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STEPHEN M. TRIMBERGER, Ph.D.
UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

MICROSOFT CORPORATION,
Petitioner,
vs.
DIRECTSTREAM, LLC,
Patent Owner.

Case IPR2018-01599 (Patent 6,076,152)
Case IPR2018-01600 (Patent 6,247,110)

VIDEO DEPOSITION OF STEPHEN M. TRIMBERGER, Ph.D.
Washington, D.C.
Friday, June 7, 2019, 9:00 a.m.

Job Number 161500

Reported by: Laurie Donovan, RPR, CRR, CSR

STEPHEN M. TRIMBERGER, Ph.D.
Video Deposition of
Stephen M. Trimberger, Ph.D.

Held at the offices of:
Sidley Austin, LLP
1501 K Street, NW
Washington, D.C. 20005

Taken pursuant to notice, before
Laurie Donovan, Registered Professional
Reporter, Certified Realtime Reporter, and
notary public in and for the District of
Columbia.

STEPHEN M. TRIMBERGER, Ph.D.
A P P E A R A N C E S
ON BEHALF OF PETITIONER:
Sidley Austin
1501 K Street, N.W.
Washington, D.C. 20005
By: Scott Border, Esq.

ON BEHALF OF PATENT OWNER:
Janik Vinnakota
8111 LBJ Freeway
Dallas, Texas 75251
By: Donald Puckett, Esq.
Sean Hsu, Esq.

ALSO PRESENT:
David Chroniger, videographer

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EXHIBITS		
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Exhibit 2062	Article entitled "Three Ages of FPGAs: A Retrospective on the First Thirty Years of FPGA Technology"	83
Exhibit 2063	Book by Trimberger et al entitled Field-Programmable Gate Array Technology	101
Exhibit 2064	Article entitled "Architectural Tradeoffs in Field-Programmable Device-Based Computing Systems"	106
Exhibit 2065	Article entitled "On the Viability of FPGA-Based Integrated Coprocessors" ...	107

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Exhibit 2066	Article titled "The Roles of FPGAs in Reconfigurable Systems"	109
Exhibit 2067	Book entitled Reconfigurable Computing: The Theory and Practice of FPGA-based Computation	112
Exhibit 2068	Article entitled "Examining the Viability of FPGA Supercomputing"	135
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Exhibit 2070	U.S. Patent 6,339,819 B1 ...	204
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Exhibit 2072	Article on Wikipedia regarding Sun4D computer architecture . .	240
Exhibit 2073	Article on Wikipedia regarding SPARCstation	241
Exhibit 2074	Book entitled SPARCstation 2 Field Service Manual	243

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 2 (Exhibits continued)
 3 EXHIBIT DESCRIPTION PAGE
 4 Exhibit 2075 Book entitled SPARCcenter
 5 2000/2000E Service Manual . . . 244
 6 Exhibit 2076 Chapter from book entitled
 7 Memory Systems, Cache, DRAM,
 8 Disk 260
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1 STEPHEN M. TRIMBERGER, Ph.D.
 2 P R O C E E D I N G S
 3 THE VIDEOGRAPHER: This is the
 4 start of tape labeled number 1 of the
 5 videotaped deposition of Stephen Trimberger
 6 in the matter of Microsoft Corporation versus
 7 DigitalStream LLP, Patent Owner, in the court
 8 United States Patent & Trademark Office,
 9 IPR 2018-01599, Patent 6,247,152; also IPR
 10 2018-01600, Patent 6,247,110.
 11 This deposition is being held at
 12 1501 K Street, Suite 600, Northwest,
 13 Washington, D.C., on June 7, 2019, at
 14 approximately 9:06. My name is David
 15 Chroniger from TSG Reporting, Inc., and I am
 16 the legal video specialist. The court
 17 reporter is Laurie Donovan in association
 18 with TSG Reporting.
 19 Will counsel please introduce
 20 yourselves.
 21 MR. PUCKETT: Good morning. This
 22 is Donald Puckett, the law firm Janik
 23 Vinnakota. I'm here with Sean Hsu, also of
 24 Janik Vinnakota, and we represent Patent
 25 Owner is these proceedings.

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1 STEPHEN M. TRIMBERGER, Ph.D.
 2 MR. BORDER: Scott Border. I'm
 3 with Sidley Austin, LLP. I'm here on behalf
 4 of the witness and Microsoft Corporation.
 5 THE VIDEOGRAPHER: Would the court
 6 reporter please swear in the witness.
 7 *****
 8 STEPHEN M. TRIMBERGER, Ph.D.,
 9 having been first duly sworn, testified
 10 upon his oath as follows:
 11 EXAMINATION BY COUNSEL FOR PATENT OWNER
 12 BY MR. PUCKETT:
 13 Q Good morning, Dr. Trimberger. Before I
 14 begin my questioning, if you'll allow me to put a
 15 couple of housekeeping things on the record.
 16 As the videographer announced, we're
 17 taking this deposition for purposes of two
 18 separate IPR cases. The first is Case IPR
 19 2018-01599. The second one is IPR 2018-01600.
 20 For purposes of the exhibits during this
 21 deposition, I'm going to be using the exhibit
 22 numbers for the 1600 case. Across the two cases
 23 at least for the, the Petitioner exhibits, 1004 on
 24 up I think are identical across the cases.
 25 For the documents that are unique to the

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1 STEPHEN M. TRIMBERGER, Ph.D.
 2 1599 case, Exhibits 1001 through 1003, I have
 3 designated those three documents with a "dash A"
 4 designation for this deposition. So Exhibit
 5 1001-A will actually correspond to Exhibit 1001 in
 6 the 1599 IPR, and the same thing for Exhibit
 7 1002-A and 1003-A. So I just wanted to get that
 8 on the record before we get started.
 9 Anything else, Scott, that we need to
 10 put on the record?
 11 MR. BORDER: I don't think so.
 12 BY MR. PUCKETT:
 13 Q Okay. Dr. Trimberger, good morning.
 14 A Good morning.
 15 Q Could you start by introducing yourself,
 16 by just stating your full name for the record,
 17 please.
 18 A My name is Stephen Trimberger.
 19 Q And Dr. Trimberger, have you had any
 20 previous experience, either in depositions or in
 21 court or otherwise, in giving testimony and being
 22 a witness in a legal proceeding?
 23 A Yes.
 24 Q And so in your previous experience, have
 25 you, have you previously testified in, in a court

1 STEPHEN M. TRIMBERGER, Ph.D.
2 of law?
3 A Yes.
4 Q Was that at a trial or a hearing of some
5 sort?
6 A At a trial.
7 Q Okay, and then have you previously sat
8 for a deposition?
9 A Yes, I did.
10 Q Approximately how many times on each of
11 those? How many times have you testified in court
12 or at trial?
13 A Once in court at a trial.
14 Q And then --
15 A And depositions, I'm not sure. Three or
16 four, something like that.
17 Q So of the depositions that, that you've
18 been involved in, were any of those in an inter
19 partes review proceeding in the patent office?
20 A No.
21 Q So this is the first time you've given
22 an IPR deposition?
23 A Yes, sir.
24 Q Okay.
25 So when you previously sat for

1 STEPHEN M. TRIMBERGER, Ph.D.
2 depositions, those were in connection with some
3 sort of district court civil litigation?
4 A Yes.
5 Q And so those are what we refer to in
6 legal practice as "discovery depositions," so the
7 lawyers are trying to discover facts before you go
8 and later potentially testify at a trial, right?
9 Do you understand that?
10 A That's my understanding, yes.
11 Q And so I want to make sure that, that
12 you understand for -- an IPR is a little bit
13 different in one, I think, important respect.
14 In an IPR, right now we're in trial,
15 okay, so you submitted a declaration in both of
16 these IPR cases, the 1599 and the 1600.
17 You provided a declaration in each case,
18 correct?
19 A Yes.
20 Q And so do you understand that that, that
21 declaration constitutes the, the direct
22 examination portion of your trial testimony?
23 Do you understand that?
24 A Yes, I understand that.
25 Q And so this deposition here, this is

1 STEPHEN M. TRIMBERGER, Ph.D.
2 considered cross-examination, okay? So in
3 essence, to compare it to a civil jury trial, your
4 declaration was you getting on the stand and your
5 lawyer or a lawyer asking you questions that you
6 would give your direct testimony to, and then at
7 the conclusion of that portion, the lawyer would
8 pass the witness, and then the opposing lawyer,
9 which would be me, would stand up and do a
10 cross-examination in court, right?
11 So do you understand that that's where
12 we're at in this proceeding right now? This isn't
13 a discovery deposition. Do you understand the
14 difference?
15 A I understand that.
16 Q Okay.
17 Now, the declaration that you've
18 submitted in this case contains your opinions on
19 various matters as an expert witness in this case,
20 right?
21 A That is correct.
22 Q Have you ever been an expert witness in
23 any of your other previous cases that you've been
24 involved in, either your trial testimony or your
25 depositions? Have you ever been an expert

1 STEPHEN M. TRIMBERGER, Ph.D.
2 offering opinions about anything?
3 A I haven't had the title of "expert
4 witness," but I have, of course, given opinions
5 about, about actions and, and technology.
6 Q So there's a couple of things that I
7 want to go through just to make sure that, that
8 you and I are communicating correctly over the
9 course of the day, and it has to do with this
10 capacity that you're in today, serving as an
11 expert witness to provide opinions about certain
12 things.
13 And what I want to make sure that you
14 and I have an understanding about is sort of the
15 difference between things that you know through
16 your own personal experience versus things that
17 you are providing opinion testimony about as an
18 expert, okay?
19 So the first thing is: You understand
20 what it means to know about something through your
21 own personal knowledge, right? Do you understand
22 that concept?
23 A Yes.
24 Q And so, for example, if you, if you
25 perceived an event with your own eyes, you know,

1 STEPHEN M. TRIMBERGER, Ph.D.
2 if you saw someone walk into a room or something,
3 right, like you would, you would have personal
4 knowledge of that because you are perceiving it
5 with, with your own senses.

6 Do you understand that?

7 A Yes.

8 Q Okay, and so ordinarily -- I'm going
9 to -- I want to give you an exhibit on your
10 screen, and we won't spend time on this, but if
11 you'll indulge me just for a moment or two.

12 So ordinarily, for any witness to
13 testify in a court of law, provide competent
14 testimony, that witness needs to have personal
15 knowledge of the matters that they are testifying
16 to. This is for lay, you know, lay fact
17 witnesses, okay?

18 Do you understand that?

19 A All right, yeah, I understand.

20 Q So ordinarily, you would not be allowed
21 to come to court and testify about things that you
22 didn't personally have some sort of actual
23 personal knowledge of yourself, okay?

24 So, for example -- so, for example, you
25 hear this notion of, of hearsay. Somebody told

1 STEPHEN M. TRIMBERGER, Ph.D.
2 you something. You know, my spouse told me about
3 something that happened between her and some
4 friends over there, right? So when you have
5 hearsay knowledge of something, you might know
6 that someone said something, but you don't have
7 personal knowledge of the thing that they are
8 talking about.

9 You kind of understand that, right?

10 A I understand that.

11 Q Okay. Now, here is kind of the
12 important concept for, for purposes of this, this
13 deposition. A lot of times people differentiate
14 between facts and opinion, right? Okay, and, and
15 we don't sort of make that distinction in the
16 rules of evidence. They can be a little bit
17 confusing. This is why I want to talk about this.

18 In the rules of evidence, we make a
19 distinction between what you have personal
20 knowledge of and then what you're providing
21 opinions about, okay, and so let me just give you
22 a quick example to kind of illustrate this.

23 So if I were to ask you whether you know
24 who was the first president of the United States,
25 I'm sure that you do, right? You know who was the

1 STEPHEN M. TRIMBERGER, Ph.D.
2 first president of the United States?

3 A Yes.

4 Q Who was it?

5 A So I, I have been told it's George
6 Washington.

7 Q Right, and that you don't have personal
8 knowledge of that, right?

9 A Never met him.

10 Q Okay, and so, so you would not --
11 frankly, nobody alive today would be competent to
12 go to court and testify based on personal
13 knowledge that George Washington was the first
14 president of the United States, right; but if this
15 were an important fact in a lawsuit, we could get
16 an expert, a historian, let's say, to come in and
17 testify based upon their special skills and
18 knowledge and based upon a methodology, a
19 historical methodology that they applied in terms
20 of doing research or something, and could testify
21 as an expert that George Washington was the first
22 president of the United States, but when
23 someone -- when an expert did that, that would be
24 considered their opinion.

25 Do you understand that?

1 STEPHEN M. TRIMBERGER, Ph.D.

2 A I understand.

3 Q Okay. So let me show you -- I'll be
4 very brief on this, but under Evidence Rule 702,
5 someone can only give opinion testimony in court
6 if they are qualified as an expert with knowledge,
7 skill or experience, training or education, okay,
8 and that training has to be helpful to the trier
9 of fact, and then the testimony has to be based on
10 sufficient facts or data, the testimony has to be
11 either a product of reliable principles and
12 methods, and then you have to have applied those
13 principles and methods correctly to the facts of
14 the case. That's what the rule says.

15 Do you sort of understand that?

16 A Yes.

17 Q Okay, and so -- and you, and you believe
18 that you have special knowledge and skills
19 regarding some areas that are useful to the trier
20 of fact in this case, the PTAB, such that you're
21 qualified to bring opinion testimony into this
22 case; is that fair?

23 A I believe I qualify here under evidence
24 rule 702 as stated.

25 Q Now, there's one more important

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