DR. LAROCHELLE: 21 Q So I'd like to talk now about your 22 opinions on motivation to combine for ground 1.,	84 1 Notes' Search bar," what are you referring to 2 there? 3 A Let me just scroll back in my 4 description of Lotus Notes to be -- to give you 5 a clear definition of that. 6 Q Sure. And you're scrolling back 7 to -- 8 A Yeah, I'll tell you when I get there. 9 Q Thank you. 10 A I guess starting in 59 I say, "For 11 example, the Lotus Notes references disclose 12 search tools, a simple Search bar" -- and so 13 that is the first thing that I'm referring to. 14 And then in paragraph 60 I say, "For the simple 15 Search bar, the user enters multiple search 16 strings in the search field of the Search bar 17 and separates the search strings with a Boolean 18 AND operator." 19 And then I illustrate that with a 20 screen -- well, I guess on the top of page 44, 21 with screens from both Wilcox and Londergan. 22 Q Okay. And so, by my count, you've

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85 1 listed three different search functionalities or 2 tools, the simple Search bar, Query Builder and 3 Search Builder; is that right? 4 MR. THACKER: Objection. Form. 5 A I referred here to -- I'm not sure if 6 I always used the same term the "simple Search 7 bar" and then I referred to the Query Builder 8 and Search Builder. Those are the things that I 9 just pointed to so far. 10 Q And then just to kind of complete 11 this loop here, if you go to paragraph 62, you 12 say, "Lotus Notes also discloses searching 13 within specific fields, including title, 14 category, and/or body fields of the document, by 15 selecting the 'Form' button." So that is a 16 fourth type of search functionality in the Lotus 17 Notes references, correct? 18 MR. THACKER: Objection to form. 19 A Let's see. Let me just take a look 20 at that. 21 I'm going to just quickly review the 22 citations that I included in paragraph 62,	87 1 And you would still create a query 2 that is instanti- -- or that shows up in the 3 Search bar. So I just wanted to clarify that. 4 Q Noted. 5 Okay. But you would agree that the 6 simple Search bar, as you call it, is a separate 7 search functionality from the more advanced 8 Query Builder and Search Builder 9 functionalities, correct? 10 A Those are all -- the Search bar and 11 the Query Builder and the Search Builder are 12 separate, specific, implemented interfaces or 13 tools in Lotus Notes. 14 Q Okay. So I want to take a quick look 15 at Query Builder and Search Builder. And so 16 Query Builder is found in Lotus Notes version 17 3.0 as described by Wilcox. Is that your 18 memory? 19 A Yes. 20 Q Okay. And so if we still have 21 Exhibit -- the Wilcox reference, which is 22 Exhibit 1059, page 163 is, I believe, where
86 1 because I think there is maybe a more precise 2 way of answering your question. So I'm going to 3 take a quick look at those. 4 Q Take your time. 5 (Witness reviewing document.) 6 A So just to be clear, the -- in 7 paragraph 62, I say, "Lotus Notes also discloses 8 searching within specific fields, including 9 within the title, category, and/or body fields 10 of the documents, by selecting the 'Form' 11 button." 12 And so just to be clear, the -- what 13 is indicated is the query box over in the left 14 side. That -- if you look at that screen that I 15 included there, this is still, let's see, the 16 same screen as I showed to illustrate the simple 17 Search bar. And so with the simple Search bar 18 you can start in that state and then use Form in 19 order to do what I described here to search 20 "within specific fields, including within the 21 title, category, and/or body fields of the 22 documents, by using the 'Form' button."	88 1 there is a screenshot of the Query Builder 2 dialog box. 3 A Okay. I see that. 4 Q Okay. So you would agree that in the 5 Query Builder you've got an interface, a box 6 pops up, and you can type words -- multiple 7 words into one of the boxes in this interface. 8 And now when you want to search, you hit the 9 search button and the search is executed. 10 Would you agree with that process? 11 A Yes. Specifically in the -- there is 12 a search field labeled all of these words, and 13 you can enter different terms there, separated 14 by commas, and then you would press the Search 15 button in order to actually execute the search. 16 Q Okay. Let's now look at the 17 Londergan reference that is 1061 and, I believe, 18 a similar screenshot of the Search Builder 19 interfaces on page 142. 20 A Okay I see that. I'm on page 142. 21 Q And you agree that that is the Search 22 Builder interface in Lotus Notes R5, which is

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89 1 the version of Lotus Notes described by 2 Londergan in Exhibit 1061. Do agree with that? 3 A Yes. 4 Q And in the Search Builder 5 functionality, you have a bunch of different 6 fields where you can enter a single word only or 7 a single search string only in each of those 8 fields. Would you agree with that? 9 MR. THACKER: Objection. Form. 10 A In the Search Builder tool you can 11 have multiple separate fields in which you can 12 enter terms that you want to search for. 13 Q But you can only put one term in each 14 field, correct? 15 A Let's see. I just want to make sure 16 I've got all the details right here, okay. 17 (Witness reviewing document.) 18 Well, I think if I read this 19 carefully, on page 142 under the "Multiple 20 words" option, as I understand it, as you said, 21 as I agreed that the Search Builder gives you 22 the ability to enter different search terms in	91 1 A The specifics of the Search Builder 2 and the Query Builder are different. They are 3 both more, I guess, advanced search techniques 4 than the simple Search bar, but the specifics of 5 the two tools do differ. 6 Q And in both of these functionalities, 7 Search Builder and Query Builder, the user has 8 to open this interface, enter their strings and 9 hit Okay to search, correct? 10 MR. THACKER: Objection. Form. 11 A For both the Search Builder and the 12 Query Builder, the user has to click a button to 13 execute the search. 14 Q So neither of these is incremental 15 search, as we've discussed earlier today? 16 A No. For the incremental search 17 capability of Lotus Notes references, I rely on 18 the Search bar. 19 Q So what features of Query Builder -- 20 and so let me back up because I think one of the 21 things I want to try to understand here is what 22 you are -- what teachings you are taking from
90 1 multiple different fields that are numbered 2 fields. But there is also an option where you 3 can actually enter a phrase, as far as I -- as 4 far as is disclosed here, in a numbered box, as 5 it says. So that's still a single search term, 6 but I guess it could be multiple words. 7 Q Sure. It could be multiple words, 8 but it is a single search string. You would 9 search for the phrase itself -- 10 A It's a single search string, yes. 11 Q -- not for the words in the phrase, 12 correct? 13 A Yes, I wanted to clarify that. Yeah. 14 Q Understood, and a fair 15 characterization. 16 So you agree that the Search Builder 17 and Query Builder functionalities are different 18 in this sentence, right, where Query Builder 19 allows you to put multiple terms in a single 20 search field; Search Builder, you have to put 21 each search string in a separate field, correct? 22 MR. THACKER: Objection. Form.	92 1 these various search functionalities that you 2 refer to, to kind of create your combination. 3 So what are the features of Search 4 Builder that you rely on in your combination? 5 MR. THACKER: Objection. Form. 6 A I'm going to review my declaration. 7 And after I do that, I'll tell you the parts of 8 it that I looked at. 9 Q Thank you. 10 (Witness reviewing document.) 11 A I think I remember your question, but 12 can you just ask that again so I've got that. 13 Q Absolutely. I am just wondering, 14 what features of Query Builder specifically do 15 you rely on in your combination? 16 A Well, I think for the Query Builder, 17 you know, this is a more advanced expressive 18 type of search than the Search bar, but one of 19 the express teachings or the express disclosures 20 of the Query Builder is that you can do a 21 Boolean search for multiple search strings where 22 you separate the search strings with a comma.

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93 1 So that's one of the teachings of the Query 2 Builder that I referred to. 3 Q And can you point me to where in your 4 declaration you rely on that. 5 A Yeah, let me find that. 6 (Witness reviewing document.) 7 Well, I think there's a few places 8 that I mention that the Query Builder allows you 9 to separate search strings by a -- with a comma. 10 I think I first mentioned it in -- actually, in 11 the background of the Art section in 12 paragraph 41, where I say, I imagine that Lotus 13 Notes provides -- you can separate the strings 14 "with a comma in a Query Builder dialog box." 15 And then I think I mention that 16 particular teaching again, for example, in 17 paragraph 61 and maybe paragraph 82, for 18 example. 19 Q Okay. So let's look at paragraph 61. 20 A Sure. 21 Q You say, "For the Query 22 Builder/Search Builder" -- and so let's stop	95 1 A Yeah. 2 Q And so we saw that in Query Builder, 3 yes, you separate multiple words by a comma. 4 But that's not how Search Builder works, 5 correct? 6 A That's correct. That's not how 7 Search Builder works. 8 Q Okay. And in -- you talked briefly 9 about what you called the simple Search bar, or 10 the Search bar, and in paragraph 60 you describe 11 that. "The user enters multiple search strings 12 in the search field of the Search bar and 13 separates the search strings with a Boolean AND 14 operator." 15 A Yes, that's what I wrote. 16 Q Okay. So you agree that in using the 17 Search bar functionality, if you want to search 18 on multiple strings, you have to separate those 19 by a Boolean AND operator, correct? 20 A That's the particular implementation, 21 yes. 22 Q And I think you said earlier -- and
94 1 here for a second. Is it your intent to 2 indicate to the reader of your declaration that 3 Query Builder and Search Builder are equivalent, 4 the way that you present that here with a slash, 5 "Query Builder/Search Builder"? 6 A No, they are not an equivalent tool. 7 I mean, maybe that was an inartful way to put 8 it. But I think what I was trying to 9 communicate generally is that in both Lotus 10 Notes references, there is a Search bar tool 11 with either the same or -- as far as we can 12 tell, the same or very similar functionality. 13 And then there are two more advanced search 14 tools, the Query Builder and Search Builder. 15 So, really, that's what I'm -- that's 16 what I mean when I do this slash between them, 17 not that I'm saying they are equivalent. 18 Q Okay. And so you continue here, "The 19 user similarly enters multiple strings in a 20 single search field but separates the search 21 strings with a comma instead of a Boolean AND 22 operator."	96 1 I'm going to give you an opportunity to modify 2 your statement, but I think you said earlier 3 that you rely on the Search bar or incremental 4 search. Is it your understanding that the 5 Search bar performs an incremental search? 6 A Let me review because I -- there is a 7 lot of art here and I want to -- 8 Q Agreed. 9 A -- make sure that I didn't misspeak. 10 No, I see that -- I was -- thank you 11 for bringing that up. That was a misstatement. 12 For my combination, I'm not relying on the Lotus 13 Notes Search bar for incremental search. 14 Q Okay. And, in fact, you rely on 15 Raskin for incremental search, correct, in your 16 combination? 17 A That's correct. 18 Q A couple last questions about the two 19 Lotus Notes references. If we go back to your 20 motivation to combine section, in paragraph 73 21 of your '139 declaration, you say, "A POSITA 22 would have been motivated to combine the

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97 1 complementary teachings on Lotus Notes from 2 Londergan and Wilcox to obtain a more complete 3 and comprehensive understanding of the Lotus 4 Notes system, its features and its 5 capabilities." 6 Do you see that? 7 A Yes. 8 Q But in this paragraph you don't say 9 anything about motivation to combine features of 10 the different search functionalities that we've 11 talked about across these two references, do 12 you? 13 MR. THACKER: Objection. Form. 14 A Well, I say, for example, "Wilcox 15 provides additional details on the core 16 functionality of Lotus Notes' user interface and 17 the search functionality." 18 And so if you want to -- well, and 19 going back to the first sentence, I said, "A 20 POSITA would have been motivated to combine the 21 complementary teachings on Lotus Notes from 22 Londergan and Wilcox to obtain a more complete	99 1 "the Search bar." You don't say anything about 2 Query Builder or Search Builder in paragraph 74, 3 do you? 4 A Not explicitly. I say -- but when I 5 say in the first sentence "A POSITA would have 6 reasonably expected success in combining the two 7 references' complementary teachings on Lotus 8 Notes' search functionality," that is a general 9 statement about Lotus Notes' search 10 functionality. And then I say, "at least 11 because the references describe using the same 12 search tool," and then I'm talking specifically 13 about the Search bar. 14 So, you know, I'm talking about the 15 overall or the -- yeah, the comprehensive 16 teachings on search functionality before I talk 17 about the fact that they describe this Search 18 bar. They both describe the same search tool, 19 i.e., the Search bar. 20 Q I want to look at one more thing in 21 the Wilcox reference. So if you could go back 22 to Exhibit 1059 and scroll down to page 168.
98 1 and comprehensive understanding of the Lotus 2 Notes system, its features, and its 3 capabilities." 4 And so one of the benefits of -- or 5 one of the specific more complete and 6 comprehensive understandings you got would have 7 been the additional details on the search 8 functionality from Wilcox. 9 Q Looking at paragraph 74, this is 10 where you talk about reasonable expectation of 11 success. You -- in combining, specifically, 12 Wilcox and Londergan, the two Lotus Notes 13 references. Here you find reasonable 14 expectation of success because, as you say, "The 15 references describe using the same search tool 16 (Lotus Notes' Search bar) for the same purpose." 17 And you also say that "The core search 18 functionality of Lotus Notes' search tool (e.g., 19 the Search bar) is largely, if not completely, 20 the same between the two versions." 21 So here you refer to the core search 22 functionality of Lotus Notes' search tool as	100 1 A Okay. 2 Q At the bottom of 168, there is a 3 section headed "Indexing Databases." 4 A Uh-huh. 5 Q And Wilcox says that "A database must 6 be indexed for the full-text search features to 7 be available." Do you see that? 8 A Yes. 9 Q And I think we talked -- we touched 10 on indexes briefly, but I want to get your 11 understanding of what a database index is and 12 how it relates to searching. 13 MR. THACKER: Objection. Form. 14 A Is that a question? 15 Q Yeah, it is a question. What is your 16 understanding of a database index? 17 A Well, as we -- as -- so I think -- 18 and now I can't recall if you read the first 19 sentence under the heading "Indexing Databases," 20 but what it says is, "As we discussed earlier, a 21 database must be indexed for the full-text 22 search features to be available." And so the

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101 1 index is a data structure that relates things 2 that you can search for to objects that contain 3 the things that you could -- may want to 4 identify. 5 And so the database, in general, 6 includes things like documents, e-mail messages, 7 contacts, whatever it might be. These are all 8 types of databases containing text objects. And 9 a full-text search is basically saying you're 10 going to let people enter search strings as text 11 that they are going to then find items from the 12 database -- documents, e-mail messages, whatever 13 they may be -- that contain or match the search 14 strings. 15 And the index is a data structure 16 that enables that correspondence, that finding 17 of search terms within the set of items in the 18 database, like documents or e-mail messages. 19 Q So if we scroll down to page 169, 20 there are some bullets here that describe how 21 you index a database -- or how Lotus Notes 22 indexes a database. And then the second bullet	103 1 to -- your index would only need to -- would not 2 need to distinguish between the two. If you are 3 worried about case-sensitive search, your index 4 would have to distinguish between the two. And 5 so that means you would have to have more 6 information in the index to do that. 7 Now, it says the "option will 8 increase the size of the index by about 25 9 percent." Why it's 25 percent in particular 10 would be a detail based on the particular 11 implementation of the index, and I don't recall 12 that this reference talks about how the index is 13 implemented. 14 Q Okay. That's fine. What is your 15 understanding of why Wilcox would note these 16 concerns about the size of the index? 17 MR. THACKER: Objection. Form. 18 A Well, for some purposes, the size of 19 the index in a particular implementation could 20 affect performance. 21 Q Right. In fact, you testified about 22 this earlier today when we talked about your
102 1 talks about the available options, and then you 2 see there are three subbullets that discuss how 3 these different options either increase or 4 decrease the size of the index. 5 Do you see that? 6 A Yes. 7 Q So, for example, the first subbullet 8 talks about if you want to do case-sensitive 9 searches, that increases the size of the index 10 by about 25 percent. Do you have an 11 understanding of why that is? 12 A Well, I think there are two parts to 13 that. Case-sensitive searches would mean you 14 would distinguish the same sequence of letters 15 if based on the capitalization lowercase versus 16 uppercase. And so that means your index has to 17 be able to distinguish those things. 18 And so if you didn't distinguish 19 those, you would only have -- let's say the 20 string, just for one example, "CAT" could be all 21 lowercase or all uppercase. If you didn't worry 22 about case-sensitive search, you would only need	104 1 2007 paper, correct? 2 A That's correct. 3 Q Okay. And, in fact, I believe you 4 said that reducing the size of the index could 5 improve performance, correct? 6 A I think that's right, yeah. 7 Q So based on Wilcox, this is something 8 that as of the priority date in 2002, a POSITA 9 would have known about this, correct? 10 MR. THACKER: Objection. Form. 11 A A POSITA would have had knowledge 12 about, you know, the general trade-offs between, 13 you know, the size of an index and the 14 efficiency -- well, the size of the index and, 15 therefore, the memory requirements and the 16 efficiency of the search. 17 Q So in order to implement incremental 18 search in an indexed system, would you agree 19 that the index would necessarily be larger than 20 in a non-incremental search system? 21 MR. THACKER: Objection. Form. 22 A To enable incremental searching, the

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105 1 index must be able to allow searching on 2 characters as you go. So that would require, 3 you know, a different -- how would you put it -- 4 more information or different representation of 5 information in the index. 6 Q Right, because I think what you're 7 saying is you would need all of the little 8 prefixes, right? 9 A You would need a way for the search 10 engine to be able to search by prefixes, yes, to 11 search incrementally. 12 DR. LAROCHELLE: Okay. Let's go 13 ahead and enter into the deposition the Exhibit 14 1021 to each of Microsoft's IPRs. This is the 15 Raskin reference. 16 (Microsoft Exhibit 1021 previously 17 marked for identification and attached to the 18 transcript.) 19 Q And just let me know when you have 20 it. 21 A Okay. I've got Raskin. 22 Q Okay. And so -- and I apologize to	107 1 searching has a number of other advantages over 2 delimited searching. Incremental searching 3 wastes less of a user's time: The search begins 4 when the first character of the pattern is 5 typed; the system does not wait until the 6 pattern is complete. With a delimited search, 7 the computer waits for the user to type the 8 pattern and delimit it, after which -- after 9 which it is the user -- after which it is the 10 user who waits while the computer does the 11 search." 12 So I mean, this is one passage in 13 Raskin that is talking about the search being 14 faster for the user. 15 Q Okay. And then what do you mean when 16 you refer to "effectiveness" in terms of 17 motivation? 18 (Witness reviewing document.) 19 A So I think going on in that paragraph 20 on page 126, you know, these concepts of speed, 21 effectiveness and ease of use are -- I think 22 they are related. You know, there may be two
106 1 make you flip back -- in your '139 declaration, 2 paragraph 75 is where you talk about motivation 3 to combine the Lotus Notes references with 4 Raskin. 5 Are you there? 6 A Yes, yes. 7 Q And you find that motivation in 8 Raskin itself. You say, "The reasons stated by 9 Raskin: Speed, effectiveness and ease of use." 10 When you -- what are you referring to 11 when you say "speed" here? 12 A Let me take a quick look at those 13 pages of Raskin, and I'll give you an answer 14 based on what Raskin himself referred to. 15 Q Absolutely. Take your time. And 16 then be prepared to point me to what you're 17 looking at in Raskin, if you could. 18 A Absolutely. 19 Q Thank you. 20 (Witness reviewing document.) 21 A Well, I think if we look at the first 22 paragraph on page 126, it begins, "Incremental	108 1 sides or three sides of the same coin, but I'll 2 read another brief section of Raskin. 3 "When using a delimited search, the 4 user must guess, beforehand, at how much of a 5 pattern the computer needs to distinguish the 6 desired target from other similar targets; with 7 an incremental search, he can tell when he has 8 typed enough to disambiguate the desired 9 instance because the target has appeared on the 10 display. Thus, as soon as he sees that he has 11 reached the point desired, he can stop entering 12 the pattern." 13 And, yeah, so it is more effective 14 because you get results sooner. And then I 15 think toward the end of that same paragraph, 16 the -- Raskin writes that "the user can 17 backspace at any time and be returned to the 18 last match found. Because backtracking after an 19 error is -- because backspacing after an error 20 is habitual, the process of correcting an error 21 is very fast, and the search stops immediately." 22 And so he is talking about speed, but

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109 1 it is also more effective if you can immediately 2 find that there is an error -- that is, your 3 search string is not giving you what you want -- 4 and quickly correct it. 5 So, yeah, I think speed and 6 effectiveness are both captured by this notion. 7 Q Okay. And so we're already at -- you 8 know, you already pulled up the pages of Raskin 9 that you cite here, 125 to 127, and in this 10 section of Raskin, this disclosure of 11 incremental search in Raskin in these pages, 12 that relates to the EMACS text editor; is that 13 right? 14 A Well, to be clear, on page 125, what 15 Raskin wrote is -- he described "incremental 16 search, a popular example of which is found in 17 EMACS." So he referred to EMACS as a -- as one 18 place in which incremental searching is found. 19 Q Okay. Are you familiar with EMACS? 20 A Yes. 21 Q Have you ever used it? 22 A It's been a long time, but I used to	111 1 buffers for, you know, the files that you had 2 opened. 3 That is my recollection but it's -- 4 so you would be searching through open documents 5 one at a time, but -- I think that's the way it 6 worked. Again, it's literally been, I think, 7 over 20 years since I've used EMACS, but that's 8 my recollection. 9 Q Sure. And, I mean, if you want to 10 review the paragraph of Raskin that describes 11 search in EMACS, you're welcome to. That's on 12 page 125. 13 A The thing that I quoted? 14 Q Well, yeah, so "The less common 15 strategy is the incremental search," and it 16 talks about EMACS and talks about typing the 17 first character of the pattern, "the system uses 18 this character as a complete pattern and 19 immediately begins to search for the first 20 instance in the chosen search direction." 21 A Uh-huh. 22 Q Right?
110 1 use it every day, yeah. 2 Q Agree. Same. 3 So are you familiar or do you have an 4 understanding of how search works in EMACS? 5 A Again, it's been a long time, but my 6 recollection is that you hit a key combination, 7 and it is not Control F like it is in Windows 8 but it was some key combination, and then you 9 could type in the string that you were searching 10 for. 11 Q Right. And so EMACS is a text 12 editor, right? 13 A Yes. 14 Q Yeah. So when you do a search in 15 EMACS, you're searching within the text of a 16 single document, right? 17 MR. THACKER: Objection. Form. 18 A You know, my recollection is that in 19 EMACS you could have multiple files open in 20 different buffers in EMACS and -- well, I know 21 that's true. And I believe that you could do a 22 search that would go across all of the open	112 1 A Yes. 2 Q So are you familiar with the concept 3 of sequential scanning? 4 A I'm not sure if I know it by that 5 name. Can you describe it? 6 Q Well, what are you thinking of when I 7 say that phrase? Or sequential searching? 8 A Well, I'm -- I would understand 9 sequential searching as you're searching through 10 something sequentially. 11 Q Okay. And would you agree that 12 that's how a text editor like EMACS performs its 13 search, is by sequentially searching through the 14 document? 15 MR. THACKER: Objection. Form. 16 A I think within a single document -- 17 within a single document I think that is how you 18 would search. You would first find, for 19 example, the first instance of a pattern, and 20 then you could find the next instance of a 21 pattern. 22 You also -- I'm not sure if it's

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113 1 described here, but, you know, for many years 2 you could also do, like, not just a "find" but a 3 "find all" or whatever the equivalent command 4 is, and then the system would search for and 5 highlight all the instances of the search term. 6 So from the user's point of view, you would be 7 able to see all of them at once then. 8 Q Okay. But in terms of the disclosure 9 in Raskin here, this is describing an 10 incremental search within a single document; is 11 that right? 12 A Well, Raskin is describing 13 incremental search, and then in the 14 particular -- how should I put it -- the 15 sentence that you started to read, it is the 16 second sentence in the paragraph that introduces 17 incremental search. "In most implementations of 18 incremental searches, as with the delimited 19 search, the user first summons a dialog box that 20 contains a field in which the user can enter the 21 pattern. When he types the first character of 22 the pattern, however, the system uses this	115 1 take Raskin's incremental search for strings, 2 and the disclosure is within a single document, 3 and that's by scanning or sequentially searching 4 that document. So you're going to take that 5 disclosure, that functionality, and combine it 6 with one or more of the different search 7 functionalities disclosed in the Lotus Notes 8 references; is that correct? 9 MR. THACKER: Objection. Form. 10 A Well, I want to make sure I give you 11 a good answer, so I'm going to quickly look at 12 my overview of Raskin in my declaration and then 13 the combination. 14 Q Sure. Take your time. 15 (Witness reviewing document.) 16 A So my combination is to combine the 17 searching functionalities, the searching 18 teachings, from Lotus Notes with the teachings 19 regarding incremental search from Raskin. So 20 that's my combination. 21 Q So your combination is -- I'm just 22 going to repeat what you said -- the incremental
114 1 character alone as a complete pattern and 2 immediately begins to search for the first 3 instance of that character in the chosen search 4 direction." 5 So here the -- here what Raskin is 6 talking about is searching in a particular 7 direction and illustrating that within a 8 particular -- I think in this example, in a 9 particular document or set of texts, yeah. 10 Q So you would agree that this 11 disclosure in Raskin, this is not a disclosure 12 of incremental search across a set of documents? 13 MR. THACKER: Objection. Form. 14 A Well, here Raskin is not explicitly 15 talking about searching across a set of 16 documents, but the teaching that I relied on in 17 general from Raskin is the idea of incremental 18 searching. That is the teaching that I relied 19 on for my opinion. 20 Q Okay. So I want to try to understand 21 your combination of Raskin with the two Lotus 22 Notes references. So your combination is you	116 1 search from Raskin with the searching 2 functionalities in Lotus Notes? 3 A The -- for Raskin, the teachings 4 about incremental searching, namely, you know, I 5 talked about -- what I specifically point to is 6 the benefits of incremental searching for speed, 7 effectiveness and ease of use. So that's -- so 8 I'm relying on the general teachings of Raskin 9 about incremental searching. 10 Q Okay. Can you point me to where in 11 your declaration you explain how a POSITA would 12 implement the technique of incremental search as 13 disclosed in Raskin, which is by, you know, 14 sequentially searching through a single 15 document, how you would implement that teaching 16 into the search functionality disclosed by Lotus 17 for an indexed database system where you're 18 searching across multiple documents. 19 MR. THACKER: Objection. Form. 20 Q Where do you explain how a POSITA 21 would implement those two things together? 22 A Well, my combination doesn't rely on

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117 1 that and it doesn't have to rely on that. That 2 question presumed that -- first, that Raskin was 3 teaching a specific implementation -- or first 4 it assumed that Raskin was disclosing a 5 particular implementation; and, second, that I 6 had to incorporate that particular 7 implementation into my combination, which is not 8 what I'm doing. 9 And, instead, I'm saying a person of 10 ordinary skill in the art would be motivated to 11 incorporate the use of incremental searching 12 into or with the Lotus Notes search 13 functionality for the reasons that I laid out in 14 my declaration. But I'm not, and I did not have 15 to talk about implementation level details or 16 incorporating a particular implementation. That 17 wasn't necessary for my opinion. 18 Q So I want to make sure I understand 19 this. What you're taking from Raskin is just 20 the idea of incremental search. Is that what 21 you're saying? 22 A The idea of incremental search and	119 1 coast so it's a little bit late for me, so ... 2 THE WITNESS: Yeah. 3 DR. LAROCHELLE: It's all good. 4 Okay. So we'll see you back at 1:50. 5 Thank you. 6 (A luncheon recess was taken.) 7 BY DR. LAROCHELLE: 8 Q So welcome back. I wanted to ask 9 just one or two last questions about Raskin and 10 then we'll move on to a new topic. 11 So when we broke for lunch, we were 12 talking about Raskin's disclosure of incremental 13 search. And I'm just going to refresh your 14 recollection. The last question I asked you was 15 about what you were taking from Raskin for the 16 combination, and you said what you were taking 17 is "the idea of incremental search and then, 18 obviously, the benefits of doing incremental 19 search that would motivate a person of ordinary 20 skill in the art to include the incremental 21 search technique with the search functionality 22 of the Lotus Notes references."
118 1 then, obviously, the benefits of doing 2 incremental search that would motivate a person 3 of ordinary skill in the art to include the 4 incremental search technique in -- with the 5 search functionality of the Lotus Notes 6 references. 7 DR. LAROCHELLE: And I think this 8 might be a good stopping point if we want to 9 take lunch right now. 10 THE WITNESS: Okay. Sounds good. 11 DR. LAROCHELLE: How long would you 12 like for lunch? 13 THE WITNESS: Let's see. Maybe -- 14 I'm going to kind of split 30 and 45. How about 15 40 minutes? How about if we come back at 50 16 after the hour, 12:50 my time? 17 DR. LAROCHELLE: That's fine by me as 18 long as it works for Sam. 19 MR. THACKER: Yes, that's fine. 20 THE WITNESS: Early lunch for you, 21 Sam. 22 DR. LAROCHELLE: I'm on the east	120 1 Do you remember that? 2 A That sounds right, yes. 3 Q Okay. I'm reading it right off the 4 realtime so I give you my word that I'm reading 5 your words as transcribed. 6 A I believe you. 7 Q Okay. So I want to kind of go back 8 to the idea of how incremental search is 9 implemented in the examples that Raskin talks 10 about, and the primary example that Raskin talks 11 about is EMACS. 12 And you said you are familiar with 13 EMACS, right? 14 A Yes. 15 Q And I think you talked about how 16 EMACS -- I think I'm remembering correctly that 17 you talked about how in EMACS documents are 18 loaded into an active buffer. Is that right? 19 A Yes, yes. You -- in your EMACS, you 20 could have multiple buffers open for the 21 documents that you had opened and might be 22 working on. That's my recollection, anyway.

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121 1 Q Okay. And so when you have a 2 document in -- loaded into the active buffer and 3 you do a search, what -- would it surprise you 4 to know that what EMACS is doing in terms of its 5 incremental search is actually not using an 6 index but is scanning through the document in 7 real time? 8 MR. THACKER: Objection. Form. 9 A How EMACS implemented -- whether that 10 is how EMACS implemented incremental search 11 would not surprise me. Again, that's not what I 12 relied on for my opinions here, but it wouldn't 13 surprise me one way or the other. 14 Q Okay. Understood. 15 You would agree that sequentially 16 scanning every word of a document, or let's 17 say -- 18 DR. LAROCHELLE: Strike that. 19 Q So let's say you have a file system 20 that you want to do a full-text search on. Do 21 you have that in mind? 22 A Yes.	123 1 Q Okay. I think let's move on and talk 2 about your Ground 2 combination. 3 So in your Ground 2 combination, you 4 rely on three Entourage references plus a patent 5 to True, and then, I think it is a textbook, to 6 Baeza-Yates. I don't know if I said that 7 correctly. 8 A I don't know either, but I know who 9 you're talking about. 10 Q You know what I'm talking about. 11 A Yeah. 12 Q Okay. So let's start by talking 13 about the three Entourage references. And so 14 these are Microsoft's Exhibits 1004, 1005 and 15 1006 in each of the three proceedings, and those 16 are Schwartz, Sebastian and Barber, 17 respectively. 18 (Microsoft Exhibit 1004 previously 19 marked for identification and attached to the 20 transcript.) 21 So I think primarily we're going to 22 look at Exhibit 1004, the Schwartz reference.
122 1 Q So a set of documents, and you want 2 to do a full-text search. So we've talked about 3 indexed systems where you described to me how 4 you build an index with words that have 5 associations to the documents. 6 Do you remember that? 7 A That was one example I talked about, 8 yes. 9 Q Okay. And another way of doing a 10 full-text search would be to analyze every word 11 of every file sequentially until you find the 12 string that you're searching for. 13 Would you agree with that? 14 A In principle, you could do that. 15 Q Okay. And that would be 16 substantially slower than using an indexed 17 system, wouldn't it? 18 MR. THACKER: Objection to form. 19 A If you have to search through every 20 file, character by character, as opposed to 21 having an index, that technique, in general, 22 would be slower.	124 1 So if you could download that and pull that up. 2 A Okay. 3 Okay, I have the Schwartz reference 4 open. 5 Q And you still have your '139 6 declaration open? 7 A Yes. 8 Q Okay, good. So just in a general 9 sense, you agree that the Entourage references 10 describe an e-mail system; is that right? 11 A Yes. 12 Q And would you also agree that the 13 Entourage references don't disclose an indexed 14 search system? 15 MR. THACKER: Objection to form. 16 A Let's see. I want to make sure 17 that -- how I characterize them so I'm going to 18 take a quick look here at my declaration. 19 Q Sure. And if it is helpful to you to 20 open your '490 declaration, you're welcome to do 21 that and look in there as well. 22 A Okay. Let's see, let me find -- I

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125 1 don't know if I downloaded that. Let me just 2 check here. 3 Q And I can even short-circuit this by 4 directing you to a paragraph of that declaration 5 once you have it open. 6 A That would be great. Let me -- 7 Q Sure. 8 A I'm bringing it up here. 9 Okay, sorry about that. It's taking 10 me a minute to get to it. Okay, there we go. 11 Q Take your time. 12 A Okay, I have got my '490 as well. 13 Q Okay. So if you go to paragraph 146 14 of your '490 declaration. 15 A Okay. Yeah, I'm there. 16 Q Okay. "Although the Entourage 17 references do not expressly disclose indexing 18 the computing system's files in an index data 19 structure comprising associations between ... 20 character strings and associated files." 21 Do you see that? 22 A Yes.	127 1 Q Okay. And you have a number of 2 citations to Exhibit 1004, which is the Schwartz 3 reference. So let's go to page 8, which is the 4 first citation you have. 5 A Okay. I'm bringing Schwartz up or -- 6 Q Sure, take your time. 7 A -- navigating to page 8. 8 Okay, I'm on page 8. 9 Q And can you point me to where on this 10 page Schwartz discloses what you call 11 "incremental quick-find search." 12 A Starting under the heading 13 "Filtering" is where Schwartz describes what I'm 14 calling "incremental quick-find search." 15 Q Okay. So Schwartz doesn't call it 16 incremental quick-find search, right? 17 A No, no, that was the characterization 18 I used. It is an accurate description of what 19 it is, but that's not the term that Schwartz 20 specifically uses. 21 Q Right. And so you're pointing to the 22 section on "Filtering." So you would agree that
126 1 Q Okay. So you agree that the 2 Entourage references do not expressly disclose 3 indexing the computer's file system? 4 A Yes, that's what I wrote and I agree 5 with that. 6 Q Okay. 7 So let's flip back to your '139 8 declaration and look at paragraphs 125 to 129. 9 A Okay, I've made it to paragraph 125. 10 Q So in these paragraphs you describe 11 several different search functionalities, and I 12 think if you go to the end of paragraph 125, you 13 number them out, three of them, "an incremental 14 quick-find search, a 'Find' search and an 15 'Advanced Find' search." 16 Do you see that? 17 A Yes. 18 Q Okay. I want to look at the 19 functionality that you call Entourage's 20 "incremental quick-find search," which you 21 describe in paragraph 126. 22 A Okay.	128 1 what you have labeled "incremental quick-find 2 search" is actually a list-filtering 3 functionality; is that right? 4 MR. THACKER: Objection to form. 5 A Well, it describes this technique -- 6 Schwartz describes this technique as a way "to 7 filter the item list," but when you read through 8 it, it also says, "Filtering is the fastest way 9 to perform a simple search." You can choose 10 search criteria as you do this filtering thing. 11 "If the chosen criterion requires a search 12 string, type it in the text box." To see all 13 items again, delete the search string." 14 And so, clearly, this is a type of 15 search in Entourage, and, you know, the overall 16 term Schwartz uses is "filtering," but it is a 17 type of search. 18 Q And this list-filtering 19 functionality, this is the only disclosure you 20 point to in the Entourage references of 21 incremental searching; is that right? 22 A Yes, that is my recollection.

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129 1 Q And if we go back to your '139 2 declaration, paragraph 127 is where you talk 3 about the Find and Advanced Find functionality. 4 So this is a different functionality that you're 5 describing now, Find and Advanced Find, and you 6 say that these are delimited searches, correct? 7 A They are delimited searches. I don't 8 recall if I used that exact term. Yeah, I did. 9 Q Right. 10 A Yes, they are delimited searches. 11 Q And delimited means that you have to 12 hit -- you have to do something to delimit. You 13 have to tell the computer, run the search, so 14 hit the Find key, Okay, whatever it might be, in 15 the specific implementation; is that right? 16 A That's correct. You have to -- the 17 user has to tell the system explicitly, okay, 18 now go do the search. 19 Q Okay. So if we go back to Schwartz, 20 the Find and Advanced Find functionalities are 21 described around page 162. This is one of your 22 citations.	131 1 to click Find, so this is a delimited search. 2 And then once you click Find, the system gives 3 you a "Search Results window." 4 Do you see that in paragraph 6 there? 5 A Oh, paragraph 6 of Schwartz. 6 Q Yeah. 7 A Yeah, "Click the Find button. The 8 headers of all matching messages are displayed 9 in a Search Results window," and it shows that, 10 yes. 11 Q Okay. So let's hang on to this. 12 We're going to come back to this. 13 So when we talked about what you call 14 quick-find search and what Entourage -- the 15 Schwartz reference calls list filtering, do you 16 have an understanding of how list filtering 17 works? 18 A Well, I think you -- I mean, it is 19 also described briefly on page 161 as well as on 20 page 8, which is where we started. 21 And so what it says on page 161, "If 22 you're looking for a particular message in a
130 1 A Okay. Yeah, I know Schwartz also 2 describes them starting on page 9, right after 3 the filtering, but yeah, it describes 4 throughout. So you're pointing me to which 5 pages of Schwartz now? 6 Q Yeah, I'm sorry, yeah, I was pointing 7 you to 162, which is one of -- it is one of your 8 citations here. 9 A 162, okay. Just a second. 10 Okay, I'm there. 11 Q Okay. And, actually, I want to back 12 up to 161, I apologize, because 161 is where it 13 starts to describe the Find functionality. 14 A Okay. 15 Q So searching for messages with the 16 Find command, and then there is a series of 17 steps, and those steps include, you know, 18 selecting Edit Find or Apple Find -- Apple F, 19 and you get a dialog box, and then so on and so 20 forth. 21 And, I'm sorry, I already asked you 22 this question, that you just click -- you have	132 1 folder that contains many messages, or if you 2 don't even know which folder the message is in, 3 you can filter the message list," and then 4 "issue a Find command, or perform an Advanced 5 Operation." And so on page 161, it talks about 6 how to do the filtering and gives three steps 7 for performing the filtering. 8 Q And so what is different about list 9 filtering from the Find and Advanced Find 10 commands? 11 A Well, I want to go back to page 8. 12 Maybe it gives a better overview of all the 13 differences. And right offhand, I don't 14 remember all the differences. I remember the 15 key feature for me, or a key feature for me, was 16 that the filtering was incremental and that the 17 Find and Advanced Find are delimited and they 18 gave you additional functionality. 19 So, for example -- I'm just looking 20 at my declaration where I talk about them -- 21 "The Find search can search the body portion of 22 e-mails (in addition to the headers as in the

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133 1 incremental, quick-find search) and the Advanced 2 Find search can search across multiple headers, 3 item types and/or folders and lets a user filter 4 e-mails based on whether or not they have an 5 attachment." So -- 6 Q And, for the record, that was 7 paragraph 128 of your '139 declaration, correct? 8 A Yeah. 9 Q Okay. 10 A That's how my declaration 11 characterized features of filtering and Find and 12 Advanced Find, and, you know, there may be other 13 differences and wrinkles in the -- disclosed in 14 detail in the Schwartz and other references, but 15 this is what I called out. 16 Q Okay. So I'm not sure you explicitly 17 said this, but when you filter -- I think you 18 hinted at this. When you use the Entourage's 19 filtering functionality, you're only able to 20 filter by specific, like -- by last name. 21 MR. THACKER: Objection to form. 22 THE COURT REPORTER: I'm sorry, your	135 1 works on a single search term over a single 2 field of a set of documents; is that right? 3 MR. THACKER: Objection. Form. 4 A Well, the express disclosure was to 5 do a search within a defined field, a defined 6 textual field of an e-mail message, and it's 7 applied to a defined set of e-mail messages, 8 such as all the e-mail messages in a particular 9 folder. 10 Q Okay. And that was going to be my 11 next question. You have to be within a 12 specific -- it filters on the items within a 13 specific folder, correct? 14 A Yes. The set of things that it 15 filters or searches within are the items within 16 a particular folder. 17 Q So you would agree that that 18 list-filtering functionality is functionally 19 different from the search that's conducted in 20 the Find and Advanced Find searches? 21 MR. THACKER: Objection to form. 22 A Well, I'm not sure what all you mean
134 1 audio went out. I couldn't hear what you said. 2 DR. LAROCHELLE: Okay. Let me start 3 that question again and then we'll let Sam get 4 his objection in. 5 Q So I don't think you explicitly said 6 this but you hinted at it. So when you used 7 Entourage's list-filtering functionality, you're 8 only able to filter by a specific field, whether 9 it's, you know, the subject or the To/From -- if 10 you're in the address book, it's a person's last 11 name, perhaps. Is that understanding correct? 12 MR. THACKER: Objection. Form. 13 A Yeah, the filtering function or what 14 I call the incremental quick-find search, as I 15 wrote in paragraph 126, "The incremental, 16 quick-find search allows a user to search within 17 specific e-mail headers" -- for example, or, 18 well -- "(To, From, Subject, Category) and 19 displays results incrementally." 20 So, yeah, that's how I characterized 21 it in my declaration. 22 Q Okay. So to be clear, this search	136 1 by functionally different, but they certainly 2 are not the same as I described -- as my 3 declaration shows, as I described the different 4 functionality that each of these particular 5 tools has in Entourage. 6 Q In paragraph 130 of your '139 7 declaration, you provide your motivation to 8 combine the three Entourage references. And if 9 we just kind of scan down through this 10 paragraph, you say, would have been -- "A POSITA 11 would have been motivated to look to the 12 teachings of all three references to obtain a 13 more complete and comprehensive understanding of 14 the Entourage system, its features and its 15 capabilities." 16 So where in your declaration do you 17 address motivation to combine the different 18 functionalities, right, so the list-filtering 19 functionality with the Find and Advanced Find 20 functionality? 21 MR. THACKER: Objection. Form. 22 A Well, let me take a look at this.

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137 1 (Witness reviewing document.) 2 Could you ask your question again? 3 Q Sure. Where in your declaration you 4 address the motivation to combine the 5 list-filtering functionality in Entourage with 6 the Find and Advanced Find functionalities? 7 MR. THACKER: Same objection. 8 A Well, I think the sentence you had me 9 read, or you read, "Specifically, a POSITA would 10 have been motivated to look at the teachings of 11 all three references to obtain a more complete 12 and comprehensive understanding of the Entourage 13 system, its features and each -- its 14 capabilities," what I'm getting at there, when I 15 talk about the features, is to understand them 16 comprehensively, including how the features work 17 together -- how the teachings of the features 18 work together. 19 And, specifically, a person of 20 ordinary skill in the art would be motivated to 21 understand the teachings of the different ways 22 of doing searches and, therefore, to understand	139 1 success in combining the list-filtering 2 functionality with the Find, Advanced Find 3 functionality? 4 MR. THACKER: Objection to form. 5 A I don't recall, and I will take a 6 quick look to see if I have done anything 7 explicitly like that. 8 (Witness reviewing document.) 9 Still just checking one more thing. 10 Q Take your time. 11 (Witness reviewing document.) 12 A So can you ask your question again? 13 Q Absolutely. Let me just get the 14 realtime here. 15 Is there anywhere in your declaration 16 that you address reasonable expectation of 17 success in combining the list-filtering 18 functionality with the Find and Advanced Find 19 functionality across the Entourage references? 20 MR. THACKER: Objection to form. 21 A Well, I'm going to answer that in two 22 parts. I think you asked -- and I want to make
138 1 how they might work together. And I believe -- 2 so, for example, I say, "Barber provides extra 3 details on the Advanced Find search." 4 And so it would -- a POSITA would be 5 motivated, since these are related 6 functionalities of searching, to understand them 7 well and then understand how those teachings 8 could be combined to -- if the POSITA was 9 actually interested in implementing a search 10 tool. So that's -- that's what paragraph 120 is 11 getting at -- or, excuse me, 130. 12 And I know that -- I know that 13 sometimes when I go through the individual claim 14 limitations and I talk about the -- what's 15 obvious based on the references, I may elaborate 16 a little bit more on those aspects of combining, 17 but I don't recall right offhand if I have done 18 that. And if so, I would have to just look 19 through the detailed mapping of the claims to 20 see what I have said there. 21 Q Is there anywhere in your declaration 22 that you address reasonable expectation of	140 1 sure I understand what you're really asking. 2 Are you asking did I address combining -- I 3 think I answered already the notion of or how I 4 was describing combining the features of the 5 different search tools, the search tools 6 disclosed in Entourage, and then the reasonable 7 expectation of success. I'm going to take one 8 more quick look. 9 (Witness reviewing document.) 10 I don't recall if I ever specifically 11 said that beyond what I have in my motivation to 12 combine paragraphs on Entourage. So as I sit 13 here today, I'm not sure if I have said anything 14 more. 15 (Microsoft Exhibit 1009 previously 16 marked for identification and attached to the 17 transcript.) 18 Q Okay. Well, let's move on and talk 19 about True. Because you have your combination 20 of the three Entourage references and then you 21 combine those with the True reference, which is 22 Exhibit 1009 to each of the three IPRs, and this

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141 1 should be in the repository starting -- the file 2 starting with the word "True." 3 A Okay. I'm going to download that. 4 Q Yep. Take your time. 5 A Okay, I've opened True. 6 Q Okay. And in your '139 declaration 7 you describe the True reference at 8 paragraph 133. 9 A Yes. 10 Q And in paragraph 133 you state that 11 "True ... discloses incrementally searching for, 12 and locating, portions of an audio transcript 13 containing multiple search strings." 14 Do you see that? 15 A Yes. 16 Q You would agree that a portion of an 17 audio transcript is not a document. Would you 18 agree? 19 MR. THACKER: Objection. Form. 20 A Well, I think there is a subtlety 21 here. So, first of all, an audio -- a 22 transcript of an audio -- a transcript of an	143 1 discloses running queries on this transcript of 2 an audio recording; is that right? 3 A Yes. 4 Q Would you agree that True discloses 5 that these transcripts of audio recordings are 6 computer generated? 7 A Yes. 8 Q And would you agree that True 9 discloses using a parameter called a confidence 10 level that represents the likelihood that the 11 recognized word is the correct word? 12 A Yes, that's one thing that True 13 discloses which makes sense since they are doing 14 automatic recognition of audio. So there could 15 be errors, so in that particular case you need a 16 confidence score for the words that were 17 recognized. 18 Q Right. So, basically, True 19 recognizes that the computer-generated 20 transcript may not be fully accurate; is that 21 right? 22 A That's right.
142 1 audio recording is a document, and, second, I 2 think that as you read True, one could -- a 3 person of ordinary skill in the art could 4 conclude that one way to implement portions of 5 transcripts would be to break those out into 6 separate files or documents; however, that's -- 7 that wasn't really something that my opinion 8 depended on. 9 So even though I think that is a 10 possibility, my opinion doesn't rely on that. 11 Q Thank you. And True doesn't 12 expressly disclose that, does it? 13 A True talks about portions or windows 14 of the audio transcript without ever saying 15 exactly how those are represented or stored. 16 Q So I want to see if we can agree on 17 how the True -- how True's system works. And so 18 I'm going to try to step through it and make 19 sure that we agree, and if you disagree, you can 20 explain to me why I'm wrong, okay? 21 A Okay. 22 Q So you would agree that True	144 1 Q And then I think you hinted at this 2 earlier. So you agree that True discloses 3 performing queries within transcript windows of 4 some specific size? 5 A True discloses breaking the audio 6 transcript into windows, or transcript windows, 7 and then doing search within those windows. 8 Q And so True discloses a user 9 interface where a user will type a query. Do 10 you agree with that? 11 A Yes. 12 Q And then the system will generate a 13 result which is presented in the user interface 14 in a result window. Do you agree with that? 15 A Yes. 16 Q And if you want to pull up True and 17 go to figure 2, I think this is the figure that 18 you have copied into your declaration on page 19 88. 20 A Okay. 21 Q That result window is labeled 12 in 22 figure 2. Is that your understanding?

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145 1 A That's correct, yeah. 2 Q Okay. And what's presented in that 3 result window is a bar graph; is that right? 4 A Yes. 5 Q And what is your understanding of 6 what that bar graph is meant to convey to the 7 user? 8 A It's -- it is conveying information 9 about the presence or potential presence of the 10 search terms that were being queried in 11 particular transcript windows. 12 Q And when you say "potential 13 presence," why do you say potential presence? 14 A Well, because the transcript itself 15 may contain transcription errors. So because 16 the transcript itself may have errors, that's 17 where the confidence scores were used and that 18 means that the system is sort of presenting 19 information in such a way that the users in 20 True's implementation in this embodiment have 21 information that they can use to assess that. 22 Q And in this result window there is a	147 1 '139 declaration. 2 A Okay. I'll take a look there as 3 well. 4 Q Okay. 5 (Witness reviewing document.) 6 A Yes, I see my -- I read my 7 paragraph 153, which includes cites and includes 8 True column 5, lines 41 to 50. 9 Q Okay. So you agree that this is how 10 True works, that there is an interest level 11 calculated for each of these transcript windows 12 and that is based on the combination of the 13 confidence level with the number of times that 14 one of the search strings appears in the window. 15 Is that your understanding? 16 A Yes. 17 Q So the query results that True 18 returns, this bar graph, it indicates which 19 transcript windows are of interest; is that 20 right? 21 MR. THACKER: Objection. Form. 22 A In -- yeah, I want to just read
146 1 horizontal line that represents what True calls 2 an interest level threshold. Would you agree 3 with that? 4 A I would have to look that up because 5 for my opinions for my combination, I'm not 6 relying on these teachings of True, so, yeah, I 7 would have to look that up. 8 Q Okay. I think you do describe how 9 this works, though, where True's system 10 calculates an interest level for each of the 11 windows based on some combination of the 12 confidence level that you've discussed and then 13 how many times one of the search strings appears 14 in that window. Does that sound right to you? 15 A Sounds right. Can you just point me 16 to that part of my declaration so I can be 17 careful. 18 Q Sure. And you can also look in True 19 at column 5, rows 31 to 40. 20 A (Witness reviewing document.) 21 Q And then if you want to look at your 22 own words, that would be paragraph 153 of your	148 1 exactly what True said. 2 (Witness reviewing document.) 3 I mean, if I look at True, let's see, 4 I think you pointed me to line 30 or 31, and 5 then I also cited 41 to 50, and it describes 6 that the "interest level represents the degree 7 to which text in the window represents segments 8 of interest," and then it says, "An interest 9 level is a function of the extent to which the 10 text in the transcript window accurately 11 represents the words that were spoken in the 12 digitized audio and the extent to which the text 13 in the transcript window matches the query." 14 So that is what the -- that is what 15 True's output here is reflecting. 16 Q So you would agree that the 17 transcript windows that are identified as being 18 of interest or above this interest threshold may 19 not contain the string that was actually in the 20 query. Would you agree with that? 21 MR. THACKER: Objection to form. 22 A Well, again, in True, it is possible

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149 1 that the transcript windows shown in the results 2 may not contain the terms in the query. It is 3 also possible that they may contain the terms in 4 the query. And, again, for my opinion, I -- for 5 my opinion, I don't have to worry about 6 confidence levels. 7 You know, I didn't use that teaching 8 of True because, essentially, in the case that 9 I'm looking at, accuracy is always 100 percent 10 so, if you will, the confidence level is always 11 1 or 100 percent so there is no need for this 12 aspect of True's teachings. 13 Q Okay, so let's explore that. So you 14 said, "In the case that I'm looking at, accuracy 15 is always 100 percent so the confidence level is 16 always 100 percent so there is no need to worry 17 about this." 18 So what exactly is the case that 19 you're looking at? What were you referring to 20 there? 21 A Well, for my analysis of the patent 22 claim limitations and the obviousness analysis	151 1 A Yeah. And I always want to be 2 careful and go back to what I said in my 3 declaration, and so if I -- so I'm going to just 4 belabor the point to be careful. 5 So if I go back to paragraph 121, 6 which is the introduction to my Ground 2, I say, 7 "The Entourage references disclose every element 8 of the challenged claims except two of the 9 independent claims features: (1) receiving two 10 partial search strings in a single search field; 11 and (2) locating documents containing two 12 partial search strings by searching each string 13 separately and then identifying the documents 14 that appear in both sets of search results. 15 Both features were well-known in the art, 16 however, and True expressly discloses (1) and 17 Baeza-Yates expressly discloses (2)." 18 So I'm glad I read that, and, 19 obviously -- because I misspoke a minute ago. 20 So I'm relying on True for receiving two partial 21 search strings in a single search field. 22 Q Okay. So what you're telling me is
150 1 based on the prior art that I identified, I 2 think, you know, there -- we're not talking 3 about -- in those cases there is no, how should 4 I say, references to errorful transcripts or 5 data that may not be accurate. So the fact that 6 True dealt with that was not the teaching of 7 True that I built on. 8 For True, I built on its teachings to 9 do incremental search of multiple search 10 strings, and that's all. Anything else of 11 True -- or this aspect of True, the fact that it 12 had these confidence factors was irrelevant for 13 me. 14 Q Okay. So to make sure I am clear, 15 the only thing you rely on True for -- so I 16 guess -- you said two things, okay? So one 17 thing you said was incremental search; is that 18 right? 19 A Yes. 20 Q And then the second thing you said 21 was multiple strings in a single search field, 22 correct?	152 1 nothing else in True matters. The only thing 2 that matters is True discloses you can put two 3 partial search strings in a single field; is 4 that right? 5 A Let me just verify since I already 6 misspoke a minute ago. 7 So if I go to paragraph 133, where I 8 give an overview of True, I say that True 9 "discloses incrementally searching for, and 10 locating, portions of an audio transcript 11 containing multiple search strings entered in a 12 single search field." And so True discloses 13 incremental searching, but the Entourage 14 references already did disclose it. So I did 15 not have to rely on True for that feature even 16 though -- in my opinion, even though True did 17 disclose incremental searching as well. 18 Q Okay. Since we're talking about 19 incremental searching in True, let's look at the 20 True reference, Exhibit 1009, column 5, starting 21 at line 6. 22 A Let me make sure I'm in the right

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153 1 place. Column 5, starting at line 6, okay. 2 Q Right. 3 So True says, "To make efficient use 4 of system resources, the search engine UI 5 process 78 may wait until the user pauses after 6 pressing a key before performing a query. In 7 this way, only one query will be performed after 8 the user quickly enters a number of characters, 9 rather than performing the query after the user 10 enters each character." 11 You would agree that the system waits 12 for the user to pause? This isn't incremental 13 search, right? 14 MR. THACKER: Objection. Form. 15 A Well, first of all, as I said, I was 16 not relying on True in my opinion -- in my 17 opinion, I did not rely on True for the teaching 18 of incremental search. I relied on the 19 Entourage references. So it is irrelevant 20 whether True discloses that or not. 21 Then, looking at what it -- what True 22 wrote in that particular sentence, it says -- or	155 1 "To make efficient use of system 2 resources, the search engine UI process 78 may 3 wait until the user pauses after pressing a key 4 before performing a query. In this way, only 5 one query will be performed after the user 6 quickly enters a number of characters, rather 7 than performing the query after the user enters 8 each character." 9 So I mean, this thing that True is 10 saying may be done is just literally saying if 11 you do things this way instead of doing a query 12 after every single word is entered, you may do a 13 lower number of -- a smaller number of queries 14 only after some number of keys have been pressed 15 or characters have been entered. 16 So, you know, just literally that 17 means you would be doing fewer queries and if 18 each -- each query will take some amount of 19 time, so you would -- and some amount of 20 processing effort, so you would use a little bit 21 less in this possibility that True mentioned 22 here.
154 1 the sentence you read, it says, "To make 2 efficient use of system resources, the search 3 engine UI process 78 may wait until the user 4 pauses after pressing a key before performing a 5 query." 6 And so when it says it "may wait," 7 that doesn't mean that it has to wait. So 8 certainly searching after every character is 9 entered is still consistent with True. But, as 10 I said, that's also irrelevant because my 11 opinion didn't rely on True for incremental 12 searching. 13 Q Okay. That's fair. Just one 14 follow-up question. The start of this passage 15 says "To make efficient use of system 16 resources." What do you understand that to 17 mean? 18 A Well, I think it is implying -- it is 19 suggesting that something that is -- well, let's 20 look at what it says a little further. So I'll 21 read that sentence again to make sense of the 22 next sentence.	156 1 Q Let's turn to paragraph 169 of your 2 '139 declaration. 3 A Okay. 4 Q And this is the part of your 5 declaration where you talk about claims 4 and 5 6 for Ground 2. We already talked about claims 4 7 and 5 pretty extensively under Ground 1. So 8 I -- you can refresh your memory as to what 9 those two claims are, if you would like. 10 A Okay. 11 Q And when you're ready, I'll ask a 12 question. 13 (Witness reviewing document.) 14 A Okay, ask away. 15 Q Okay. I want to ask about the -- 16 like claim 5 here, the "highlighting a plurality 17 of occurrences of the first and second partial 18 search strings." 19 So you talk about this in your 20 paragraph 171, and you cite to the Schwartz 21 reference, which is Exhibit 1004, at page 11. 22 So if you could pull up Schwartz

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1 Exhibit 1004. 2 A Okay. 3 Q Go to page 11. 4 A Let me find that. 5 Q Take your time. 6 A Page 11, you said? 7 Q That's what you cite in paragraph 8 171. 9 A Okay. 10 Q Okay. And, in fact, if you turn the 11 page in your declaration, you have a screenshot 12 from page 11, figure 1.16. 13 A Okay. 14 Q Okay. And so I want to make sure we 15 understand what Entourage actually -- what 16 Schwartz discloses here and so this is -- we're 17 going to need to scroll back up to page 10 to 18 the start of the section here and -- 19 A Oh, page 10 of Schwartz, okay. 20 Q Yes, page 10 of Schwartz. Sorry. 21 So at the bottom of page 10 of 22 Schwartz, there is a section titled, "To search	157 1 relating to claims 4 and 5 -- I think maybe 2 the -- paragraph 172 at the end is maybe the 3 best summary. "A POSITA would have understood 4 or at least found it obvious to highlight a 5 plurality of occurrences of the search strings 6 to point the user to more (for example, all) of 7 the relevant portions of the document, as was 8 well-known in the art." 9 So what I'm doing here is saying that 10 the different features of the Entourage 11 references, including as disclosed by search -- 12 excuse me, as disclosed by Schwartz, would 13 render it obvious to a person of ordinary skill 14 in the art to -- would render claims 4 and 5 15 obvious to a person of ordinary skill in the 16 art. 17 So, to summarize, I'm referring to 18 this particular highlighting feature -- this 19 particular highlighting feature from Schwartz, 20 and then I'm saying that that, along with the 21 other teachings of Entourage, renders claims 4 22 and 5 obvious.
1 the current item for a text string." 2 And -- do you see that? 3 A Yes. 4 Q Yeah. And then -- so it tells you to 5 select the item in the list, open the item in 6 its own window, and then you perform a Find. 7 Well, a find operation on it. Do you see that? 8 A Yes. 9 Q And then after you click the Find 10 button, you get the first instance of the text 11 string highlighted. Do you see that? That's in 12 number 5 on page 11. 13 A Yes. 14 Q Okay. So you would agree that this 15 functionality that you're relying on is -- 16 Entourage is -- or Schwartz discloses opening a 17 single item and searching that single item for a 18 text string, correct? 19 MR. THACKER: Objection. Form. 20 A That is the specific functionality 21 that is being described here. And then, as I 22 say in my -- in this section of my declaration	158 1 Q So the portion of -- or as you just 2 read, paragraph 172 of your declaration, which 3 ended with "as was well-known in the art," and I 4 think we talked about this earlier, but when you 5 say "well-known in the art," you're talking 6 about knowledge of a POSITA at the time of 7 invention; is that correct? 8 A Yes. So I -- you're right, we did 9 talk about this before. So just take the phrase 10 "a POSITA would have found it obvious to 11 highlight a plurality of occurrences of the 12 search strings to point the user to the relevant 13 portions of the document, as was well-known in 14 the art." And then when I refer to that section 15 of my declaration, I'm using that to illustrate 16 what the knowledge of a POSITA would include. 17 Q Okay. So to the extent this 18 limitation -- the limitation of claim 5 that we 19 have been talking about -- is not expressly 20 disclosed in the Entourage references, you're 21 relying on the knowledge of a POSITA to fill any 22 gaps, any missing claim limitation here; is that

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161 1 correct? 2 A Well, the Entourage references teach 3 the -- if you will, the different aspects of the 4 claim, but as -- I would agree with what you 5 said, that according -- that a POSITA would use 6 their knowledge in order to render the 7 particular limitations obvious based on the 8 teachings -- based on their knowledge and the 9 teachings of the Entourage references. 10 DR. LAROCHELLE: So I don't have a 11 whole lot left. I think we have been going for 12 over an hour. Did you want to take a quick 13 break now and then I think I can finish up in a 14 last session that may not even be an hour? 15 THE WITNESS: Sure, let's take 16 another. 17 DR. LAROCHELLE: Okay. Let's take a 18 five-minute break. 19 THE WITNESS: Sounds good. 20 (A recess was taken.) 21 BY DR. LAROCHELLE: 22 Q Welcome back. I have just a few more	163 1 not expressly disclose searching all textual 2 content of the files for the first search string 3 and only a single field of the files for the 4 second search string." 5 Do you see that? 6 A Yes. 7 Q So, basically, you admit in this 8 paragraph that Entourage references do not 9 expressly disclose the additional limitation of 10 claim 17, correct? 11 A That's correct. I start by saying 12 they don't expressly disclose all of the limits 13 of -- additional limits of claim 17. 14 Q Okay. And you don't point to the 15 other Ground 2 references, which are True and 16 Baeza-Yates, to find this disclosure, do you? 17 A No, I don't refer to True or 18 Baeza-Yates for this limitation. 19 Q What do you point to for this 20 disclosure for this limitation? 21 A Well, as I move down a little bit -- 22 I'll just read -- I say, "It would have been
162 1 questions for you. I won't keep you too much 2 longer. Let's turn to your opinion for claim 17 3 in Ground 2. And this is for claim 17 of the 4 '139 patent, and you address this in 5 paragraph 182 of your '139 declaration. So I'll 6 give you a second to scroll there. 7 A Okay. Let me review that quickly. 8 Q Sure. 9 (Witness reviewing document.) 10 A Okay. 11 Q So claim 17 -- I'll just read it into 12 the record for -- just so the record is clean. 13 Claim 17 says, "The method of claim 14 1, wherein the first partial search string 15 applies to all textual content of the set of 16 documents, and the incremental searching of the 17 second partial search string is performed only 18 on content of a single field of documents within 19 the set of documents." So that's the text of 20 claim 17. 21 And in your paragraph 182, you begin 22 by saying, "Although the Entourage references do	164 1 obvious to a POSITA, however, to permit such 2 search functionality at least because it was 3 well-known to do so, such as by using field 4 terms." And then I go on to talk about, you 5 know, well-known techniques. I give some 6 citations to it. 7 And then the example I give was "A 8 POSITA would have understood the search query of 9 'lyrics AND title: John Lennon' would search 10 all textual content of the documents for the 11 word 'lyrics' and only the title field of the 12 documents for 'John Lennon' and would return 13 documents containing 'lyrics' somewhere in the 14 documents of 'John Lennon' in the title of the 15 documents." 16 So I'm saying that, in summary, I 17 mean, what my paragraph 182 says is that it 18 would have been obvious to a POSITA, based on 19 their knowledge of the -- based on their 20 knowledge and the Entourage references -- well, 21 this claim, the claim 17 limitations would have 22 been obvious to a POSITA based on the Entourage

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165 1 references and the knowledge of the POSITA. 2 Q So here you're using knowledge of a 3 POSITA to fill in the missing claim limitation 4 that is not expressly disclosed by the Entourage 5 references; is that right? 6 MR. THACKER: Objection to form. 7 A Well, to be careful, to be more 8 precise, my argument here is an obviousness 9 reference -- or obviousness argument, and so I 10 start by saying that the Entourage references do 11 not expressly disclose all the limitations of 12 claim 17. I talk about what they do disclose, 13 however, and then I say that based on the 14 knowledge of a POSITA, as evidenced by citations 15 I give, that the limitations would be obvious to 16 a POSITA, based on the Entourage references and 17 their knowledge. 18 Q Okay. So, essentially, your 19 obviousness combination for claim 17 is your 20 Ground 2 references to cover claim 1 plus 21 knowledge of a POSITA. 22 A Yes. As I say -- as I wrote, "It	167 1 type of calendar file." 2 And so this is where I want to focus, 3 is this statement you make that the Entourage 4 references disclose that tasks are a type of 5 calendar file. Do you see that? 6 A I do. 7 Q Okay. So let's go ahead and open up 8 Exhibit 1004, the Schwartz reference, which you 9 have a reference here to. You have a citation. 10 So you say, "The Entourage references disclose," 11 meaning tasks, "is a type of calendar file." 12 And then you reference Exhibit 1004, the 13 Schwartz reference, and you have two pages 14 there, 66 and 73. So let's go to page 66. 15 A Okay. 16 Q And I'd just ask you to take a look 17 at page 66 and let me know where on page 66 18 Schwartz discloses that tasks are a type of 19 calendar file. 20 (Witness reviewing document.) 21 A I think -- you know, and I searched 22 back to page 73 since I did cite to that as
166 1 would have been obvious, however, to permit such 2 search functionality at least because it was 3 well-known to do so." And then I go on to 4 explain and give some citations that show that 5 it was well-known, and so, therefore, it would 6 have been obvious to a POSITA. 7 Q Let's take a look at claim 11 of the 8 '139 patent, and you -- your analysis of 9 claim 11 appears in paragraph 180 of your '139 10 declaration. 11 A Okay. Shall I review that then? 12 Q You're welcome to review it or I 13 could ask you a question. 14 A Go ahead and ask, and then I probably 15 will review it. 16 Q Okay. That's fine. 17 So -- well, let's look at 18 paragraph 180 together. You state that "This 19 claim is obvious at least because the Entourage 20 references disclose the subject and/or content 21 fields of tasks" -- you have a citation -- 22 "which the Entourage references disclose is a	168 1 well, and -- 73 of Schwartz. But on page 66, it 2 says, "In List view, you can open any listed 3 event by clicking its name. Regardless of the 4 view, you can open any of today's scheduled 5 events or tasks by clicking the event or task 6 name in the Today section of the calendar 7 window." 8 And then I -- as I said, I searched 9 for it a little bit, and, I mean, like on 10 page 73, in the caption of page -- excuse me, 11 the caption of figure 4.15, it says, "When it 12 gets close to the time for a scheduled event or 13 task for which you've set a reminder, this 14 window pops on-screen." 15 So, I mean, my understanding, then, 16 of tasks is these are events that can have a 17 date associated with them, and then they would 18 appear on the calendar. And so that's all I 19 meant by saying "tasks are a type of calendar 20 file." Yeah. 21 Q Understood. So sticking with 22 paragraph 80 but on the next page of your '139

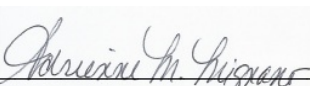
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169 1 declaration, so on page 128, I think this is the 2 last sentence of paragraph 180. You say, 3 "Moreover, modifying existing Entourage 4 searching of e-mail messages on e-mail-specific 5 attributes to enable searching of other types of 6 files on attributes specific to those files was 7 trivial and well within the ability of a POSITA 8 and would have been obvious to try." 9 When you say that -- well, let me ask 10 the question. What do you mean by that? 11 A I guess that's a long sentence. Are 12 you asking what I mean by the whole sentence? 13 Q Well, sure. I mean, I'm most 14 interested in the "trivial and well within the 15 ability of a POSITA and would have been obvious 16 to try." 17 A Sure. So I wanted to go to the first 18 part, "trivial and well within the ability of 19 the POSITA." So to read the sentence up until 20 that point, "Moreover, modifying existing 21 Entourage searching of e-mail messages on 22 e-mail-specific attributes to enable searching	171 1 calendar files, you would still be searching 2 through a set of items, perhaps in a database, 3 and now, instead of e-mail items, they could be 4 calendar entries. And those calendar entries 5 would have attributes associated with them, at 6 least some of which would be textual. 7 And the very same search technique 8 could be applied to look at particular 9 attributes of an object, to look for particular 10 query terms in those attributes. It would be 11 the same technique, whatever the type of items 12 was and whatever the attributes were. 13 So that's what I meant by saying 14 enabling "searching of other types of files on 15 attributes specific to those files was trivial 16 and well within the abilities of a POSITA." 17 Q So, essentially, here what you're 18 saying is that to the extent this limitation is 19 not expressly disclosed in the Entourage 20 references, you're relying on the knowledge and 21 ability of a POSITA to fill in that missing 22 limitation; is that right?
170 1 of other types of files on attributes specific 2 to those files was trivial and well within the 3 ability of a POSITA." 4 So Entourage had functionality to 5 search e-mail messages on e-mail-specific 6 attributes. And what that means is e-mail -- 7 e-mail messages would be stored and they would 8 be stored and have structured information 9 associated with them. The attributes, like the 10 sender, the date, the subject line and so on, 11 those would be attributes of the e-mail 12 messages. 13 And so Entourage already had the 14 functionality to search e-mail messages on 15 e-mail-specific attributes. That means there 16 was a search functionality or algorithm that 17 could go through a set of e-mail message records 18 stored in a database or whatever and look at 19 information, textual information in particular 20 specified attributes. 21 And so to modify that to look at -- 22 to do that for other types of files, such as	172 1 A Well, I say a few things. I mean, I 2 guess going back to page 127, I say, "The 3 Entourage references expressly disclose the 4 ability to search calendar files, albeit in the 5 non-incremental advanced find dialog box." 6 So the Entourage references did 7 disclose searching for calendar files, but then 8 the sentence we were talking about is 9 something -- is a more general thing that would 10 be obvious, namely, as I say, "searching of 11 other types of files on attributes specific to 12 those files." And so that's a more general 13 thing that would be obvious because modifying 14 the existing Entourage searching of e-mail 15 messages on e-mail-specific attributes, doing 16 that modification would be trivial, as I 17 explained, and so well within the abilities of a 18 POSITA. 19 Q Okay. So, essentially, it would have 20 been obvious in view of -- so it rendered 21 obvious by Entourage in view of the knowledge of 22 a POSITA, is what you're saying?

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173 1 A Yes, that's correct. 2 DR. LAROCHELLE: Let's take a quick 3 break. I think I'm done, but I just want to go 4 over my notes and make sure I didn't miss 5 anything. 6 THE WITNESS: Sure. 7 DR. LAROCHELLE: So five minutes. 8 (A recess was taken.) 9 DR. LAROCHELLE: Thank you, 10 Dr. Terveen. I have no further questions and 11 pass the witness. 12 MR. THACKER: Thanks. I just have a 13 couple quick clarifying questions, Dr. Terveen. 14 EXAMINATION BY COUNSEL FOR THE PETITIONER 15 BY MR. THACKER: 16 Q So you were asked about claim 17 of 17 the '139 patent. And you were specifically 18 asked about whether you were using Entourage and 19 the knowledge of a POSITA for claim 17. 20 So I want to turn your attention to 21 paragraph 182 of your '139 declaration, and my 22 question is, do you see at the bottom of	175 1 that -- and this is towards the middle of the 2 page, "The language" -- 3 A I'm looking there now, yeah. 4 Q Oh, okay, sorry. Yeah, just let me 5 know when you have it open. Sorry. 6 A Yes, I am now on page 114. 7 Q Okay. Do you see in the middle of 8 page where it says, "The language supports 9 Boolean and logical operators, thesaurus, 10 proximity operations and some special 11 characters, for example, where paper contains 12 retrieval or like info and date is greater than 13 January 1st, 1998"? 14 Do you see that? 15 A Yes, I do. 16 Q Do you recall why you cited to this 17 specific page of Baeza-Yates? 18 A I do. And I obviously -- so, first 19 of all, the reference number 123 didn't remind 20 me that this was the Baeza-Yates reference, 21 which, of course, is part of my combination. I 22 should have been more careful when I looked at
174 1 page 129 where you cited Exhibit 1023 at 2 page 114? 3 A Yes. 4 (Microsoft Exhibit 1023 previously 5 marked for identification and attached to the 6 transcript.) 7 Q Okay. Can you open Exhibit 1023 and 8 review page 114 and then let me know when you're 9 done doing that. 10 A Yes. Let's see, have I opened 1023 11 already, or is that something I need to 12 download? 13 Q I don't believe you have. 14 A Okay, let me find that. I assume it 15 is in the repository. Oh, yes. 16 DR. LAROCHELLE: It is. You will 17 find it under Baeza-Yates, or however you say 18 that. 19 THE WITNESS: Yes, we're all 20 wondering. 21 A Okay. So I've opened that up. 22 Q Do you see specifically where it says	176 1 that in answering Ms. Larochelle. 2 So I say in that sentence for 3 which -- where I -- where the citation was 4 included, "For example, many search engines 5 allow users to enter a field term (for example, 6 'title' and 'text' -- 'title,' 'text') before a 7 search string to limit the search string to that 8 particular field of the files." 9 And then the example that I cited -- 10 or the page that I cited to from Baeza-Yates 11 gives an example -- the query -- it is showing 12 an excerpt of the query "where paper contains 13 retrieval or like info percent and date greater 14 than 1-1-98." 15 So what that is showing is searching 16 for the term "retrieval" and looking at a 17 particular field, date, that has to be greater 18 than 1-1-98. So it -- Baeza-Yates does 19 illustrate that concept and, again, I apologize 20 for not looking at that reference when I 21 answered the question earlier. 22 MR. THACKER: That's okay.

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177 1 I have no further questions. 2 DR. LAROCHELLE: Nothing further. 3 Thank you, Dr. Terveen. 4 THE WITNESS: Thank you. 5 (Time noted: 3:34 p.m.) 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22	179 1 CERTIFICATE OF SHORTHAND REPORTER - NOTARY PUBLIC 2 3 I, ADRIENNE MIGNANO, Certified 4 Stenographic Reporter and Notary Public do 5 hereby certify: 6 That LOREN G. TERVEEN, PH.D., the 7 witness whose deposition is hereinbefore set 8 forth, was duly sworn by me before the 9 commencement of such deposition and that such 10 deposition was taken before me and is a true 11 record of the testimony given by such 12 witness. 13 I further certify that the adverse 14 party, MICROSOFT, INC., was represented by 15 counsel at the deposition. 16 17 I further certify that the deposition 18 of LOREN G. TERVEEN, PH.D., occurred remotely 19 via Zoom Videoconference equipment on Tuesday, 20 October 21, 2025, commencing at 10:01 A.M. to 21 3:34 P.M. 22
178 1 ACKNOWLEDGMENT OF DEPONENT 2 3 I, LOREN G. TERVEEN, PH.D., do hereby 4 acknowledge that I have read and examined the 5 foregoing testimony, and the same is a true, 6 correct and complete transcription of the 7 testimony given by me and any corrections appear 8 on the attached Errata sheet signed by me. 9 10 _____ 11 (Date) (Signature) 12 13 14 15 16 17 18 19 20 21 22	180 1 I further certify that I am not 2 related to any of the parties to this action by 3 blood or marriage, I am not employed by or an 4 attorney to any of the parties to this action, 5 and that I am in no way interested, financially 6 or otherwise, in the outcome of this matter. 7 8 IN WITNESS WHEREOF, I have hereunto 9 set my hand this 30th day of October, 2025. 10 My commission expires: June 2026 11 12 13 14  15 ADRIENNE M. MIGNANO, RPR 16 17 18 19 20 21 22

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