IN THE UNITED STATES DISTRICT COURT

DISTRICT OF UTAH

CENTRAL DIVISION

NOVELL, INC.,

Plaintiff,

vs.) CASE NO. 2:04-CV-1045 JFM

MICROSOFT CORPORATION,

Defendant.

BEFORE THE HONORABLE J. FREDERICK MOTZ

November 9, 2011

Jury Trial

A P P E A R A N C E S

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I N D E X

Exhibit	Received

(No exhibits received.)

November 9, 2011 8:00 a.m.

P R O C E E D I N G S

THE COURT: Good morning, everyone.

Be seated or keep standing. You have to stand for the jury anyway.

(WHEREUPON, the jury enters the proceedings.)

THE COURT: Good morning, everybody. I really like your promptness and diligence.

Mr. Schmidtlein.

MR. SCHMIDTLEIN: Thank you, Your Honor.

Your Honor, the plaintiff calls Mr. Ronald Alepin.

THE COURT: Mr. Alepin.

RONALD SALEM ALEPIN

Having been duly sworn, was examined

and testified as follows:

THE COURT: If you feel uncomfortable at some time, just let us know and we'll try to --

THE WITNESS: Thank you very much. I expect to take you up on that.

THE COURT: Anything that we can do --

THE WITNESS: My full name is Ronald Salem Alepin, R-o-n-a-l-d, S-a-l-e-m, A-l-e-p-i-n.

DIRECT EXAMINATION

BY MR. SCHMIDTLEIN

Q. Good morning, Mr. Alepin.
A. Good morning.
MR. SCHMIDTLEIN: As you just indicated, Mr. Alepin has unfortunately recently had a problem with his tendon in his shoulder, and we may ask for a break periodically.
THE COURT: Absolutely.
MR. SCHMIDTLEIN: He gets some shooting pain, and don't be alarmed, and hopefully not in my questioning, but he has been very good and has postponed some surgery which would have made him unavailable for us, so we're going to move ahead as best we can here today.
BY MR. SCHMIDTLEIN
Q. Mr. Alepin, where do you currently work?
A. In Silicon Valley.
Q. And who do you work for?
A. I have my own company, a consultant company.
Q. What is the name of the company?
A. Los Altos Systems Research.
Q. Have you been retained by Novell in this case as an expert witness?
A. Yes.
Q. What have you done in connection with your work, your assignment as an expert? What types of materials have you reviewed in this case?

A. A large amount of stuff. I looked at computer programs, documentation and I operated computer programs and examined their results. I read countless pages of material from the trade press and also from third-party books written about the software programs in question, as well as reading and studying the deposition testimony from witnesses in the case, and the documents that were produced including e-mails, reports, presentations, also produced by both companies in this case.

Q. Are you familiar with and have you at least reviewed the expert reports that were submitted by Microsoft's experts in this case?

A. Yes.

Q. When were you first contacted about becoming an expert witness?

A. I believe it was in the spring or early summer of 2008, as memory serves.

Q. And as a part of your consulting work, do you charge your clients for the time that you spend doing consulting work?

A. I do.

Q. What is your hourly rate?

A. My hourly rate is $400 an hour.

Q. And is that the rate that you charged in connection with this matter?

A. Yes.
Q. And just ballpark, roughly how many hours have you spent in connection with this retention in terms of the time you have spent formulating and coming to some of your opinions and producing the expert reports that you were obliged to produce in this case?
A. To the present time?
Q. Well, to the time that you were formulating your opinions and providing your expert reports and were deposed in connection with the discovery process?
A. I understand. About 1,200 hours, I think, around there.
Q. Based on the work that you have done in this matter, are you prepared to offer opinions based on your expertise?
A. I am.
Q. Let me talk a little bit about your education and your professional background first, if I may.
MR. SCHMIDTLEIN: Your Honor, we have marked as Exhibit 575 Mr. Alepin's resume.
May I approach?
THE COURT: Of course.
BY MR. SCHMIDTLEIN
Q. Mr. Alepin, can you identify Exhibit 575 for the record?
A. This is a copy of my curriculum vitae.

Q. Let's sort of go back to the beginning here starting with your education.

Did you attend college?

A. I did.

Q. Where did you go to college?

A. I went to McGill University.

Q. Where is McGill University?

A. McGill is in Montreal, Quebec Canada.

Q. What did you study at McGill?

A. I studied economics, econometrics and computer science.

Q. When were you enrolled at McGill University?

A. From 1967 up 'til approximately 1971.

Q. And while you were there, aside from some of your studies in computer science, did you do any other computer or software related activities?

A. Yes.

Q. Can you describe those, please.

A. Well, I did work for the social sciences statistical laboratory, which was a facility that the departments of anthropology and sociology, political science and economics had put together to provide access to McGill University's computing facility, and allowed the professors there and selected students to conduct research using computer systems. I made myself available to the professors using the laboratory to develop programs to assist them in their

analysis.

Q. Is it fair to say that while you were in college that you wrote software programs for some of the social science departments at McGill?

A. That is correct.

Q. And were there particular projects that you worked on there?

A. Yes. Some of them included -- I developed a program to perform cost-benefit analysis modeling for the World Bank to allow them to determine the value of constructing a road in Mali, which is a country in Africa.

I wrote another program that provided -- this was in conjunction with the medical school, but it provided the ability to model the flow of blood cells, white and red blood cells through veins in peoples bodies in order to track how you could deliver certain types of medicine.

I wrote another program that was based on some research in 1900 biology that applied some of their statistical methods to estimating statistical values on data that had lots of missing values. And so oftentimes times people couldn't perform an analysis reliably if you were missing a couple of years of information, which in this case it was from Africa in particular. So using the methodology I was able to allow them to proceed even though they were missing or they had dirty data.

Q. Now, did you obtain a degree from McGill University?
A. No, I did not.
Q. Why not?
A. I -- increasingly the call of playing with computers was driving me to want to be out in the world and to be playing with computers. It was a moment in time where people were paying me lots of money to essentially do what I found to be very exciting. In my last year at the university, in fact, a company paid me my tuition if I would go to work for them, so I found it too irresistible to continue studying economics rather than programming computers.
Q. At this point in time were there sort of large sophisticated computer science departments at universities?
A. They were large only because the only computers then that computer science departments had were large computers, large mainframe computers, but computer science was really starting up. There were not a whole lot of disciplines in there, and there wasn't a whole lot of structured teaching along those lines, so a lot of it had to do with mathematics and probabilities and that kind of stuff.
Q. During this time period was it unusual for people who were interested in computer programming to pursue their interests in computer science without getting a degree?
A. I think that is true, yes.

Q. Can you give some examples of some people --
A. Oh, this is -- these people are much more famous than --
THE COURT: Ask him to give one.
BY MR. SCHMIDTLEIN
Q. One or two.
A. Bill Gates, Steve Jobs.
Q. Now, you made reference to a company that had approached you and you had begun doing work for while you were at McGill.
What company was that?
A. That was Bell Canada. They were the Canadian equivalent of AT&T a long time ago when AT&T had all of the baby bells around the country organized inside of it.
Q. And what were you hired to do at Bell Canada?
A. Basically I was hired to be I guess a programmer at Bell Canada. It was more come join us, we have one computer of every kind on the floor, and you find what you like to do and we'll see if we can make it happen.
Q. Can you tell the jury, did you develop any software while you were working at Bell Canada?
A. I did.
Q. And did you write code?
A. I did.
Q. Can you describe a little bit about some of the

software programs and the code that you wrote? Describe that for the jury.

A. I wrote in these days, still the early days of computing, so there is not -- there are not a lot of packages of software that assist the systems programming people in doing their jobs. The systems programming people are the people who look after the operating system and look after the hardware and put on new software.

They come calling, come running when the computer stops and they try and finger out why the computer stopped, and so I wrote lots of software that facilitated the application of new releases of software programs that facilitated the analysis of computer failures, that allowed the systems programming and I.T. management teams to access the computers from terminals. So it was called C.R.B.E., conversational remote back entry, software that would allow you to access the computer without having to run downstairs into the machine room.

Q. Now, how long did you work at Bell Canada, to the best of your memory?

A. About two and a half years.

Q. You worked there roughly between 1971 and 1973; is that right?

A. I think it says '74 here.

Q. Okay. Where did you go to work next?

THE COURT: Would you like a page turner there to help you turn --

THE WITNESS: No. There are only a few pages. Thank you. Later on that may be -- I went to work for a company called Societe de Mathematiques Appliquees.

BY MR. SCHMIDTLEIN

Q. Which is French, I take it?

A. It is actually a French way of saying Applied Mathematics Corporation.

Q. Where were they located?

A. They were also located in Montreal, in Canada.

Q. What did you do there?

A. I was the software developer at that company.

Q. What were you developing software for at -- I am just going to refer to it as SMA, if that is okay.

A. I'm sorry. The question?

Q. What types of software were you developing?

A. I was developing software to optimize the computer systems for use in a service bureau environment.

Q. Describe what a service bureau is for the jury, please.

A. Well, in those days, and this is the early seventies and the years preceding that and actually afterwards, mainframe computers cost a lot of money. The cost a lot of money not just to acquire but to operate. You needed to have a special room with special cooling and a raised floor

and special electricity, and you needed special people to operate the computer. That cost a lot of money and not everybody could -- not all companies and all organizations could afford that kind of a computer system, but they wanted to take advantage of some of the features that they could get with a computer. They could get their payroll done faster, get their planning done more quickly, so they would come to companies that were organized as service bureaus and the service bureau would do their work for them.

You can imagine they would come up to the window with a deck of punched cards, and they would give it to the operator and the operator would take those cards and read them into their computer, and at some appropriate time their job would run and the results would be returned to them. That is the basic concept behind a service bureau. They don't operate the computer. The service bureau operates the computer and we run their work for them.

Q. After you worked at SMA, where did you go to work next?

A. I went to work at L'Industrielle Services Techniques, which is another way of saying Industrial Technical Services, Inc.

Q. Where were they located?

A. Montreal.

Q. Describe for me your job responsibilities there.

A. I was the lead software developer up to their director

of software development during my tenure there. IST was a service bureau like Applied Mathematics was a service bureau, and my job was developing software for IBM's newest main frame computer system and its newest operating system.

Q. How long did you work there?

A. Two and a half years, approximately. Something like that.

Q. Did you next go to work for a company called Amdahl?

A. Yes, I did.

Q. And what was Amdahl?

A. Amdahl was a company that developed what came to be known as plug compatible IBM mainframe computers.

Q. Where were they located?

A. In Sunnyvale, California, in Silicon Valley.

Q. What types of software -- or tell me what your job responsibilities were there.

A. I came to work there in software development, and I was part of an advanced team inside Amdahl that was thinking about software that needed to be developed to make Amdahl's products more superior to IBM's products.

Q. Are you familiar with the term benchmarking?

A. I am.

Q. Were you involved in job responsibilities relating to benchmarking at Amdahl?

A. I was. I became -- I was asked to take on the

responsibility of managing the benchmark and performance analysis center at Amdahl.

Q. Explain your use of the term benchmark in that context for the jury.

A. Well, buying a mainframe computer, and this is the late 1970s, was still extensive, a very expensive proposition, and people wanted to make sure that if they bought a non-IBM computer that was being sold as capable of running their IBM computer programs, that it could run their IBM computer programs, because maybe their programs were special.

I know you can run somebody else's program, but maybe they can't run my programs, or maybe they can run them but maybe that can't run them as fast as IBM can run their programs. So they wanted to kick the tires with their programs. They would come to our facility, which I was responsible for, and we put in multiple large mainframe computers from Amdahl and lots and lots of disks and lots of tape drives with spinning wheels and other equipment, and we would take their programs and demonstrate that they worked, and that they in fact worked faster on our computer system than on IBM's.

Of course, the customer would go to IBM in Gaithersburg, Maryland, and they would see what the results were that they got on their computers and usually we won. Usually we won.

Q. And did you write lots of operating system software while you were at Amdahl?
A. I did.
Q. And I think, as you said, was a fair amount of the work that you did at Amdahl relating to software compatibility issues?
A. There was a good deal of it that related to compatibility, yes.
Q. Now, after you left Amdahl what did you do next? Is that when you started your consulting firm?
A. That is correct.
Q. And where is your consulting firm based?
A. In Los Altos, Silicon Valley.
Q. Can you give some examples of the types of companies that have hired you as a consultant?
A. Let's see. Starting back in the early eighties, Boole & Babbadge, which was a software company, an independent software vendor, an ISV, and they were in the business of writing software that extended the operating system or provided tools for the operating system. I wrote software for them as well as software that took them into a different market, software that helped programmers develop programs, so like developer's toolkit kinds of programs.
At Systems Industries they developed hardware and software for digital equipment, DEC computers, Vax computers

sometime it is called. I worked for Care. Care was a company that developed the software and the hardware that reads the two lines of information on your passport that are encoded in OCR. That was a breakthrough. Before readers could only read one line. It is hard to imagine now that that was a breakthrough, but it was. They also developed page reading and optical character recognition software, so that you could scan a page and read it and have the page converted into real words that you could work with.

I worked with IBM and with Roam. Roam was a telephone switch company. They made PBXs for offices.

Q. Are you familiar with a company called Controlled Data Corporation?

A. Yes, I am. Thank you.

Controlled Data Corporation a long time ago was one of the largest computer companies in the world and made the largest computer in the world, the CDC-7600. It had a line of business called the Service Bureau Corporation, which was a company that they had acquired from IBM, but basically it was a service bureau with offices around the United States. They operated a service bureau, and they hired me for a variety of software development tasks inside the service bureau subsidiary.

Q. In connection with your work with Controlled Data, were you involved in the development of business application

software?

A. Yes.

Q. Can you describe that for us?

A. Well, CDC was interested in the early 1980s, at the dawn of the PC revolution, they were interested in branching out and having some software that worked on computer systems like Wang systems where you would have typewriter -- word processing applications, and they also were interested in getting into PCs, seeing whether it would be good business for them to tie to PCs.

In that regard they asked me to look at a company and a product called VisiOn that was available and was being sold. The company was selling their product, the whole product, and CDC asked me if I would look at this Visi On product. It is spelled V-i-s-i O-n. The owning company at the time was VisiCorp, which was the company that was responsible for VisiCalc. If you go back in time you will remember the original program that made personal computers interesting was VisiCalc's spreadsheet on a little Apple 2 computer.

They had developed this Visi On program and they were offering it for sale, and I did an evaluation of the product and an evaluation of the team and an evaluation of the software. At the time it was remarkably advanced. It allowed you to do -- this is 1983 -- it allowed you to do what you see is what you get word processing and what you

see is what you get -- excuse me -- spreadsheets.

That means that as you typed you saw your words as they would appear on the page. At the time people were using word processors that allowed you to enter the words and you would put maybe some formatted codes in the document, and you would see perhaps the formatting codes, but it wouldn't show you what the document was ultimately going to look like when it printed out. The breakthrough with Visi On was that you could see it on the screen as you typed, and you could have the two of them together. You could have the document and the spreadsheet open at the same time and you could be operating them simultaneously. It was quite remarkable.

Q. Is it fair to say that you have done consulting work for dozens and dozens of companies?

A. That is correct, yes.

Q. And have you done consulting work for companies like Yahoo and Oracle?

A. Yes.

Q. I want to talk a little bit about one company in particular. Is there one company in particular that you have done sort of more significant or substantial consulting work than others?

A. Yes.

Q. What company was that?

A. Fujitsu, F-u-j-i-t-s-u.

Q. Tell the jury, what is Fujitsu?
A. At the time that I began my relationship with Fujitsu they were I think the third largest computer company in the world. They became the second largest computer company in the world and now they are maybe the sixth largest. Most of their business is outside of the United States. A lot of it or the majority of it is in Japan.
Q. Can you describe -- I think you have held a number of different positions and performed a number of different sort of functions for Fujitsu. When you were first hired by Fujitsu, can you describe sort of the project that you were hired to work?
A. We're talking about 1985 or thereabouts?
Fujitsu -- I had mentioned that Fujitsu was a large computer company, and Fujitsu was a company that made basically anything in electronics and IT that you could plug in. So if it used electricity, they made it. They also developed large mainframe computers, and mainframe computers that were substantially compatible with IBM mainframe computers at the time. They had a business relationship with IBM, and there was a dispute in the business relationship between the two companies that involved operating systems software, and Fujitsu asked me to come and help them with this dispute.
Q. And how long did that dispute play out?

A. Ten years. It was a long dispute.
Q. Just at a high level, were you involved and as part of your work on that did you review software code?
A. Yes, I did. Fujitsu came to me in part because -- not in part, they came to me because they were of the opinion that the only people who could understand the issues and could understand the software in their operating systems and in IBM's operating systems and could provide advice and analysis on that either worked for Fujitsu or worked for IBM, and they were not going to hire somebody from IBM, and somebody from Fujitsu was not going to be much help in providing an independent voice on this.

So they came to me as someone who was outside of IBM and Fujitsu and was capable of understanding the intricacies of the operating systems. My job became one of analyzing the operating system software from IBM and comparing it with the operating system software from Fujitsu, and trying to determine whether there were any similarities between the two systems that were not the result of proper operating system design, or part of writing an operating system for a large mainframe computer, or writing an operating system that was concerned about robustness or high performance, because if there were some similarities that were not explainable by that, then Fujitsu might need a license for that stuff if they had obtained it from IBM.

So that was my job. There were maybe 20 million lines of code, something like that, across maybe 20, 24 programs, something like that.

Q. At the conclusion of this sort of dispute, this legal dispute between IBM and Fujitsu, did Fujitsu continue to employ your services in other capacities?

A. I think I should have -- once the dispute was concluded, and that didn't take ten years, that took only a couple years. The next set of years, probably eight years, was spent identifying programming interfaces that would be necessary to allow Fujitsu to develop an operating system that would be compatible with IBM's operating system.

So the idea here is, and this was for money, and we had arranged a payment system, but the net result was that we were going to identify a set of APIs, and it was broader than APIs, communications protocols, message formats, programming languages, command syntaxes, everything that was part of the interface of a program, of an operating system, and what of those were necessary to allow for compatibility and interoperability between the operating systems so that a customer could take a program, or take his knowledge and go from an IBM computer to a Fujitsu computer and not suffer much in the way of conversion. For that it took about eight years.

We processed more than a quarter million pages of

documentation, looking at the documentation and saying is this part of the interface of this program? Should this be available? Is it necessary for interoperability? Is it necessary for compatibility? If it was, we put it in this stack. If it wasn't, we let it go. That is what we did for eight years after the two years of dispute resolution.

Q. Did there come a time when Fujitsu engaged you to be a chief technology officer and vice president?

A. Yes.

Q. Can you explain generally what your job responsibilities were in that context?

A. Well, I became a resource for the various divisions within Fujitsu in Japan to assist them in developing technology strategies and partnerships with companies, with technology companies in the United States and Europe. For example, Fujitsu had entered into a partnership with Nokia, which now makes cell phones. Back then they made telephones too, but they had a groupware product called TeamWare, and TeamWare was I think the largest selling groupware product in Europe by seats. People counted it by how many users do you have, which was the way that people kept score in the groupware business.

Fujitsu was interested in expanding groupware's market into the United States, so I worked with them and with AT&T to try and get TeamWare through AT&T into North America.

I worked with Fujitsu in evaluating part of the network computer project which was in 1996 or thereabouts, 1997. Some companies, Intel, IBM, Lotus, a subsidiary of IBM, were interested in seeing whether there was an alternative to the PC that was based on Java, which was a technology that maybe has been discussed here, but that wouldn't run Windows. It would run something else. It would run Java. So I was part of the team from Fujitsu who was evaluating the viability of that technology and looking at whether Lotus's software, personal information manager, its word processor and spreadsheet processer that it had put on the network computer were competitive with what was being offered by companies like WordPerfect and Microsoft on PCs. It was just an attractive option, and should we go and invest money, because Fujitsu could have made the computer itself, because it was in the computer manufacturing business as well. There was an opportunity there.

Q. In addition to the business consulting project, the examples of the business project consulting jobs that you have done, have you also done consulting in connection with litigation?

A. Yes, I have.

Q. Have you been retained in the past by, for example, the United States Department of Justice?

A. Yes, I have.

Q. Have you been retained by private companies to provide consulting services in connection with litigation?
A. Yes.
Q. Have you been retained in any other matters that required you to look at and analyze products manufactured by Microsoft?
A. Yes.
Q. Have you been retained by state attorneys general in connection with legal proceedings involving Microsoft?
A. Yes.
Q. During the course of those engagements, have you had an opportunity to review and analyze various Microsoft products?
A. Yes.
Q. Can you describe some of the products that you have looked at in connection with some of your litigation consulting?
A. I have looked at MS DOS, Microsoft's DOS operating system. I have looked at various versions of Microsoft Windows, from Windows 2.03, I think. I have looked at Windows 95, Windows 98 and versions following that. I have looked at specific technologies, the Windows Media Player, the Internet Explorer, and I have looked at Microsoft's server based operating systems and the communications protocols within the server computers.

I have looked at Microsoft's word processing software and office products software more generally.

Q. Have you participated in any proceedings before European competition authorities?

A. Yes.

Q. How many proceedings over there have you participated in?

A. Do you mean separate matters or times?

Q. Separate -- well, how many appearances have you made?

A. Dozens. Dozens.

Q. Can you give me an example of some of the types of clients, private companies who have retained you to provide consulting services in matters involving Microsoft?

A. Are you referring to Europe now, European --

Q. Europe. Aside from the present case, in Europe or in other places what types of companies have retained you?

A. What type of companies? Do you mean by name?

Q. Yes.

A. Okay. Real Networks, and they are the company that made the original media player, IBM, Oracle, Sun, some trade associations, the Computer Information Industry Association, the software industry -- SIIA, Software and Information Industry Association, ECIS, the European Community for Interoperable Systems, and I think that is probably the list.

Q. In your career can you estimate how many software programs that you have developed or modified?
A. Hundreds. Hundreds.
Q. How many lines of coded that you have written?
A. Many hundreds of thousands of lines of code. Many hundreds of thousands, maybe millions of lines of code, yes.
Q. Can you even estimate how many lines of code that you have reviewed and analyzed in the course of your career?
A. Tens of millions of lines of code.

MR. SCHMIDTLEIN: Your Honor, at this time we ask that Mr. Alepin be qualified as an expert generally in computer software development and computer system design.

THE COURT: Yes.

MR. HOLLEY: May I voir dire, Your Honor?

THE COURT: Of course.

VOIR DIRE EXAMINATION

BY MR. HOLLEY

Q. Good morning, Mr. Alepin. Nice to see you again.

Now, you told Mr. Schmidtlein that you don't have a college degree; is that right?
A. That is correct.
Q. And you were not suggesting, were you, sir, that at the time you went to college there were not computer science department in universities? You were not saying that, were you?

A. No, I was not.
Q. Because when you went to college the Massachusetts Institute of Technology, the Georgia Institute of Technology, and Carnegie Mellon University and Stanford University, they all had computer science departments, right?
A. And McGill University had a computer science department as well. A good one, actually.
Q. Now, you have never taught a course in computer science at any college or any university; isn't that right?
A. That is correct.
Q. Have you ever written a book about computer science?
A. No.
Q. You have never written any articles in any scholarly journal about political -- about computer science; is that right? Or political science either, but about computer science?
A. No, I have not.
Q. Okay. None of the work that you have ever done in the field of computer science has been peer reviewed by people who are professors of computer science; isn't that right?
A. I think that is correct.
Q. And you have never done any basic research in the field of computer science?
A. If by that you mean associated with a university, no.

Q. Okay. Now, when I asked you at your deposition in this case, in August of 2009, whether you were an expert in the design and development of PC operating systems, you declined to answer that question.

Isn't that right, sir?

A. I am not sure that the exchange went that way. I remember the conclusion that you stated for the record at the time, yes.

Q. Well, isn't it true, Mr. Alepin, that when I asked you the question are you an expert in the design and development of PC operating systems, that your answer was that is a difficult question to answer? You didn't say yes, did you, sir?

A. I gave examples of where I would consider myself to be an expert.

Q. But not in the design or development of PC operating systems. That question you declined to answer yes, isn't that fair?

A. I don't think that that is fair, no.

Q. Well, I'm happy to show you your testimony if that would be helpful.

A. I remember it quite well.

Q. Okay. When I asked you do you know of all of the considerations that go into designing and developing a PC operating system you said no; isn't that right?

A. That is -- I don't believe that that is exactly the way the conversation went.

Q. Well, I'm happy to read this to you, and if you want to see the transcript that is fine, but do you recall being asked the question do you believe --

THE COURT: Mr. Schmidtlein needs a page and line.

MR. HOLLEY: It is page 24, lines 3 through 18, Your Honor.

BY MR. HOLLEY

Q. Do you recall being asked the question, do you believe that you are an expert in the design of personal computer operating systems? Answer, that is a difficult question to answer. Do I think I could design a personal computer operating system? The answer is yes. Do I have an understanding of the subject matter? Yes. Do I understand the considerations? Not all of them, but I believe I could design a personal computer operating system. Could I compare a personal computer operating system to operating systems from servers and mainframe computers, for example, and identify the significant differences? Yes, I think I can do that. So I am not sure I can take your question on.

Do you recall that, sir?

A. That is correct, yes.

Q. You did say that you didn't understand all of the considerations that went into designing and developing PC

operating systems?

A. I think that that -- I was trying to get the frame of reference that you understood by what an expert for a PC operating system was, and I was offering you examples of where I would have expertise in the area, and there may be particular points within a subject that I would not have specific knowledge of, but I was answering your question if you understand comparing operating systems, relative features, yes, I can do that. Yes, I'm an expert in that, if you understand it by whether you are able to build -- if the expertise is deemed are you able to build one then, yes, I am an expert in it.

If it is that you understand each and every one that goes into a particular operating system, then maybe I don't have all of the individual elements of a particular operating system in my head.

Q. You have never worked on the development or design of any PC operating system. Isn't that fair, sir?

A. I have worked with the designs of personal computer operating systems, yes.

Q. Mr. Alepin, you recall being deposed in 2003, don't you, in a case involving Microsoft? Do you recall being asked this question?

MR. HOLLEY: Sorry. This is the MDL deposition, page 32, line 18, to page 33, line 2.

THE COURT: I am just curious, is this the consumer --

MR. HOLLEY: This is called in re Microsoft Corporation antitrust litigation, Your Honor.

THE COURT: I know.

THE WITNESS: What is the page?

BY MR. HOLLEY

Q. What is the date?

A. No, the page.

Q. I'm sorry. I'm looking at page 32, starting at line 18.

Apparently this went on for days, and I have just given you the wrong one.

A. Do you know the page numbers?

Q. I think it is this one.

Mr. Alepin, and I know it is hard for you with one hand, but I'm looking at page 32, line 18.

A. My page numbers begin at 220.

Q. I guess the third time is the charm.

MR. SCHMIDTLEIN: You're just trying to get rid of all of your papers.

MR. HOLLEY: I am trying to kill more trees.

THE WITNESS: Do you want this one back?

BY MR. HOLLEY

Q. Yes, I will take it back. Sorry.

Got it?

A. I have got it.

Q. So the question was asked of you, Mr. Alepin, and I want to know -- you told me some things in the 1990s, but then I thought I understood you to say that really was not -- that was either middelware or something other than PC operating systems design development experience. And what I want to know is have you had any PC operating systems design or development experience, you personally, aside from what you did in the mid 1980s -- excuse me -- with this fashion automation software? Answer, no, not that I can recall.

Do you recall giving that testimony, sir?

A. That is correct. Yep.

Q. Now, Mr. Alepin, you're not an expert in the design of word processing applications, are you, sir?

A. No, I am not an expert in the design of word processing.

Q. And you're not an expert in the design of spreadsheet applications, are you, sir?

A. No.

Q. In fact, in the same 2003 deposition, and if you look at page 33, line 3, you testified that you had zero experience working on applications for PC operating systems; isn't that right?

A. Excuse me. I am reading it.

Q. Sure.
A. Thank you. I see that.
What was the question?
Q. My question to you was whether you recall saying in your 2003 deposition that you had zero experience working on application software for PC operating systems?
A. I recall that. I don't think that is correct anymore, but --
Q. What PC -- excuse me. What --
A. In 2003 that was accurate.
Q. Okay. And can you tell me, sir, what applications for PC operating systems you have designed or developed since 2003?
A. A system for the tracking of the availability of web sites and the recording of the operational status of web sites around the United States.
Q. Okay. But if we limit ourselves to word processing applications and that run on PCs, spreadsheet applications that run on PCs, relational databases that run on PCs, and presentation graphics software products that run on PCs, the answer you gave in 2003 remains true in 2011.
Is that not right, sir?
A. Sir, you're asking for personal productivity applications, you're not asking for applications software as that term is --

Q. Yes, sir. I'm talking about what I guess you would call office applications or personal productivity applications. And the answer still is, as we sit here today, that you have zero experience in the design or development of those products, correct?

A. No.

Q. Well, can you tell me, sir, which office productivity applications, as you and I have now understood that term, that you have designed or developed between your deposition in 2003 and today?

A. I have worked on the spelling and spellchecking and spell correcting portions of word processing.

Q. For which company?

A. With Yeda University in --

Q. I'm sorry?

A. Yeda, Y-e-d-a, in Israel.

Q. Anything else that you can tell me about your experience in personal productivity applications, designs or development between 2003, when you said that you had zero experience, and today?

A. No. Not as I am sitting here, no.

MR. HOLLEY: Your Honor, in light of this testimony Microsoft opposes the qualification of Mr. Alepin as an expert.

THE COURT: Do you have any more questions, Mr.

Schmidtlein? I am not suggesting that you have to have any, but --

MR. SCHMIDTLEIN: No more questions.

THE COURT: Okay. I am going to generally qualify Mr. Alepin as an expert. As you all know, I am pretty much a -- if you have a specific problem, Mr. Holley, let me know and approach the bench. I will generally qualify him.

Ladies and gentlemen, I will give you a more formal instruction about this later, but being qualified as an expert is somebody who can give you their opinion in an area of their expertise. Normally, as you know, you come into court and talk about facts and things that you observed. There are a couple of exceptions to that. One of them is for expert testimony. Somebody can actually come in and give you their opinion, and that is what it means to be qualified as an expert.

Mr. Schmidtlein.

MR. SCHMIDTLEIN: Your Honor, if I may, can we take a short break?

THE COURT: Sure.

MR. SCHMIDTLEIN: Thank you.

THE COURT: I'm ready any time you all are.

MR. SCHMIDTLEIN: Thank you, Your Honor.

(Recess)

THE COURT: We will take another break around

10:00.

MR. SCHMIDTLEIN: Thank you, Your Honor. We appreciate the Court's indulgence.

(WHEREUPON, the jury enters the proceedings.)

THE COURT: Just so you all know, we'll of course take a break when anybody needs one, but if nobody needs one before 10:00 we'll take one around 10:00.

Mr. Schmidtlein.

MR. SCHMIDTLEIN: Thank you, Your Honor.

DIRECT EXAMINATION (Cont.)

BY MR. SCHMIDTLEIN

Q. Mr. Alepin, the jury has patiently listened already a lot about software and various different acronyms, so I'm not going to have you sort of teach the full semester course here, and hopefully we'll sort of hit some of the highlights.

Can you quickly just describe what a computer operating system does?

A. Quickly --

Q. Pull the mike in front of you there. That will make it easier for everybody.

A. Better? Okay.

A computer operating system is actually a collection of software modules sometimes called a program that manage the hardware that is attached to the computer, that manages the

resources on the computer, resources are memory and time, C.P.U. time, the time it takes to execute the program, so that programs that the user wants to operate will run effectively and reliably. So the operating system's job is managing hardware and allocating resources to programs that the user wants to run.

The operating system also provides a mechanism to allow the user to tell it what it is supposed to do. So the operating system relies on the user's instructions to establish what programs to run and when to run them, and what to do with the results and what to do with it when they are finished. That is it in a nutshell.

To run the programs the operating system provides a set of interfaces that allow the programs that are running on the computer and on the operating system to request and receive the results of services that the operating system provides. So if the operating system provides a means for the programs to ask for memory, it says I need more memory, the operating system provides an API, an interface where the program can ask for the memory and the operating system can give the program memory and tell them where the memory is located.

There are lots of things that programs want, so there are lots of programming interfaces to accommodate the needs of programs. Historically we started out with operating

systems that were very small and did very little for programs and very little for users. Some of you may remember a green screen or a black screen and typing little commands, and you compare that with today with flashy icons and moving pictures and drag and drop and all of this kind of stuff on a big, fancy desktop, and that is because there is a lot more functionality and a lot more interfaces in operating systems.

Q. You testified earlier this morning about your extensive experience working with mainframe computer operating systems. Mr. Holley asked you some questions about PC computer operating systems. Kind of on a very high level can you kind of compare mainframe operating systems with PC operating systems?

A. Yes, I can.

THE COURT: Please do so.

THE WITNESS: Thank you.

I made mention of the fact that it is not too far back in memory when personal computer systems had screens and you would type commands on the line next to a C prompt or something like that, and mainframe operating systems have been around for a lot longer and have evolved to perform many of the functions that only now today's PC operating system are undertaking.

The mainframe computer systems do them in ways

that reflect the fact that businesses, corporations, enterprises, hospitals, run their mission critical businesses on mainframe computers. And, accordingly, the operating system has to be more robust and can't break and has to be able to suffer multiple failures in the components of the operating system and still keep running. It is not possible to get a blue screen and say, whoops, sorry, restart your computer.

Mainframe computer systems have got redundancy designed into the operating system, protection and security designed into the operating system so that it is not possible to crash or to sneak in and obtain information from another application that is running. There are all kinds of mechanisms in operating systems for mainframe computers that are significantly more involved and significantly more sophisticated than those that are available on PCs.

However, PCs increasingly are making strides to incorporate the functions, oftentimes borrowing them, borrowing the concepts from mainframe computers to apply them to personal computers.

BY MR. SCHMIDTLEIN

Q. What particular operating system did you focus on in coming to your opinions in this case?

A. In this case I focused on the Windows 95 operating system and its predecessor developing system, Chicago, the

Chicago beta system, the code name for the Windows 95 operating system.

Q. When was Windows 95 released?

A. August 24th or 25th of 1995.

Q. Do you know sort of roughly the development time period during which Windows 95 was developed?

A. Windows 95 was under development from I would say 1992 until its release in 1995, although there was some discussion of the next version after Windows 3.1 possibly as early as 1991.

Q. You're familiar with the term ISV, correct?

A. Yes.

Q. What does ISV stand for?

A. ISV stands for independent software vendor.

Q. What are ISVs? What is an independent software vendor?

A. Well, independent software vendors are called independent because they are not part of a hardware company or an operating system company. The term is important because it helps to distinguish them from products or services that are being developed by the -- I'll use a term of art here -- by the platform maker. So they are independent of the platform maker.

Q. Are you familiar with the interactions that typically take place between ISVs and operating system developers during the operating system development process?

A. Yes.

Q. Can you describe those generally?

A. Well, the operating system vendor needs independent software vendors, and the operating system vendor needs them for a couple of reasons. He needs them to develop their software products to run on the operating system. It is not really a good idea to have an operating system and to build it and then nobody comes, because you need applications to run on your operating system, because people buy computers to run applications not to run operating systems. That is an important thing.

The first thing is operating system vendors communicate with independent software vendors to encourage them to develop and to plan to develop their applications for the new operating system that we're planning on building. That is number one.

The second thing is operating system vendors need independent software vendors because independent software vendors are close to users and they understand what the users want and need. They have good ideas about what the operating system vendor should incorporate into the operating system in order to make it helpful for the application of software vendors to develop their application for the operating system. So you have those two reasons or those two interactions on the operating system vendor's

side.

On the application vendor's side, the application vendor wants, the independent software vendor wants a heads-up about what the future is going to be like from the operating system vendor's point of view. What are you going to do and when are you going to do it? And how will that help me get my product and make it better for my customers? So there is that interaction on the other side.

Q. Are you familiar with the term beta release as it is used in the software industry?

A. Yes, I am.

Q. Can you describe that?

A. Sure. So a new product -- so beta is a term that we use that applies to not just operating systems but it applies to almost all software development now in the market. It represents the last step before the product is finished and made available for customers.

Usually you go through maybe a customer technology preview phase where you show them some pictures and some mock-ups of what you're thinking of doing. You then go through an alpha phase where you make little pieces of software and of what you're planning to do and are available for people, independent software vendors to see. And then you go through beta phases where those parts of the operating system that are available earlier are packaged

together and given to the beta testers, the independent software vendors, so that they can test and give all their programs to use the new features in the operating system.

Q. Have you reviewed beta releases of operating system software?

A. I have.

Q. In your experience do software developers typically make significant changes to software functionality after the release of a beta version of their software?

THE COURT: You mean operating system?

MR. SCHMIDTLEIN: Yes.

THE WITNESS: I think that the best way to answer that is that the outward looking part of the system is rarely changed in the beta. It would be exceptional to change the interfaces that the operating system provides. Once they are in the operating system it is extremely rare to change them.

Inside, however, things are being fixed. Part of the beta process is to identify bugs. So you say this is supposed to work this way. It does not work this way. They go ahead and they fix it. So there are changes under the covers that are made during the beta process, but those changes take place inside under the covers of the operating system, and not at the interfaces with the product that has been described as being capable of doing or available to do.

BY MR. SCHMIDTLEIN

Q. You have made reference to the term API and the jury has heard it probably every day for the last several weeks. API stands for application programming interface; is that right?

A. That is correct.

Q. From your perspective describe what an API is.

A. Well, it is an interface. It is a point of connection or attachment. As I mentioned before, the software product has lots of interfaces and the interfaces between the operating system and the application is called an application programming interface. It is a programmable connection between the application program and the operating system that performs a specific function, and the API is the definition of what that service is.

It is the rule that you follow in order to -- I used the example of asking for more memory. That is an API. It has a certain set of requirements that the application program must follow in order to make the request, to use the API. It will receive a certain set of defined results when the operating system performs the function requested by the API.

Q. Are you familiar with something called the RNA API?

A. Yes.

Q. What is that?

A. That is -- Microsoft provided a set of interfaces, remote networking interfaces that are part of Windows 95 that allow programs to use the dialer mechanism inside Microsoft Windows 95.

Q. You made reference to the dialer mechanism. What is that?

A. Well, the Windows -- it is hard looking back all those years to when people used modems and telephone lines to communicate with AOL, and some people still do, and the modem was controlled by software that would send a set of commands to the modem, telling it to turn itself on and to set itself at a speed and to dial a telephone number. Windows 95 offered a set of programming interfaces that allowed the program to select a telephone number that had been stored previously and to dial that telephone number across the modem.

Q. Are you familiar with a product called Netscape Navigator?

A. Yes, I am.

Q. Was the RNA API something that from a technical standpoint was important for a product like Netscape Navigator?

MR. HOLLEY: Objection, Your Honor. We are now having the witness testify about things that are collaterally estopped.

THE COURT: Overruled.

BY MR. SCHMIDTLEIN

Q. Do you want me to repeat the question?

A. Please.

Q. Let me back up.

A. Okay.

Q. What is Netscape Navigator?

A. Netscape Navigator was the first --

THE COURT: While he answers that, my ruling stands. You have an objection to all, and you don't have to object each time.

MR. HOLLEY: Thank you, Your Honor.

THE WITNESS: Netscape Navigator was the first browser, the one that caught everybody's attention and sort of was there for the Internet revolution.

BY MR. SCHMIDTLEIN

Q. When was Netscape Navigator developed?

A. The first release of Netscape Navigator was in December of 1994, although there were earlier versions that were available before that.

Q. Let me come back to the question I asked you before. Was the RNA API something that from a technical standpoint was important for a product like Netscape Navigator?

A. Yes.

Q. Can you explain why?

A. Well, Windows 95 was going to have this dialer mechanism available to it with an address book and means for storing addresses and allowing users to dial out with their favorite program for online services.

You had at the time AOL and Compuserve, and you also had newly emerging Microsoft Network and you had Netscape Navigator. It would be desirable that the user's access to the dialer would be consistent, and there would be a single point by which the user would get out to the modem, so that there would be different programs using different address books and with different dialers to get outside of Windows 95. Netscape Navigator would benefit from being able to use the same one, a common one.

Q. We're going to come back to APIs again in a little while.

Have you prepared some slides to sort of work our way through some of your technical opinions in this case?

A. Yes, I have.

MR. SCHMIDTLEIN: May I approach?

THE COURT: Sure.

BY MR. SCHMIDTLEIN

Q. Mr. Alepin, these will be up there and on there, but if you want a hard copy you'll have a hard copy as well.

Mr. Alepin, did you prepare a summary side with sort of your three overarching opinions in this case?

A. Yes, I did.

MR. SCHMIDTLEIN: Can we go to that slide?

BY MR. SCHMIDTLEIN

Q. Do you see these three bullet points? WordPerfect and other Novell technologies were middelware. The second one, no legitimate technical justification for de-documenting and withdrawing support for the namespace extension APIs. Three, no legitimate technical justification for Microsoft's manipulation of the messaging application programming interface.

Are those sort of --

THE COURT: I'm sorry. I may have a previous --

THE WITNESS: That is different from the --

THE COURT: I may have a previous version.

MR. SCHMIDTLEIN: Yep.

THE COURT: Let me just show you what I have got.

THE WITNESS: You have the right one.

MR. SCHMIDTLEIN: We have a technical snafu.

THE COURT: Do I have the right one?

THE WITNESS: You do.

MR. SCHMIDTLEIN: He has the wrong one there.

THE COURT: So there were --

MR. SCHMIDTLEIN: You are correct, and I noticed it myself up here, Your Honor.

THE WITNESS: I did, too.

THE COURT: You can use mine, if you want.

MR. SCHMIDTLEIN: No. I have got one as well, just in case you need that.

THE WITNESS: Thank you, Your Honor.

BY MR. SCHMIDTLEIN

Q. Let's go to your first opinion -- we'll come back to that.

The third one is the one where the wording is not right, and we're not going to get to that one until number three. So let's go to the number that has the first overarching slide.

MR. SCHMIDTLEIN: Pull that one up about middelware.

There we go.

BY MR. SCHMIDTLEIN

Q. Is this one of the opinions that you are prepared to testify to?

A. Yes.

Q. Do you have a slide prepared that talks about this opinion?

A. Yes, I do.

MR. SCHMIDTLEIN: Can we go to that next slide?

BY MR. SCHMIDTLEIN

Q. Okay. Again, this is just sort of facilitating and moving things --

THE COURT: That is fine.

MR. SCHMIDTLEIN: -- efficiently here.

BY MR. SCHMIDTLEIN

Q. Can you tell the jury --

A. There is something on the front of this screen here. It is gone. Thank you.

Q. You're familiar with the term middelware?

A. Yes, I am.

Q. The first bullet point there, software that runs on top of an operating system and exposes APIs that encapsulate meaningful functionality.

Is that sort of the definition of middelware that you're comfortable with?

A. Yes.

Q. And the second bullet point there, if applications are written to run on APIs exposed by middelware, the operating system is rendered less relevant.

Can you describe that?

A. Well, what that is intended to convey is the observation that as an application program uses more of the middelware's APIs rather than the operating systems APIs, the application will be less dependent on the operating system, and will require fewer changes to move from one operating system to another operating system.

Q. And I see the next point you have got is if middelware

is cross-platformed, it significantly lowers the cost for developing software that runs on multiple operating systems.

Can you briefly describe what you mean by cross-platformed there.

A. By cross-platform I intended here to say that if a piece of middelware, the middleware software package makes itself available on let's say Macintosh and on the PC, then the middelware can be considered to be cross-platformed if it makes the same programming services available on both platforms, on both the Macintosh and the PC. So cross-platform is a way of saying that the APIs are available across multiple different platforms.

MR. SCHMIDTLEIN: We have taken the risk of trying to prepare a demonstrative that might visually help explain this to the jury.

Can you put that up? Okay.

BY MR. SCHMIDTLEIN

Q. Can you, sort of using this admittedly sort of very primitive demonstrative, explain some of the points that you were just talking about?

A. All right. Well, here we have an example of an application, application A that is using the APIs, the application programming interfaces of operating system A. You can see that on the left-hand side. And that application, that same application to run on operating

system B would have to be modified to run -- to use the APIs that were available on operating system B. The way for asking for memory, for example, is likely to be different between the two operating systems.

So if I want to take application A and run it on operating system B, it is likely that I'll have to change the way that I ask for memory, for example. The number of APIs that I use in my system may make this -- the more I use the APIs, the operating system, the more changes I will have to make to get the application to be able to use operating system B's APIs.

MR. SCHMIDTLEIN: Can we go to the next demonstrative?

Okay.

BY MR. SCHMIDTLEIN

Q. This demonstrative has sort of an additional layer included in there called middelware. Can you sort of take the jury through the implications of this middelware for software developers?

A. All right. So what has happened here is the application program has been coded to use the middleware APIs to perform functions that it could have otherwise used the operating system's API to perform. And in that case what has happened is the middelware software program has taken on the responsibility of adapting the request, like a

request for memory, and adapting it to the particular needs of the operating system on which today the application is running. So what the software developer who owns application A can do, is run his application on different platforms without making changes to the application. That is kind of the big payoff at the end of the middelware rainbow.

Q. We sort of simplified this, and we tried to make a lot different versions of this to be simple, and this was the best that we could do, but oftentimes the case is is that you may have for a middelware product to be cross-platformed and run on both of these, this might actually be sort of two different versions of the middelware; is that right?

A. Absolutely. Yes. Yes.

Q. So the APIs or the interfaces that are connecting here may be different depending on which operating system you're running?

A. That is what the diagram is intended to convey, yes. The APIs on the left-hand side inside the middelware would be different than the APIs inside the middleware on the right-hand side dealing with different operating systems.

Q. Does the software developer who is up here, sort of care about the differences down here?

A. No, he does not.

Q. For him the important part is this layer here is the

same regardless of which operating system?
A. Yes.
MR. HOLLEY: Your Honor, could you ask Mr. Schmidtlein to stop leading the witness?
THE COURT: Well, he knows that. He was just explaining it and to sort of simplify --
BY MR. SCHMIDTLEIN
Q. Mr. Alepin, did you prepare a slide that sets forth some examples of middleware?
A. Yes.
Q. I want to sort of go through these quickly. You talked a little bit about --
THE COURT: I just want to clarify what I said before. We may be getting into the same area as before to which an objection was made, and I think I forgot to use the word continuing. There is a continuing objection on the issue of collateral estoppel and testimony about that.
MR. HOLLEY: Thank you, Your Honor.
BY MR. SCHMIDTLEIN
Q. You have testified I think previously and described that Netscape Navigator was sort of one of the early popular browsers. Can you explain how Netscape Navigator falls into the class of middleware?
A. Well, Netscape Navigator was, in addition to being a browser, it allowed for the development of applications that

made use of information that was obtained from the network. So we had browser plug-ins, for example, that would allow programs, let's say, from Adobe Acrobat Reader to read PDFs inside the browser window. You would have a plug-in that would allow you to see the PDF documents without having to download the document and open another window to read the PDF. You could run Flash Animation in your browser window because of plug-ins.

The programmers could write programs that worked inside the Netscape Navigator and provided important services that customers who were using the browser would enjoy.

Netscape Navigator also provided scripting language. We called it Java script. That enabled people who were sending in web pages to include little programs inside the web page, not just malware, but actual programs that did important things like give you drop down menus and allow you to change some of the contents of the page. In fact, to actually do work, so that you could use the Java script language inside of the web page to actually program small applications.

Netscape also included the Java -- the programming for Java Virtual Machine, which allowed programmers to develop full-on business applications and transport them from a server over the Internet to the browser and have them execute in the browser. So Netscape offered an increasingly

broad platform for the development of applications where you would not leave the browser and you would not see the operating system.

Q. Can you describe -- what are Sun Microsystems Java technology and how did they constitute middelware?

A. Java technologies includes the Java Virtual Machine, which I just mentioned, as well as the Java interpreter and Java application frameworks, which allowed programmers to develop applications which were sort of -- the catch phrase was write once, run everywhere. The objective was that a programmer could write a program in Java using the frameworks, using the programming language, and test it once and then it could run on any computer with any kind of hardware, as long as there was a Java Virtual Machine there.

So write once, run everywhere, was seen as a great boom for programmers and developers because it unlocked applications from platforms, and you could choose what hardware you wanted to run today with these applications and change your decision about the hardware tomorrow or the next day.

Q. The next bullet that you have on your slide is Lotus Notes.

Can you describe what Lotus Notes is?

A. Lotus Notes is a groupware software. Groupware is a popular software category and, in fact, it was a very

popular software category in the early 1990s and throughout the -- excuse me -- continuing to today, of course, but it provided the kind of collaboration tools that enterprises -- when I say enterprises I am talking about businesses and governments and educational institutions, so kind of a broader term of enterprises, and so not small home or home office users, but enterprises on the other side of the market.

Those enterprises could use this to collaborate and work together. So it was for teams working together. You could have calendaring and e-mail and contacts, and you could have libraries of documents, and, like today, we have logs and bulletin boards and other areas where people meet to exchange information and search through for -- you could search through for recipes. You can imagine a search through what people have written about a particular store or a review of a restaurant.

Well, inside an enterprise you might have similar needs to write documents and to be able to find those documents. Who was the last person who talked to this customer and what did they say? How soon are they going to be ready to make a decision about buying our product? You want the members of the team to be able to search through these libraries of documents written by team members, and maybe follow up or exchange information with the person who was responsible.

So groupware was a very exciting and very popular platform. It became a platform for the development of other applications that related to just these basic groupware functions. So you might -- what I mean by that, a platform here was application developers started to make use of information in e-mail systems and in the library system to, let's say, set a routing and approval scheme for their group. I would group a message for expense account approval to my manager, and that would have a certain time limit, and once that expense account was routed and approved it would go to the accounts payable department and they would issue a check. I could set up those kinds of applications based on the information that was in the groupware database to create the middelware platform.

Q. Did in the 1990s and sort of up through today, ISVs write applications that would run on Lotus Notes?

A. Yes. Lotus Notes provided a complete set of tools to develop applications for independent software vendors, yes.

Q. The next bullet is Novell Technologies. There are several sort of sub bullet points there. Let's start with WordPerfect.

Did WordPerfect meet your definition of middelware?

A. Yes, it did.

Q. Can you explain that?

A. Well, WordPerfect provided a set of services which were

available to independent software vendors to build applications that worked with the WordPerfect document processing capabilities.

Q. The next bullet there is PerfectFit, slash, shared code.

What are those?

A. Well, increasingly the vision of WordPerfect and Novell was to deliver a fully integrated desktop office application environment. What I mean by that is they wanted to integrate applications that users typically used for personal productivity, including spreadsheets, including database, including word processing and groupware, groupware activities, e-mailing and calendaring and address book, so they wanted to integrate those functions and make the platform extensible.

They took the products that they had, WordPerfect and QuatroPro and Paradox, and they put them on top of what came to be known as shared code and PerfectFit technologies and made those services in the form of APIs, that not only those programs could call but other programs like the word processor program would work together to offer a more valuable solution for somebody in an office environment.

So you might have -- an easy one is I want to spellcheck no matter what program I am in. So if I'm in the word processor and I want to use the spellchecker service,

if I am in a spreadsheet program and I have headings for my columns and I went those spellchecked, or I am in a database and I want my information that I have typed in in the comments to be spellchecked. I can use the same spellchecking service to do that. So I have a set of common programming services for all of my applications, and I make that available to third parties, as well as I publish it to make somebody who has got something else that is a complimentary program to my word processing program, and they can sit on top of my platform.

Q. What is the next bullet there that talks about appware and open doc? What is appware?

A. Appware is an application framework. This is a concept that emerged in the early 1990s really. It was a set of programming interfaces, APIs really, that were set at a high level.

THE COURT: I'm sorry. I didn't realize it is past 10:00. I hate to interrupt you, but the court reporters I think need to take a break. I am sorry to interrupt you. I just overlooked the clock.

MR. SCHMIDTLEIN: That is fine. Thank you.

THE COURT: I am ready whenever everybody else is.

(Recess)