

UNITED STATES PATENT AND TRADEMARK OFFICE
BEFORE THE PATENT TRIAL AND APPEAL BOARD

MICROSOFT CORPORATION,

Petitioner,

IPR2025-00255

v.

X1 DISCOVERY, INC.,

Patent Owner.

REMOTE EXPERT DEPOSITION OF MARTIN P. HAEBERLI

January 8, 2026

10:00 a.m.

REPORTED BY:

Siew G. Ung

CSR No. 13994, RPR, CSR

MICROSOFT EXHIBIT 1098
Microsoft v. X1 Discovery
IPR2025-00253

1 APPEARANCES:

2
3 For Petitioner

4 KLARQUIST SPARKMAN, LLP
5 SAMUEL THACKER, ESQ.
6 TODD SIEGEL, ESQ.
7 One World Trade Center, Suite 1600
8 121 S.W. Salmon Street
9 Portland, Oregon 97204
10 503.595.5300
11 samuel.thacker@klarquist.com
12 todd.siegel@klarquist.com
13

14 For Patent Owner

15 GOODWIN PROCTER LLP
16 NATASHA E. DAUGHTREY, ESQ.
17 601 South Figueroa Street, Suite 4100
18 Los Angeles, California 90017
19 213.426.2500
20 Ndaughtrey@goodwinprocter.com

21 CHRISTIE LAROCHELLE, ESQ.
22 EMMA MURRAY, ESQ.
23 100 Northern Avenue
24 Boston, Massachusetts 02210
25 617.570.1000
clarochelle@goodwinlaw.com
emurray@goodwinlaw.com

INDEX TO EXAMINATIONS

WITNESS: MARTIN P. HAEBERLI

EXAMINATION

PAGE

BY MR. THACKER

5

1	EXHIBITS MARKED		
2	MARKED	DESCRIPTION	PAGE
3			
4	Exhibit 1001	February 4, 2020, United States	12
5		Patent No. 10,552,490 B2, Gross	
6		et al. (41 pages)	
7			
8	Exhibit 1009	August. 29, 2000, United States	44
9		Patent No. 6,112,172, True et	
10		al. (18 pages)	
11			
12	Exhibit 1054	November 4, 1997, United States	17
13		Patent No. 5,685,003, Peltonen	
14		et al. (34 pages)	
15			
16	Exhibit 2001	Declaration of Martin P.	9
17		Haeberli (105 pages)	
18			
19	Exhibit 2020	Supplemental Declaration of	28
20		Martin P. Haeberli (63 pages)	
21			
22			
23			
24			
25			

1 THURSDAY, JANUARY 8, 2026, 10:00 A.M.

2 ***

3 THE REPORTER: Please raise your right hand.

4 My name is Siew Ung, CSR Number 13994.

5 MARTIN P. HAEBERLI,

6 having been first duly sworn, was examined and

7 testified as follows:

8 EXAMINATION BY MR. THACKER

9 Q. Good morning, Mr. Haeberli. I appreciate you
10 taking the time for the depo today.

11 MR. THACKER: Before we start, I just want to
12 state for the record that this is a consolidated
13 deposition for the IPRs ending in '253, '254, and '255.
14 And all those IPRs start at 2025.

15 BY MR. THACKER:

16 Q. Mr. Haeberli, are you okay with taking, like,
17 five- to ten-minute breaks roughly every hour? And you
18 can take a longer break for lunch if you want.

19 A. Yes, thanks.

20 Q. Okay. Yeah. And then, if you need to take a
21 break any other time, just let me know. We can -- we
22 can pause.

23 So where are you located right now?

24 A. I am located in the Goodwin offices in Redwood
25 City, California.

1 Q. Okay. So -- so you are with Ms. Daughtrey?

2 A. Yes.

3 Q. Okay. And have you been provided with any
4 materials today?

5 A. I -- I have next to me a binder which is
6 titled "Expert Declarations."

7 Q. Okay. And those are clean copies of those
8 declarations?

9 A. That's my understanding.

10 Q. Great.

11 How did you -- did you prepare before this
12 deposition for -- for the deposition?

13 A. Yes.

14 Q. How did you prepare?

15 A. I met with counsel in person and by Zoom, to
16 my recollection, about four times.

17 I also spent time reviewing and rereading my
18 declaration, the deposition transcript of Dr. Terveen,
19 Dr. Terveen's declarations, and cited documents.

20 Q. You said cited documents.

21 Do you recall which exhibits specifically you
22 reviewed?

23 A. I don't recall, unaided, which exhibits
24 specifically I reviewed, but I looked at the exhibits
25 that I had cited in my declaration -- declarations, and

1 also at exhibits cited in Dr. Terveen's declarations.

2 Q. Okay. Do you know someone named Ben Bederson?
3 He's a professor at the University of Maryland.

4 A. Unaided, no.

5 Q. Okay. Do you understand that this deposition
6 is for all three IPRs, ending in '253, '254, and '255?

7 A. Yes, that'd my understanding.

8 Q. Okay. And do you understand that the
9 IPR2025-00253 involves US Patent Number 7,370,035?

10 A. I'm -- I don't have it in my brain -- unaided
11 associations. But let's all just look at '253 for a
12 moment.

13 Yes. So '253 for the '035 patent, yes.

14 Q. Okay. And you're fine if we refer to that as
15 the '035 patent?

16 A. Yes.

17 Q. Got it.

18 Same questions for the '498 and '139. But --

19 So do you understand that IPR2025-00254
20 involves US Patent Number 10,552,490?

21 A. Yes, I do.

22 Q. And you're okay if we referred to that patent
23 as the '490 patent?

24 A. Yes.

25 Q. Okay. And then do you understand that

1 IPR2025-00255 involves US Patent Number 9,633,139?

2 A. Yes.

3 Q. And you're okay if we refer to that as the
4 '139 patent?

5 A. Yes, I am.

6 Q. Okay. Do you also agree that, except for the
7 claims, the specifications of these three patents are
8 substantively identical?

9 A. I have reviewed the specifications of all
10 three patents and compared them, and I would agree that
11 they are substantively identical.

12 Q. Okay. So then, to avoid me having to repeat
13 my same questions for every single patent, do you agree
14 that, unless we are talking about claim language that is
15 unique to a specific patent, that your answers for one
16 patent would apply equally to the other two patents?

17 A. Absent any specific discussion of claims, I
18 would agree.

19 Q. Okay.

20 A. Sorry. Claims and claim language. I -- yeah.

21 Q. Right. Right.

22 So, for example, the '490 patent recites an
23 index data structure that the other two patents do not
24 recite. And so, if I'm asking you questions about the
25 index data structure of the '490, you would agree that

1 those answers wouldn't apply to the other two patents?

2 MS. DAUGHTREY: Object to form.

3 THE WITNESS: If you're asking about claim
4 language. And again, I'd like -- I'd like to ground
5 this in claim language that recites to index -- indexes.
6 And I do recall that -- that one of the patents has
7 claim language that addresses indices and the other
8 two's claim language -- other two patents' claim
9 language does not, then I'm -- I would be happy to agree
10 to that.

11 In a more general sense, however, obviously,
12 all three specifications have discussion about indices
13 in them, so if we are having -- having broader
14 discussions about indexes and how they work as
15 background, that would apply to all patents, in my
16 opinion -- all three patents here, in my opinion.

17 MR. THACKER: Okay. Let's focus on IPR -- the
18 IPR ending in '254, and I want to look at your original
19 declaration, which is Exhibit 2001.

20 (Whereupon, Exhibit 2001 was marked for
21 identification.)

22 BY MR. THACKER:

23 Q. I'll give you a second to pull that up.

24 A. Yes, I have it here.

25 Q. Okay. And in Paragraph 29, you state -- you

1 give your definition of a POSITA, correct?

2 A. Yes.

3 Q. Okay. And you allege that you were a POSITA
4 in 2002, correct?

5 A. Yes.

6 Q. Okay. Would a POSITA in 2002 know what a file
7 is?

8 A. Yes.

9 Q. Okay. And is it fair to say that a file is a
10 set of data that a computer can recognize as a discrete
11 unit?

12 MS. DAUGHTREY: Object to form.

13 THE WITNESS: That might be one way to
14 describe it, although we can have a long discussion
15 about operating systems and file systems, since even the
16 1970s -- 1960s and '70s.

17 To think of as a file in that context, in the
18 historical context, as being something that has likely
19 has a name, that contains a -- a sequence of data. It
20 could be words, characters, bytes, bits, depending on
21 the operating system and the computer architecture.

22 BY MR. THACKER:

23 Q. So you said it has -- a file has a name and
24 contains bits of data.

25 Did I get that right?

1 A. Contains a sequence of -- of bits of data.

2 Q. Okay.

3 The reason that you said it has a name is that
4 the -- the computer operating system has to have some
5 way of uniquely identifying that sequence of bits of
6 data, correct?

7 MS. DAUGHTREY: Object to form.

8 THE WITNESS: Colloquial -- colloquially, yes.
9 BY MR. THACKER:

10 Q. Okay. A -- a contact record, for example, in
11 an address book that includes the contact's name, their
12 phone number, and/or email address, contains a sequence
13 of bits of data, correct?

14 Would you agree with that?

15 A. A contact record must, of necessity, contain
16 the information related to that contact, however it is
17 represented.

18 Q. Do you agree then that an address book that
19 contains a set of contact records contains a file for
20 each of those contact records?

21 A. No.

22 MS. DAUGHTREY: Object to form.

23 THE WITNESS: Sorry, no.

24 BY MR. THACKER:

25 Q. Okay. I want to turn to Exhibit 1001 in the

1 '254 IPR.

2 So do you need me to upload that to the chat?

3 A. Yes, please.

4 (Whereupon, Exhibit 1001 was marked for
5 identification.)

6 BY MR. THACKER:

7 Q. Okay.

8 All right. I have just uploaded it.

9 A. Okay. I have it downloaded, and I have it
10 open.

11 Q. Okay. Can you turn to Column 32. And this is
12 Claim 17.

13 A. Yes.

14 Q. Do you see where it says "contacts files"?

15 A. Yes.

16 Q. So is it still your opinion that contact
17 records are not files?

18 MS. DAUGHTREY: Object to form.

19 THE WITNESS: I think that's a
20 mischaracterization of my answer, by the way.

21 That -- if you could have your previous
22 question reread, what I was trying to allow for is that
23 there may be many different -- if you'd like to have
24 that reread -- there might be many different ways of
25 structuring contact information.

1 For example, one way might be to have one file
2 per contact. Another might be to have a set of database
3 records, which themselves might be represented in a
4 single file or a number of different files. Each record
5 might then correspond to a contact -- or might add --
6 another scenario in which multiple contacts -- one or
7 more contacts are represented in a file and a contact
8 collection or -- or aggregate for a user might then be
9 represented in multiple different files. So those are
10 all potential examples of -- there might be many others.

11 BY MR. THACKER:

12 Q. So your -- your testimony, then, is that
13 contact records -- a contact record could be implemented
14 in its -- as its own file or is in -- in a file with
15 other contact records?

16 A. Or there might be other ways of representing
17 them. For example, I mentioned a database.

18 Q. Would a POSITA in 2002 have been aware of
19 these various ways of storing or representing a contact
20 record?

21 A. Yes.

22 Q. Give me one second.

23 Okay. We can -- we can return to this line of
24 questioning later. I want to move on for now.

25 In returning to Paragraph 29 of your '490

1 declaration, Exhibit 2001, you state that "A POSITA
2 would have an understanding of index search systems,"
3 correct?

4 A. Yes, I do.

5 Q. So in -- in the context of data retrieval,
6 would a POSITA in 2002 know what an index is?

7 A. Yes.

8 Q. Is an index an index data structure?

9 A. An index is -- at the -- at the 50,000-foot
10 level, an index is a concept.

11 An index data structure -- one or more index
12 data structures would be ways of representing a given
13 index in a given context.

14 Q. If an index indicated where a search term was
15 located in a file or which -- in a -- in a file, would
16 that be an index data structure?

17 MS. DAUGHTREY: Object to form.

18 THE WITNESS: I would say an -- an index data
19 structure would be a way of representing an index -- the
20 concept of an index in a concrete instance such that one
21 would query the index data structure algorithmically to
22 identify where, in this context, in this example a file,
23 one would look for the data in question.

24 BY MR. THACKER:

25 Q. So if a search tool queries the index to

1 identify where in a file a search term is located, would
2 that index be an index data structure?

3 MS. DAUGHTREY: Object to form.

4 THE WITNESS: I would rephrase it as: If a
5 search tool queries the index data structure to locate
6 where in a file a term is located, then it -- it -- that
7 would be use of the index represented in the index data
8 structure.

9 BY MR. THACKER:

10 Q. Do you agree that, in 2002, index data
11 structures were colloquially referred to as "indexes"?

12 MS. DAUGHTREY: Object to form.

13 THE REPORTER: As what?

14 MS. DAUGHTREY: Object to form.

15 THE REPORTER: No. Referred to as --
16 colloquially referred to as...

17 MR. THACKER: Indexes.

18 THE REPORTER: Okay.

19 THE WITNESS: I would say no. I think it
20 depends on the context how and on the discussion.

21 I can imagine, in some cases people might,
22 conversationally, use them interchangeably. But I think
23 one of ordinary skill in a professional context would
24 understand that an index is a concept -- an index data
25 structure is a form of rep- -- a way of representing

1 the con- -- the abstract concept of an index in a more
2 concrete way, and then there would be instances of an
3 index data structure that would have been built -- yeah.
4 So some --

5 So in some context, I would say people might
6 use those interchangeably and others no. It depends on
7 the conversation and the analysis.

8 BY MR. THACKER:

9 Q. Outside of the claims, does the '490 patent
10 ever use the term "index data structure"?

11 MS. DAUGHTREY: Object to form.

12 THE WITNESS: I don't recall unaided. I know
13 the word "index" shows up in the spec, but I don't
14 have -- I don't have an eidetic memory, so I can't tell
15 you without searching the document.

16 BY MR. THACKER:

17 Q. Okay. Well, I uploaded the '490 patent, and
18 you're free to do a quick search of the document.

19 So just let me know when you've done that.

20 A. So outside of the claims, I do not see the
21 phrase "index data structure" appearing as that trigram
22 of words anywhere in the specification.

23 I do see the word "index data" and "index" --
24 phrases "index data" and "index data file" showing up in
25 the spec -- or "index database."

1 Q. In preparing for the deposition today, did you
2 happen to review Exhibit 1054?

3 A. In your -- I -- without knowing the exhibit
4 name, I don't know.

5 MR. THACKER: Okay. I will upload the exhibit
6 now.

7 (Whereupon, Exhibit 1054 was marked for
8 identification.)

9 MR. THACKER: I just uploaded it to the chat.

10 THE WITNESS: Thank you. Yes.

11 BY MR. THACKER:

12 Q. Can you turn to the -- Figure 2?

13 A. I'm on Figure 2.

14 Q. Do you agree that Figure 2 is an index data
15 structure?

16 MS. DAUGHTREY: Object to form.

17 THE WITNESS: I would want to review the
18 patent again, thoroughly. However, in the context of
19 just this figure alone, it appears to be a form of an
20 index data structure.

21 BY MR. THACKER:

22 Q. Is it fair to say that the reason Figure 2 is
23 an index data structure is because it contains
24 associations between identifiers, in this case keywords,
25 and their locations?

1 MS. DAUGHTREY: Object to form.

2 THE WITNESS: Yes.

3 BY MR. THACKER:

4 Q. Okay. Now, I want to move from indexes to
5 searches.

6 In the context of data retrieval again, would
7 a POSITA in 2002 know what a search is?

8 A. Yes.

9 Q. Is it fair to say that a search looks to find
10 where specified search group criteria, such as keywords,
11 are located?

12 A. It's fair to say that a search assays or
13 attempts to find where information matching the search
14 criteria is found.

15 Q. So then a search returns results that match a
16 query, correct?

17 A. That would be a -- an idiomatic way of -- of
18 putting it.

19 Q. Would a POSITA in 2002 know what a user
20 interface is?

21 A. Yes.

22 Q. Is it fair to say that a user interface is the
23 means by which a user interacts with a computer?

24 A. A user interface is the synthesis of what is
25 shown by software to the computer. The computer then

1 uses -- the user then uses to tell the computer what to
2 do, so it's -- it's what the user sees and how they
3 interact with it to get the task done, whatever task
4 they're working on.

5 Q. For example, a graphical user interface
6 includes a display that a user interacts with via input
7 devices such as a keyboard and mouse, correct?

8 MS. DAUGHTREY: Object to form.

9 THE WITNESS: For example, yes.

10 BY MR. THACKER:

11 Q. I understand that you worked on user
12 interfaces in your career.

13 Is a graphical user interface limited to only
14 one window?

15 A. No.

16 MS. DAUGHTREY: Object to form.

17 THE WITNESS: Sorry. I'm -- no, it's not.

18 BY MR. THACKER:

19 Q. So it's your opinion that a -- a user
20 interface can include multiple windows?

21 MS. DAUGHTREY: Object to form.

22 THE WITNESS: Yes, although even the notion of
23 a window is not required or requisite or implicit in a
24 user interface. One could imagine a user interface that
25 didn't have any windows, for example.

1 BY MR. THACKER:

2 Q. But it encompasses or could possibly include
3 multiple windows?

4 MS. DAUGHTREY: Object to form.

5 THE WITNESS: Yes.

6 BY MR. THACKER:

7 Q. And now I want to turn to the concept of
8 incremental searching.

9 Now, I understand in your declaration that you
10 contend that incremental search processes [sic] a
11 plurality of files, you allege was not well known before
12 2002.

13 What I'm asking you is, was incremental
14 searching, the concept, generally, well known in 2002?

15 A. In 2002, incremental search within a single
16 open edit buffer or single file was well known.

17 Q. If incremental searching within a file is well
18 known, then those systems that implement it, that
19 incremental search tool must have had user interfaces
20 that allowed the user to enter a single search term and
21 that would -- and the computer would automatically or
22 incrementally display results to the user as they typed,
23 correct?

24 MS. DAUGHTREY: Object to form.

25 THE WITNESS: A concrete example would have

1 been Emacs, as also cited by Raskin, where one would
2 have an open-ended buffer, and one would begin typing --
3 enter a search mode and begin typing a search query, if
4 you will.

5 And incrementally, as one typed, the Emacs
6 would find the first match -- find and highlight the
7 first match.

8 BY MR. THACKER:

9 Q. Do you agree then, that a POSITA in 2002 could
10 implement such a search tool?

11 MS. DAUGHTREY: Object to form.

12 THE WITNESS: I certainly agree they would
13 have been aware of it and, in the context of a single
14 file, a POSITA would have been able to implement that as
15 well.

16 BY MR. THACKER:

17 Q. They would have been able to implement a user
18 interface that allows for incremental searching and
19 provides incremental search results?

20 MS. DAUGHTREY: Object to form.

21 THE WITNESS: They would have been able to,
22 except for the observation that, in Raskin, he points
23 out that, at least using standard interface builders, it
24 would have been hard to do so.

25 ///

1 BY MR. THACKER:

2 Q. All right. Let's -- let's talk about that for
3 a second.

4 So Raskin mentions Visual Basic, correct?

5 A. Yes.

6 Q. Okay. And am I right in understanding that
7 Visual Basic makes developing a user interface super
8 easy because all of the user interface elements are sort
9 of prebaked?

10 A. That's one of the, if you will, selling points
11 or benefits known about Visual Basic at the time.

12 Q. Correct.

13 For example, you would have, you know, a menu
14 of selectable interface elements like a text box or a
15 selectable button, correct?

16 MS. DAUGHTREY: Object to form.

17 THE WITNESS: Yes.

18 BY MR. THACKER:

19 Q. And the user could add that to their
20 user inter- -- or programmer -- sorry. Strike that.

21 A programmer or developer could add those
22 predefined widgets to their user interface template by
23 simply dragging and dropping them?

24 A. Yes.

25 Q. Okay. But if a POSITA wanted to create a

1 dynamic text box that would tell the computer to perform
2 a command, such as from a search, after any change in
3 text in the character box, your testimony is that a
4 POSITA would have -- at -- in 2002, would have been able
5 to do that?

6 MS. DAUGHTREY: Object to form.

7 And I don't think I under- -- I think you
8 broke up a little bit, Sam.

9 Did you say would or would not have been able
10 to do that?

11 MR. THACKER: Oh, sorry. Yeah. Thanks.

12 BY MR. THACKER:

13 Q. Let me rephrase, Mr. Haeberli.

14 So in 2002, would a POSITA have reasonably
15 expected to be able to implement a dynamic text box that
16 would cause the computer to execute a command, such as
17 perform a search, in response to any change in the text
18 box?

19 MS. DAUGHTREY: Object to form.

20 THE WITNESS: So my understanding, citing also
21 to Raskin, is at least as of the 2000 publication of
22 Raskin's work, that would not have been easy. It would
23 have been difficult to impossible.

24 BY MR. THACKER:

25 Q. Well, I'm not -- I'm not asking if it would be

1 difficult or impossible to modify Visual Basic to do
2 what I just said. I'm asking: If someone was building
3 their own user interface, would they have reasonably
4 expected to be able to implement a dynamic text box?

5 A. No.

6 Q. Well, you said earlier that a POSITA would
7 have reason -- would have been able to implement Emacs,
8 correct?

9 A. Yes.

10 Q. And Emacs features a dynamic text box,
11 correct?

12 A. Yes, from an ab initio, basically written in C
13 program that has a much longer history than that.

14 However, if you were going about implementing
15 it in a standard interface builder like Visual Basic, it
16 would not have been straightforward.

17 Q. Okay. But again, I'm not asking about Visual
18 Basic.

19 I'm saying that, if a developer in 2002 was
20 familiar with C+, would they have been able to implement
21 a dynamic text box?

22 A. If you --

23 MS. DAUGHTREY: Object to form.

24 THE WITNESS: You phrased the question in the
25 context of a -- of C+ -- I assume you mean a C++, or

1 C-native implementation.

2 BY MR. THACKER:

3 Q. Correct.

4 A. And I would say it -- manifestly, yes,
5 because, among other things, it was -- was implemented
6 in Emacs by then.

7 Q. And do you agree that a POSITA would have been
8 familiar with C+ in 2002?

9 A. A POSITA would have been familiar with C++ and
10 C in 2002.

11 Q. Do you agree that "a" is a word? For example,
12 in the phrase "a cat," is a word?

13 A. Sure. Or -- or let's just say "a cat in" -- a
14 multiword phrase "a can in a hat," I would agree, in
15 that context, the word "a" is a word. I mean, that --
16 arguably, the letter "A" shows up in the word "cat," so
17 it's a different -- different context.

18 But hearing your question, if I say the phrase
19 "a cat in a hat," is the word -- the first utterance "a"
20 or "a" [different pronunciation] a word?

21 Yes, that's a word.

22 Q. Okay. So similarly, if I said "I am Sam," you
23 would agree that "I" is a word?

24 A. In that context, yes.

25 Q. Okay.

1 THE REPORTER: Hold on a sec.

2 When you said the phrase, is it "a cat in a
3 hat" or "a cat in the hat"?

4 THE WITNESS: I believe I said "a cat in a
5 hat," but --

6 THE REPORTER: Okay.

7 THE WITNESS: -- I understand your reference
8 to the Dr. Seuss book "The Cat in a Hat." Different...
9 BY MR. THACKER:

10 Q. All right. So you -- so you agree that there
11 are certain -- at least two words in the English
12 language that are single-character words?

13 A. Yes.

14 Q. Do you agree that there are a plurality of
15 two-character words in the English language?

16 A. Yes.

17 Q. Do you agree that at least some whole words
18 can also be partial strings for longer words?

19 MS. DAUGHTREY: Object to form.

20 THE WITNESS: Yes.

21 BY MR. THACKER:

22 Q. For example, going back to "a" is a partial
23 string for other words such as "an," "and," "Andrew,"
24 et cetera.

25 Would you agree?

1 A. Yes.

2 Q. If a system indexes the word "a," do you agree
3 that it inherently indexes a partial string, since "a"
4 is a partial string for many other words?

5 MS. DAUGHTREY: Object to form.

6 THE WITNESS: I'm not sure I understand your
7 question, although it's a -- no, my first answer would
8 be no, I don't agree.

9 BY MR. THACKER:

10 Q. But you agree that "a" is a partial string for
11 other words?

12 A. I agree that a -- a string, "a," or the
13 letter, "a," occurs within many other words.

14 Q. Right.

15 So if a system indexes the letter "a," it
16 inherently indexes a partial string because "a" is part
17 of -- is a part of other words, correct?

18 MS. DAUGHTREY: Form.

19 THE WITNESS: If a system indexes all
20 instances of the letter "a" within a file, then,
21 necessarily, if you ask: Where does "a" occur in the
22 file, the index will tell you, in this hypothetical, all
23 places the letter "a" occurs within that file.

24 I -- I don't know if I would describe that as
25 indexing a partial string or not. If you are talking

1 about an individual letter, my statement would hold.

2 And -- and, oh, by the way, we can get into a
3 complete layered discussion about the distinction
4 computer scientists sometimes like to make between -- in
5 text processing, between words, which can comprise one
6 or more characters, and characters or letters.

7 BY MR. THACKER:

8 Q. All right. I'd like to go back to your
9 declaration -- this is actually your supplemental
10 declaration, so Exhibit 2020 in the '254 IPR, so I'll
11 give you a chance to pull that up.

12 (Whereupon, Exhibit 2020 was marked for
13 identification.)

14 THE WITNESS: I have it up.

15 BY MR. THACKER:

16 Q. Okay. Can you turn to Paragraph 72?

17 A. Yes.

18 Q. Okay. I believe, at the bottom of page 32,
19 where you say: "Additionally, Dr. Terveen overlooks a
20 critical aspect of Claim 1: the 'character strings' must
21 correspond to 'partial search strings' [elements 1.8 to
22 1.13] meaning the index strings themselves must be
23 partial rather than complete."

24 Do you see that?

25 A. Yes, I do.

1 Q. Is that still your opinion today?

2 A. So my answer is yes, but I would like to read
3 this -- reread this paragraph carefully in the context
4 of the fact that you just asked the question.

5 Q. Then go for it.

6 A. Yes, that's still my opinion.

7 Q. So is it your opinion then that the only way
8 to use an index to locate items that include partial
9 search strings is to index the partial search strings
10 themselves?

11 MS. DAUGHTREY: Object to form.

12 THE WITNESS: No.

13 And, by the way, may -- I don't want to take
14 you off your rhythm, but at an appropriate time, I would
15 like to ask for a break.

16 BY MR. THACKER:

17 Q. Oh, for sure. Can I ask just, like, one or
18 two more questions?

19 A. Sure of course.

20 Q. Okay. Does the Claim 1 of the '490 patent
21 that's Exhibit 1001 in the '254 IPR, does that claim
22 expressly recite that the index data structure indexes
23 partial search strings?

24 A. In the context of your question, I'm rereading
25 the claim language.

1 Could you please repeat or -- the question
2 and/or have it reread?

3 Q. Yeah, for sure.

4 Does Claim 1 of the '490 patent expressly
5 recite that the index data structure indexes partial
6 search strings?

7 A. No.

8 MR. THACKER: Okay. I think that's a good
9 place to stop for a break, if that works for you,
10 Mr. Haeberli.

11 THE WITNESS: Thank you, it does.

12 (Recess taken.)

13 BY MR. THACKER:

14 Q. All right. Mr. Haeberli, did you speak with
15 any- -- anyone while we were on break?

16 A. Yes.

17 Q. Who did you speak with?

18 A. I spoke with Ms. Daughtrey, and I also spoke
19 briefly with the receptionist.

20 Q. Did you discuss the substance of your
21 testimony today at all with anyone while you were on
22 break?

23 A. No.

24 Q. Okay. Do you agree that, in 2002, it was
25 known to perform a search across multiple files?

1 A. Yes.

2 Q. Do you agree, in 2002, that it was known to
3 perform such a search on multiple search strings entered
4 in a single search field?

5 A. Yes.

6 Q. Okay. Let's turn to your first declaration in
7 '490 -- in the '254 IPR that's Exhibit 2001.

8 Do you have that up?

9 A. Yes.

10 Q. Okay. Can you turn to Paragraph 35?

11 A. Yes.

12 Q. So is it your testimony that the '490 patent
13 resolved prior inefficient -- alleged prior
14 inefficiencies in part by allowing users to enter
15 multiple strings in a single search field?

16 A. Just going to reread that paragraph.

17 So the first sentence of that paragraph in the
18 declaration reads: "The '490 patent resolved these
19 inefficiencies by allowing users to incrementally search
20 multiple strings using just a single search field and
21 use an index data structure comprising associations
22 between files and character strings to further improve
23 searching speed and file accessibility."

24 Q. Right. And I'm asking you: Is it your
25 testimony today that the '490 patent allegedly improved

1 on prior systems in part by allowing users to enter
2 multiple search strings in a single search field?

3 A. So you inserted the word "allegedly." I
4 didn't say anything about allegedly.

5 Q. No, yeah. I -- I inserted that.

6 But -- but is it your testimony that -- that
7 the '490 patent improved upon prior art systems in part
8 by allowing the user to enter multiple search strings in
9 a single search field?

10 A. I didn't say "in part," here, although I think
11 that's accurate.

12 Q. But that's your testimony today?

13 A. Yes.

14 Q. Okay. But you acknowledge that that was known
15 in the art?

16 A. No.

17 I acknowledged -- if -- if I understood your
18 previous -- your earlier question correctly, and perhaps
19 I didn't, you asked me: Was it known -- I'm
20 paraphrasing -- to have a single search field contain
21 multiple search strings?

22 Q. Okay.

23 A. And I -- I, again, in summary, in the
24 abstract, I answered "yes" to that question.

25 Q. Okay.

1 A. But the '490 patent goes beyond that by
2 supporting incremental search with multiple incremental
3 search parameters in the same search field.

4 Q. All right. Can you turn to Paragraph 36 of
5 your declaration?

6 A. Yes.

7 Q. So you say Figure 3G shows an embodiment of
8 the disclosed searching method, correct?

9 A. Yes.

10 Q. Does Figure 3G include multiple search fields?

11 A. I'm going to refer to the original patent,
12 just because it's easier read that in my dec enclosure.

13 Q. Yeah, go for it.

14 A. Yes.

15 Q. Would you agree that having multiple search
16 fields, as in Figure 3G, can help a user more
17 efficiently narrow down search results?

18 MS. DAUGHTREY: Object to form.

19 THE WITNESS: In some cases, it -- yes, it
20 can.

21 BY MR. THACKER:

22 Q. What are those cases?

23 A. An -- an example might be, if one is
24 attempting to, in a given separate field, specify
25 different sections of the document structure to look

1 within.

2 So, for example, were we talking about emails,
3 there could be a search field for sender and there could
4 be a search field for subject -- content of the subject
5 line.

6 Q. Is that why in -- I'm looking at the '490
7 patent that's Exhibit 1001, Column 29.

8 I'll let you get there.

9 A. I'm at Column 29.

10 Q. Okay. So line 39, it says: "Advantageously,
11 the user interface provides target specific attribute
12 search fields, thereby enabling the user to efficiently
13 locate the desired email files, attachments, web pages
14 and the like."

15 Do you see that?

16 A. Yes, I see that.

17 Q. Is that one reason why it may be desirable to
18 have multiple search fields?

19 MS. DAUGHTREY: Object to form.

20 THE WITNESS: Yes.

21 BY MR. THACKER:

22 Q. Okay. I want to turn to Claim 1 of the '490
23 patent, right below where you were just reading from.

24 A. Yes.

25 Q. Right. So if I'm on a system that practices

1 Claim 1 and I enter only the character "a", nothing
2 else, does the system of Claim 1 return any search
3 results for this one character?

4 MS. DAUGHTREY: Object to form.

5 THE WITNESS: To me, it's sort of a funny
6 question to ask.

7 Another way of putting this is, the claim
8 language requires a first partial search string and a
9 second partial search -- search string -- sorry, it
10 requires that a first partial search string and a second
11 partial search string be received both in the first
12 search field.

13 In your hypothetical, so far I only see the
14 presence of one, arguably, potentially partial search
15 string, the letter "a."

16 BY MR. THACKER:

17 Q. Right.

18 A. So -- so then I don't -- I don't see yet the
19 practice of this claim.

20 I'm not -- I'm not a lawyer. I'm not a patent
21 attorney, so I don't -- I don't know fully, but I'm -- I
22 don't -- it's hard for me to answer the question -- the
23 hypothetical you posed the way I heard it, because you
24 said: Does a system of Claim 1, where I only enter this
25 one letter. And at that point, I don't quite see how I

1 would make an argument that the claim is being fully
2 practiced in all its limitations.

3 Q. Yeah. Let me -- let me rephrase the question
4 a little more simply.

5 A system that -- in which a user just enters a
6 single character, does not practice Claim 1 in the '490
7 patent, correct?

8 MS. DAUGHTREY: Object to form.

9 THE WITNESS: I'm not an attorney, but I don't
10 see -- at least -- I see at least one limitation of
11 Claim 1 not being practiced in this hypothetical.

12 BY MR. THACKER:

13 Q. Okay. All right. I'm going to continue with
14 that example.

15 So I've typed in the character "a," and now I
16 type in the character "n." So I have a two character
17 string, and that's it.

18 If I'm the system that returns search results
19 for just those two characters, am I practicing Claim 1
20 of the '490 patent?

21 MS. DAUGHTREY: Object to form.

22 THE WITNESS: If I understand your
23 hypothetical, I don't see the presence of a second
24 partial search string, so I would say no, because that
25 limitation is not present.

1 BY MR. THACKER:

2 Q. Again, if a system returns results for an
3 entire word that's entered in- -- into the search field,
4 but it's only one word, does that system practice
5 Claim 1?

6 MS. DAUGHTREY: Object to form.

7 THE WITNESS: Under my understanding of the
8 hypothetical, the same analysis I just applied is in
9 effect, I don't see a second partial string.

10 BY MR. THACKER:

11 Q. All right.

12 So it isn't until a string separator character
13 is entered and then a second partial search string is
14 entered, that the system of Claim 1 returns search
15 results, correct?

16 MS. DAUGHTREY: Object to form.

17 And, Counsel, I'm -- I don't want to interrupt
18 things, but I just want to put on the record that, to
19 the extent you're trying to get it [indiscernible] --

20 THE REPORTER: Ms. Daughtrey, you're coming in
21 very soft, so I couldn't get the ending of...

22 MS. DAUGHTREY: Sure. I said: We would
23 object to the extent any of this line of questioning is
24 directed towards issues not relevant to this proceeding,
25 for example, infringement or damages in another case,

1 and we would move to strike if that -- if the line of
2 questioning is clearly in that direction.

3 So I just needed to put that on the record.

4 BY MR. THACKER:

5 Q. Do you want me to repeat the question,
6 Mr. Haeberli?

7 A. Yes, please.

8 Q. It isn't until a string separator character is
9 entered and a second partial search string is entered
10 that the system of Claim 1 returns search results,
11 correct?

12 MS. DAUGHTREY: Object to form.

13 THE WITNESS: Again, I -- I find the whole
14 hypothetical structure almost inverted.

15 If I rephrase your question as: A system --
16 does a system practice this claim?

17 I would say: Only a system which had at least
18 two partial strings and returned search results -- I'm
19 paraphrasing the full limitations of the claim -- could
20 be seen as practicing the claim.

21 If there was only one search string, then
22 again, an assertion that this claim is practiced by such
23 a system when there's only one search string would be, I
24 think, defective because the limitation of the second
25 search string would not be present in that hypothetical.

1 BY MR. THACKER:

2 Q. So would entering multiple search strings into
3 the search field, do you agree that the computer must
4 have some way of distinguishing the two search strings?

5 MS. DAUGHTREY: Object to form.

6 THE WITNESS: It seems in -- to me, that an
7 analysis of this claim would require that there have --
8 as we have just talked, the claim requires that there be
9 two search strings, so -- within the same field, so
10 there must, of necessity, be a way of distinguishing the
11 two search strings from each other within that search
12 field.

13 BY MR. THACKER:

14 Q. Okay.

15 A. I'm sorry. I'm paraphrasing a bit further.

16 I'm saying my analysis of the claim, my
17 understanding of patent law -- and I'm not a lawyer --

18 Q. Right.

19 A. -- my understanding of the claim language
20 would require that.

21 Q. Got it.

22 And I'm just -- and I'm just asking, not with
23 respect to the claim language anymore, but just a system
24 that allows a user to enter multiple search strings, do
25 you agree that it must have some way of distinguishing

1 the multiple search strings?

2 MS. DAUGHTREY: Object to form.

3 THE WITNESS: There must be some way of
4 distinguishing multiple -- in such a situation, there
5 must be -- if you allow for multiple, how does a
6 computer know the difference between the different
7 strings? If there are multiple in the same field, there
8 must be some way of distinguishing them.

9 BY MR. THACKER:

10 Q. All right. And do you agree that, in 2002,
11 the concept of using a single character to separate or
12 distinguish between different search strings was known?

13 MS. DAUGHTREY: Object to form.

14 THE WITNESS: I would say in 2002, the use of
15 a single character to separate words or items from each
16 other in a string in general were known, and certainly
17 it was also known for searches.

18 BY MR. THACKER:

19 Q. For example, Lotus Notes discloses using a
20 comma to separate search strings, correct?

21 A. Some Lotus Notes versions and references do
22 disclose that, yes.

23 Q. And you would agree it was also known to use a
24 space to separate strings?

25 MS. DAUGHTREY: Object to form.

1 THE WITNESS: It was known to use a space to
2 separate words in a string from each other or,
3 potentially, to separate search terms from each other.

4 BY MR. THACKER:

5 Q. Okay. Let's go back to Claim 1 of the '490
6 patent.

7 A. Yes.

8 Q. Does Claim 1 require indexing every
9 one-character string?

10 MS. DAUGHTREY: Object to form.

11 THE WITNESS: So I'm rereading the claim
12 language with that question in mind.

13 BY MR. THACKER:

14 Q. Okay. Yeah, take your time.

15 A. No.

16 Q. Does Claim 1 of the '490 patent require
17 indexing every two-character string?

18 MS. DAUGHTREY: Object to form.

19 THE WITNESS: The claim language reads: "It
20 requires a computer-readable storage medium storing an
21 index data structure comprising associations between
22 each of a plurality of character strings to associated
23 files of a plurality of files in which the character
24 strings are included."

25 ///

1 BY MR. THACKER:

2 Q. Okay. I -- I know the -- the claim language
3 says, but are -- is it your opinion that each record in
4 the index data structure includes an association between
5 a plurality of characters and where those characters are
6 located?

7 Is that your opinion?

8 MS. DAUGHTREY: Object to form.

9 THE WITNESS: I --

10 I don't recall being asked to perform this
11 specific analysis. If you want to point me to something
12 in my declaration that addresses this, I'm happy to
13 review and discuss.

14 BY MR. THACKER:

15 Q. Well, the reason I'm asking this is because,
16 in your declaration and earlier in your testimony today,
17 you stated that the claims require indexing partial
18 search strings, although they don't expressly recite
19 that.

20 And so what I'm trying to understand is how
21 the claims require indexing partial search strings if
22 they don't recite that and you don't know what this
23 limitation about an index data structure, what -- what
24 that limitation means or requires.

25 So again, I'm going to ask: Does the index

1 data structure of Claim 1 of the '490 patent require
2 indexing every two-character string?

3 MS. DAUGHTREY: Object to form.

4 THE WITNESS: Based on my understanding of
5 this patent's disclosure and the literal claim language,
6 I would say there's not a specific architectural
7 requirement about how or what exactly is indexed except
8 that there be associations between pluralities of
9 character strings to associated files.

10 You could imagine a scenario in which the
11 index doesn't index all possible combinations and
12 possible substrings, but rather provides hints or
13 accelerators, in some cases; you can imagine a -- an
14 index that is complete, in other instances.

15 In my view, both of those would be covered by
16 this claim language.

17 BY MR. THACKER:

18 Q. Sorry. Were those possible implementations
19 that you just described known in 2002?

20 MS. DAUGHTREY: Object to form.

21 THE WITNESS: I -- I need -- I need more
22 context, but I think -- I need more context for that
23 question.

24 BY MR. THACKER:

25 Q. Well, you said that -- you gave two examples.

1 One is that there were hints or acceleration --
2 accelerators in some cases or that the index is
3 complete.

4 My question is: Were those two possible
5 implementations of an index known in 2002?

6 MS. DAUGHTREY: Object to form.

7 THE WITNESS: I think likely both would have
8 been familiar to a person of ordinary skill at the time.

9 MR. THACKER: All right. I would like to turn
10 to True, which is Exhibit 1009, so I'm going to upload
11 that to the chat right now.

12 (Whereupon, Exhibit 1009 was marked for
13 identification.)

14 BY MR. THACKER:

15 Q. Okay. I just uploaded it.

16 A. Yes, I have it open.

17 Q. Great.

18 Do you have it open to the first page?

19 A. Yes.

20 Q. Okay. Can you read the title of True?

21 A. "Interactive Searching."

22 Q. Okay. Do you agree that the abstract of True
23 states: "A user searches searchable information
24 representing underlying information using an interactive
25 user interface"?

1 A. The abstract begins with that phrase, yes.

2 Q. Okay. Can you go to Column 1 of True?

3 A. I'm at Column 1.

4 Q. Okay. At line 10, it says: "A search engine
5 3 then searches the file of searchable information 1 for
6 records (e.g., patents) which satisfy the query 2."

7 Do you see that?

8 A. Yes.

9 Q. Do you agree -- sorry.

10 Okay. And then do you see at -- it goes on to
11 say: "Each record either satisfies or does not satisfy
12 the query. The search engine 3 produces a set of hits 4
13 representing the records that satisfy the query. The
14 hits 4 may be presented to the user in various ways.
15 One common approach is to present the user with a list
16 of the hits and to allow the user to examine selected
17 hits."

18 Do you see that?

19 A. Yes.

20 Q. Is it re- -- reasonable that a POSITA reading
21 this would understand that the individual patent records
22 are separate files?

23 MS. DAUGHTREY: Object to form.

24 THE WITNESS: No.

25 ///

1 BY MR. THACKER:

2 Q. Are you familiar with Google Patents?

3 A. Yes.

4 Q. Would you understand that Google Patents
5 stores each patent as its own file?

6 MS. DAUGHTREY: Object to form.

7 THE WITNESS: No, I might speculate that that
8 would be one approach. And I will -- I will cite the
9 language of Column 1 here.

10 So Column 1, starting at 6: "Referring to
11 Figure 1a, when a computer user needs to search a file
12 of searchable information 1, such as a file containing
13 the text of issued patents, he typically enters a query
14 2 containing keywords interconnected by Boolean
15 operators. A search engine 3 then searches the file of
16 searchable information 1 for records (e.g. patents)
17 which satisfy the query 2."

18 So in this context -- and then it goes on:
19 "Each record either satisfies or does not satisfy the
20 query 2."

21 In this context, a plain reading of this
22 discussion is that there would be a single file
23 containing the text of issued patents in scope for
24 searching, and -- and each patent in this file would be
25 considered a record and the search would search among

1 records for those that match.

2 That -- so that -- that would be one way of
3 reading the plain language of this disclosure.

4 BY MR. THACKER:

5 Q. Right. That's one way of reading it.

6 But it says that the list of hits is presented
7 to the user, correct?

8 A. "The search engine 3 produces a set of hits 4
9 representing the records that satisfy the query." Which
10 are then -- which may then be presented to the user.

11 Q. Right.

12 So you agree that the set of the -- the
13 hits -- a list of the hits are presented to the user?

14 A. As discussed here, yes. Or may be presented
15 to the user.

16 Q. Okay. Do you agree then the search engine
17 must have some way of distinguishing the different
18 records?

19 MS. DAUGHTREY: Object to form.

20 THE WITNESS: Yes, of necessity.

21 BY MR. THACKER:

22 Q. And each record contains a sequence of bits of
23 data?

24 MS. DAUGHTREY: Object to form.

25 THE WITNESS: In this hypothetical, each

1 record contains a patent represented in some form,
2 logically and most likely a sequence of bits or -- or
3 bytes of data.

4 BY MR. THACKER:

5 Q. Can you turn to Column 7 of True?

6 A. Yes, I'm here at Column 7.

7 Q. Can you read Column 7, line 60, through
8 Column 8, line 2, and let me know when you are done.

9 A. Yes.

10 Q. Do you agree that True discloses that the --
11 that a text file could be the searchable information?

12 A. Well, for example, the item you just had me --
13 had me read: "The underlying information 5 could be a
14 text file containing a transcript of a deposition, in
15 which case the text file would also be the searchable
16 information 1."

17 Q. Do you agree that True discloses that the
18 confidence levels could all be one?

19 MS. DAUGHTREY: Object to form.

20 THE WITNESS: Again, the section you just had
21 me read ends with: "The confidence levels associated
22 with words in the searchable information could all be
23 either zero or one rather than continuous values ranging
24 between zero and one."

25 ///

1 BY MR. THACKER:

2 Q. Right. I know what True says. What I'm
3 asking is that: Does that disclosure to you mean that
4 the confidence levels could all be one?

5 A. Yes.

6 Q. Does a confidence level of one mean
7 100 percent accuracy?

8 A. In the context of True, that's -- would appear
9 to be what that means, although further discussion in
10 Column 8 says it could mean something else, see line 10
11 of Column 8.

12 Q. Right. But -- of course, it -- it could be
13 something else, but True does disclose that the -- the
14 con- -- in one embodiment, that the confidence levels
15 correspond to accuracy, correct?

16 A. Yes.

17 Q. Okay. So in that embodiment, a confidence
18 level of one would mean 100 percent accuracy.

19 A. Yes.

20 MR. THACKER: I'm at a good stopping point
21 right now.

22 Would -- would you be open to breaking for
23 lunch for maybe like 30 minutes or whatever works for
24 you all?

25 THE WITNESS: Sure.

1 MS. DAUGHTREY: Yeah. That's fine with us.

2 (Recess taken.)

3 BY MR. THACKER:

4 Q. Mr. Haeberli, did you talk to anyone on your
5 lunch break?

6 A. I talked with Ms. Daughtrey.

7 Q. Did you discuss this --

8 THE REPORTER: Talked with who?

9 MR. THACKER: Sorry. Did you need
10 Mr. Haeberli to repeat that answer to the last question?

11 THE REPORTER: Did you say you talked with
12 Ms. Daughtrey?

13 THE WITNESS: That's what I said, yes. I
14 spoke with Ms. Daughtrey.

15 BY MR. THACKER:

16 Q. And did you two discuss the substance of any
17 of your testimony today?

18 A. No.

19 Q. Okay.

20 So before we went on break, we were discussing
21 the True prior art reference, Exhibit 1009, and all
22 three IPRs. I'd like to go back to discussing that
23 reference for a little bit.

24 Do you have that reference up, Mr. Haeberli?

25 A. Yes.

1 Q. Okay. Great.

2 Is it your understanding that True discloses
3 breaking up a transcript into what it refers to as
4 transcript windows?

5 A. It's my understanding that, for the purposes
6 of the analysis that True is meant to perform, the
7 transcript is broken up into time windows that are also
8 described as transcript windows.

9 Q. Okay. And do you agree that each transcript
10 window contains a sequence of bits of data?

11 MS. DAUGHTREY: Object to form.

12 THE WITNESS: The underlying transcript
13 contains a sequence of data that is derived from the
14 under- -- in the straightforward disclosure of True,
15 derived from the underlying -- underlying audio file or
16 audio channel -- maybe extracted from a video, and the
17 transcript windows reflect sections in time as it were
18 mapped onto such a time-stamped transcript.

19 BY MR. THACKER:

20 Q. Right. So the -- the transcript for the
21 period of time defined by a given window would contain a
22 sequence of bits of data?

23 MS. DAUGHTREY: Object to form.

24 THE WITNESS: Again, as envisioned in -- in
25 the straightforward disclosure of True, it contains a

1 sequence of voice-recognized auto-transcribed words with
2 confidence annotations and time stamps.

3 BY MR. THACKER:

4 Q. Right. So would you agree, though, that the
5 -- a computer would store that information as bits of
6 data?

7 A. That would be stored, most likely, as binary
8 data, ultimately. But at one level, that would likely
9 be in the form of an annotated text file.

10 Q. Okay, so an annotated text file.

11 That annotated text file would be stored, on
12 some level, as a sequence of bits of data, correct?

13 A. Yes.

14 Q. Okay. And so, then, the portion of that text
15 file that corresponds to a given window would also
16 contain a sequence of bits of data?

17 MS. DAUGHTREY: Object to form.

18 THE WITNESS: Okay.

19 BY MR. THACKER:

20 Q. Is that a "yes"?

21 A. Yes.

22 Q. Do you agree that True displays the results
23 for specific windows that may contain the search term?

24 A. True, in the graphical user -- user interface
25 disclosed, would display results related to the search

1 terms mapped onto time windows.

2 Q. Right. But so the -- the -- what True
3 discloses is that the computer must have some way of
4 distinguishing the different time windows, correct?

5 MS. DAUGHTREY: Object to form.

6 THE WITNESS: Well, I would say that the --
7 the user has a way of specifying the size of the time
8 windows, and then the computer takes that instruction
9 from the user to define a set of separate time windows.

10 BY MR. THACKER:

11 Q. Right. So it -- but it has to be able to
12 identify those different time windows that the user has
13 set, correct?

14 A. I would say it slightly differently.

15 The user specifies the time window size, let's
16 say in this example five seconds, and True discloses
17 that the analysis is divided into -- in 5-second time
18 window chunks.

19 Q. Right. So it has to have some way of
20 distinguishing the first 5-second chunk from, say, the
21 second 5-second chunk, correct?

22 A. Yes.

23 Q. Okay. I'd like to now turn back to the '490
24 patent.

25 Can --

1 A. Yes.

2 Q. -- you pull that up?

3 Okay. Great.

4 Now, I know earlier we were talking about
5 whether a system that only returns results for a single
6 word or string practices Claim 1, and then we started
7 talking about what happens if you enter a -- a character
8 for a second string.

9 And you said: Then Claim 1 would -- would --
10 that a system practicing Claim 1 would return results.

11 So I want to -- I want to focus on what
12 happens after a user enters a -- a character for the
13 second string.

14 So is it your understanding of Claim 1 of the
15 '490 patent, that as soon as the character -- the user
16 enters a character of the second partial search string,
17 that the system locates files containing both search
18 strings?

19 MS. DAUGHTREY: Objection to form.

20 THE WITNESS: At a paraphrased level, that
21 sounds about right.

22 BY MR. THACKER:

23 Q. Okay. Now, what I want to know is what
24 happens when the user enters a -- another character
25 after they've entered two search strings.

1 Does the system search only the results that
2 it's already returned or does it re-search all the files
3 and discard the search that it just did?

4 MS. DAUGHTREY: Objection. Form.

5 THE WITNESS: I think you're asking me this
6 question in the context of the claim language.

7 BY MR. THACKER:

8 Q. Yes.

9 A. And the context for my answer is the last
10 limitation of Claim 1, which I'll read. "Updating a set
11 of matching files of the plurality of files as each
12 successive character of the first partial search string
13 and the second partial search string is received
14 respectively in the first search field by identifying
15 any of the plurality -- plurality of files included in
16 both the first one or more of the plurality of files and
17 the second one or more of the plurality of files wherein
18 the first partial search string and the second partial
19 search string are nonadjacent in at least one of the
20 matching files."

21 So my qualitative read on that is, that when
22 either partial search string is amended, shortened, or
23 lengthened, at least the set of files associated with
24 that string is re-searched or reupdated based on the
25 index.

1 Q. Yeah. So let's -- let's take an example.

2 Say I enter two search strings and the system
3 practicing Claim 1 returns results.

4 You with me so far?

5 A. Yes.

6 Q. Okay. Now, let's say that I add one character
7 to one of those strings.

8 You with me?

9 A. Yes.

10 Q. Does the system that practices Claim 1
11 re-perform the search for that changed search string
12 across all files or only the files that were previously
13 returned?

14 MS. DAUGHTREY: So, Counsel, again, I'm going
15 to launch an objection, because it sounds like what you
16 are asking about has nothing to do with this proceeding.
17 I've given you a lot of latitude on these questions, but
18 I'm worried that this is really crossing the line. This
19 is not tied to, like, prior art or anything in Mr.
20 Haeberli's declaration --

21 THE REPORTER: Ms. Daughtrey, you're soft
22 again. Sorry.

23 MS. DAUGHTREY: Sorry. I don't know how much
24 you got of that.

25 I said I've allowed you to ask your questions.

1 I've given you latitude. But I'm worried that we're
2 veering into issues that are completely unrelated to
3 this proceeding, so I would request that you try and tie
4 the questions to issues in this case.

5 And if not, we might need to meet -- go off
6 the record and meet and confer.

7 MR. THACKER: Yeah. No. I'm -- I'm planning
8 to get there.

9 MS. DAUGHTREY: Understood.

10 THE WITNESS: So please reask the question
11 because, as you can appreciate, it's a complicated
12 question and the context gets dropped when the necessary
13 legal discussions take place.

14 MR. THACKER: Yeah.

15 BY MR. THACKER:

16 Q. Okay. So a system that practices Claim 1
17 returns results after a user has entered two partial
18 search strings, correct?

19 A. Yes.

20 Q. Okay. Now, the user modifies the search query
21 in some way.

22 My question is: Does the system practicing
23 Claim 1 re-perform the search across all files or only
24 those files that it previously returned?

25 MS. DAUGHTREY: Same objections.

1 THE WITNESS: So a way of -- a way that I can
2 possibly answer -- that I can possibly answer this
3 question is that one technical approach would be, if you
4 amend the first or the second search string, let's say
5 you lengthen it, that means the number of files returned
6 in that new partial string is applied is no longer
7 than -- no more than the set that is currently been
8 found, and might be smaller.

9 If you shorten it, then the set could be
10 larger.

11 BY MR. THACKER:

12 Q. Right.

13 A. That said, an efficient -- kind of a best case
14 design from a performance standpoint would be to say:
15 Oh, you lengthened the string, so the list of files gets
16 shorter. We will start with the current list of files
17 we found, Set -- Set A list, Set B list, Set 1 list or
18 Set 2 list, and narrow it. But you can also imagine an
19 implementation that started that search from scratch.

20 It seems to me, in my opinion -- and I was not
21 asked to do this analysis, but I'm trying to answer your
22 question as best I can in a hypothetical, both kinds of
23 systems would infringe.

24 Did that address your question?

25 Q. Yes, it did. Thank you.

1 I have two follow-up questions for that.

2 You mentioned that if the string is being
3 lengthened, then the most efficient approach, or an
4 efficient approach, would be to just narrow the current
5 list of results.

6 And is that because you're limiting the total
7 volume of searching you have to do? Is that -- is that
8 why?

9 A. So let me be slightly more precise, if I may.

10 Q. Yeah. No, for sure.

11 A. So suppose you have a partial search string
12 for "th," and it also -- assume here we're talking about
13 partials that are anchored in the initial letters of
14 words.

15 So we don't find "th"s in the middle of the
16 words. We find "the," "then," "there" would all match
17 the "th" search string.

18 So let's consider just the list of documents
19 that contain at -- at least one word starting with "th."

20 Now, if I lengthen that search string
21 arbitrarily by adding a letter in the middle, like
22 "tah" -- I don't even know if there's any English words
23 that start that way -- then, in that context, I kind of,
24 obviously, have to start the search over.

25 But if I lengthen it by going -- by just

1 adding a letter at the end, all files that contain
2 "th" -- I change it to "the" in this hypothetical --
3 it's quite possible that there are some files that have
4 no instances of "the" in them but just have "th" and
5 some other -- like "thus", for example, a file
6 containing a "thus," but didn't have the word "the" or
7 "then" in it would now no longer match. So the list, of
8 necessity, would get shorter. It would contain no more
9 than the files in the first search -- the first search
10 instance, all the files containing "th," and would
11 likely contain less.

12 So there's no reason to search -- in that
13 hypothetical, there's no reason to search the broad
14 scope of all files. One would search, for efficiency's
15 sake, only the files that have already been found, and
16 the list either would stay the same or likely -- might
17 get shorter.

18 Q. So -- sorry. Were you done?

19 A. I'm done.

20 Q. Okay. So just to clarify, make sure I'm
21 hearing you correctly, if your end -- if you're adding a
22 character to the end of a string --

23 A. Yes.

24 Q. -- then what would make the most sense, per
25 the -- per the claim language, is to search only the

1 files that you have already found?

2 A. I disagree with the qualification "per the
3 claim language," okay?

4 What would make sense from an efficiency
5 standpoint -- would make the most sense from an
6 efficiency standpoint would be to search only the set of
7 files you've already found.

8 Q. And the claims cover that situation?

9 A. In my opinion -- and I was not asked to do
10 this analysis.

11 Q. Right.

12 A. But in my opinion, as I sit here, the claims
13 would cover that situation -- sorry, Claim 1 language
14 would cover that situation.

15 Q. And -- and do you agree that that situation
16 where you're, essentially, keeping track of the results
17 you've previously returned and then narrowing with
18 characters being added to the end of the string, would
19 create some efficiencies if it kept -- if a user
20 backspaces or deletes a character at the end of the
21 string because then you already have the search results?

22 MS. DAUGHTREY: Objection. Form.

23 THE WITNESS: I guess I disagree. The reason
24 is -- it sort of depends a little bit on what one does
25 in an implementation sampling. But in a -- in a

1 straightforward implementation, suppose you started by
2 typing "t." Now, you have a list of -- I'm making this
3 up now -- 101 files that contain words that start with
4 "t."

5 Now, I type "h." Now I'm down to 56 files
6 that have words that start with "th."

7 Now, the question is, did I remember what the
8 first list was in my software? I could have done that
9 or I could have not have done that. But one
10 implementation would be you don't remember what was done
11 before, you just throw that away.

12 So now you have all the files with "th"s.

13 If I backspace and remove the "h," of
14 necessity, I have to search the whole scope again to go
15 from 56 to 101 files.

16 BY MR. THACKER:

17 Q. Right. And in a -- in a specific instance
18 where you don't store previous results in memory?

19 A. The result lists.

20 Q. The original list. Sorry.

21 A. It's one way.

22 Q. Do you agree that the '035, '490, and '130
23 patents disclose narrowing a list of search results?

24 MS. DAUGHTREY: Objection. Form.

25 THE WITNESS: Of necessity, because what is

1 discussed and disclosed is incremental searches, it must
2 support narrowing search results as the search
3 constraint gets longer.

4 BY MR. THACKER:

5 Q. Right. So I'm looking at Column 15 of the
6 '490 patent, Exhibit 1001 in the '254 IPR.

7 Do you have that open?

8 A. I'm now at Column 15.

9 Q. Okay.

10 Can you read from line 44 to 52, and let me
11 know when you are done?

12 A. Yes, I will.

13 So just 44 through 51?

14 Q. Through 52, yeah.

15 A. Through 52.

16 Yes, I've read that.

17 Q. Do you understand that disclosure to mean that
18 the list of search results is incrementally narrowed
19 down as the user types in additional characters?

20 MS. DAUGHTREY: Objection to form.

21 THE WITNESS: Yes.

22 MR. THACKER: Can we take a quick five-minute
23 break and then come back? I'm pretty sure I don't have
24 any other questions, but I just want to make sure.

25 MS. DAUGHTREY: Okay.

(Recess taken.)

MR. THACKER: I have no further questions.

MS. DAUGHTREY: No questions from us.

THE REPORTER: Does anybody need a rough
draft?

MS. DAUGHTREY: Sure.

MR. THACKER: Yes.

THE REPORTER: And regular delivery?

MR. THACKER: Yep.

MS. DAUGHTREY: Yep.

(Deposition concluded at 12:50 p.m.

Declaration under penalty of perjury on
the following page hereof.)

DEPOSITION OFFICER'S CERTIFICATE

I, the undersigned, a Certified Shorthand
Reporter of the State of California, do hereby certify:

That the foregoing proceedings were taken
before me at the time and place herein set forth;
that any witnesses in the foregoing proceedings,
prior to testifying, were duly sworn; that a record
of the proceedings was made by me using machine
shorthand, which was thereafter transcribed under my
direction; that the foregoing transcript is a true
record of the testimony given.

Further, that if the foregoing pertains to
the original transcript of a deposition in a federal
case, before completion of the proceedings, review
of the transcript [] was [X] was not requested.

I further certify I am neither financially
interested in the action nor a relative or employee
of any attorney or party to this action.

IN WITNESS WHEREOF, I have this date
subscribed my name.

Dated: 1/16/26



Siew Ung, RPR, CSR No. 13994