IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

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BEFORE THE PATENT TRIAL AND APPEAL BOARD

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SAMSUNG ELECTRONICS CO., LTD., and
SAMSUNG ELECTRONICS, AMERICA, INC.,
Petitioners,
v.
CERENCE OPERATING COMPANY,
Patent Owner

_____

Case No. IPR2024-01267
U.S. Patent No. 9,026,428

_____

VIDEOCONFERENCE DEPOSITION OF
JONAS ANDERSSON
WEDNESDAY, JULY 16, 2025

Reported by: Monice K. Campbell
CA CCR No. 14171, CRR, RMR
Job No.: 7471154

PAGES 1 - 111

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Samsung v. Cerence
IPR2024-01267
Exhibit 1023

Exhibit 1023
Page 001 of 139

VIDEOCONFERENCE DEPOSITION OF JONAS ANDERSSON, held on Wednesday, July 16, 2025, at 7:00 a.m., before Monice K. Campbell, Certified Court Reporter, in and for the State of California.

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I N D E X

JONAS ANDERSSON	PAGE
Examination By Mr. Clark	4
Examination By Mr. Hyde	106

E X H I B I T S

NUMBER	DESCRIPTION	PAGE
Exhibit 1	Declaration of Jonas Andersson	20
Exhibit 2	U.S. Patent Number 9,026,428	23

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WEDNESDAY, JULY 16, 2025

7:00 A.M.

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JONAS ANDERSSON,

having been sworn to testify to the truth, the whole truth, and nothing but the truth, was examined and testified under oath as follows:

EXAMINATION

BY MR. CLARK:

Q. Good afternoon, Mr. Andersson. Thank you for coming today.

Could you please state your full name for the record?

A. Yes. My name is Jonas Andersson. In Sweden we have multiple given names, but Jonas Andersson is the name that's used in documents, contracts, and so on. On my passport, it says listed as Per Jonas Mikael Andersson, but in the population register the Jonas name is highlighted as the name which I'm to be addressed with.

Q. Yeah. If you go ahead and spell the first -- the full name on your

passport.

A. It's, Per, P-E-R, Jonas, or Jonas as you would say in US maybe, J-O-N-A-S, and Mikael or maybe it's close to Michael in US, it's M-I-K-A-E-L. And then Andersson is -- Andersson, as I would say, it's Andersson with two Ss. A-N-D-E-R-S-S-O-N.

Q. Thank you.

And what is your address? And could you spell it for me too, as well.

A. The full address, street address or just the city and country?

Q. The full street address.

A. It's called Execerisgatan 1B, Apartment 1501. It's -- zip code is 21149. And city is Malmö, M-A-L-M-O with two dots above.

THE COURT REPORTER: Can you spell the street address?

THE WITNESS: So the street address is E-X-E-C-E-R-I-S-G-A-T-A-N. That's the street. 1B. Apartment Number 1501.

/ / /

BY MR. CLARK:

Q. And Malmö is M-A-L-M-O with two dots on top of the O?

A. Yes.

Q. And that's in -- that's a city in Sweden?

A. Yeah. That's in Sweden.

Q. I understand you live in Sweden. Are you comfortable proceeding in English without a translator?

A. Yes. So maybe it's relevant, I'm -- my native language is Swedish and I've never lived in another country than Sweden, but I'm able to speak English.

Q. And who is your current employer?

A. That's Cerence AB, the Swedish subsidy of Cerence.

Q. The Swedish subsidy of Cerence?

A. Or subsidiary. Whatever the correct word is.

Q. And that's a subsidiary of Cerence Inc., correct?

A. I don't know the exact legal structure, but my formal employer in the contract is the Swedish entity of Cerence.

Q. Have you ever been deposed before?

A. No. This is the first time.

Q. Okay. Well, then, I will go through carefully the ground rules just so you understand what your -- what you'll be doing today and kind of how the structure is for today's deposition.

Do you understand that this deposition is under oath as if you were in the court of law?

A. Yes. I understand that.

Q. And if you fail to tell the truth, then it will be considered perjury. Do you understand that?

A. Yes.

Q. And really important that you give audible answers because Monice here is our court reporter, and she needs to take down every word that you say, so be careful not to nod your head or shake your head but give verbal answers. Is that fair?

A. Yes.

Q. It's also really important that

we don't talk over each other because it makes Monice's job really difficult if she has to try to type what two different people are saying at the same time, so I just ask that you be patient, wait until I finish my question before starting your answer, as well as your counsel, Mr. Hyde here, will be at times objecting to some of my questions.

So I'll just ask for you to give a little pause and wait for him to give an objection if necessary.

Do you understand that?

A. Yes.

Q. And we will generally take breaks about once every hour, although I don't expect this deposition to go too long, but if you need a break at any time, just let me know. And the only thing I would ask is that if we are in the middle of a question, is that you first answer the question and then we can take a break after you've answered it. Does that sound okay?

A. Yes.

Q. Very important too is if you don't understand one of my questions today, just let me know and I can rephrase it or ask it a different way. Otherwise, if you give me an answer without saying you don't understand it, I will assume that you understood the question. Is that fair?

A. Yes.

Q. And is there any reason you cannot give truthful and accurate testimony today?

A. Assuming this refers to medical condition or similar, no, I'm able to speak the truth.

Q. So you're not on any medications that might impair your ability to give answers today?

A. No.

Q. So, Mr. Andersson, what did you do to prepare for testifying today?

A. So I have been asked to make a declaration on the -- based on my experience as a Cerence software engineer on the handwriting technology I've been

working on there. So I prepared by looking through the declaration I made because I assumed that this would be about that declaration and questions about that declaration.

Q. Did you discuss this deposition with anyone to help you prepare to testify today?

A. So my counsel told me the things you told me too, to speak up, to pause, and these sort of things. That there will be breaks and how this works. And that I would be asked if I had been deposed before and these things.

Q. And did you talk to anyone other than your counsel?

A. No.

Q. Approximately how long did you meet with your counsel to prepare?

A. I think it was around two hours, maybe.

Q. Did anyone, other than your counsel, provide you information at all for purposes of testifying today?

A. No.

Q. And other than your declaration, did you review any documents to prepare for your deposition today?

A. I've skimmed through the patent that's mentioned in the declaration, and so I'm listed as one of the inventors on that patent, but it was a long time ago, so it's a document not written by me. My role was in the idea phase when the idea was conceived in collaboration with other colleagues also listed on the patent.

So I was not very familiar with the patent and the way it was written, but I was familiar with the idea of the invention that's described there.

Q. And I understand you said that you currently work for Cerence AB, the Swedish subsidiary of Cerence?

A. Yes. Yes.

Q. Have you ever heard of Cerence Operating Company?

A. Yes. I've heard of it.

Q. And how is Cerence AB related to Cerence Operating Company, if you know?

A. I don't know. I think it's -- I

mean, when I say that Cerence AB is my employer, it's mainly the -- what's listed when I get my paycheck and -- I mean, originally, I was -- contract was written with Decuma AB, the company I was originally employed in, and this contract is still valid. It has been acquired through the years. Zi acquired Decuma and then Cerence -- excuse me. Nuance acquired Zi and then Cerence, that was spun off from Nuance.

So each time it's been a Swedish entity that my contract has moved to. First was the Decuma AB, then Zi Decuma AB was formed, and then -- and there was already a Nuance Communications Sweden AB, so that was transferred into there. And then Cerence AB was created when Cerence spun off to hold the Swedish asset and contracts of things.

So my understanding is that from the contract and who is paying my salary, it's the Swedish entity. If that's a technicality, I'm working with colleagues and groups in different parts of Cerence functionally.

So I'm not aware of the details of that legal or accounting structure.

Q. So in your declaration, I know you mentioned you've been working for Cerence or its predecessor since 2001; is that correct?

A. Yes.

Q. And 2001, is that when you started to work for Decuma AB?

A. Yes. Decuma AB in 2001.

Q. And that's spelled T-E-C-U-M-A?

A. D, as in David.

Q. D-E-C-U-M-A?

A. Yes.

Q. And then I think you said that Decuma AB was acquired by Zi AB?

A. Zi Corporation in Calgary, Canada.

Q. And how do you spell Zi?

A. Zed-I. Sometimes you say Z. The last letter in your alphabet.

Q. Z, like in zebra?

A. Yes.

Q. And do you remember approximately what year that was that Zi Corporation

took over Decuma?

A. I think that was 2005.

Q. And then you said, I believe, that Nuance Communications AB acquired Zi Corporation?

A. Yes. Nuance somehow acquired Zi. Zi had subsidiary, Zi Decuma AB. I don't know exactly -- Nuance Communications Sweden AB already existed. I don't think Nuance Communication AB acquired Zi Decuma AB. That acquisition was of the full Zi company, I think, but how that transfer -- so they didn't want to have two Swedish entities, I guess, Nuance, so they -- yeah, there was some transfer of Zi Decuma AB into Nuance Communications Sweden AB.

Q. And that's spelled Nuance Communications. Nuance is N-U-A-N-C-E, right?

A. Yes.

Q. And just to make sure I'm clear, was Zi Corporation always part of Nuance when you started, when it took over Decuma, or do you remember when it actually became part of Nuance?

A. Nuance acquired Zi in 2009.

Q. And then around 2019, Cerence spun off from Nuance; is that correct?

A. Yes.

Q. So at a high level, what type of -- what type of product or services did Decuma provide?

A. They provided handwriting recognition and such as we call it or core libraries. So some software or code that you can compile to run on any operating system. It doesn't contain any -- it doesn't use any specifics. Only available on, say, Android or iOS or Windows. Pure C, standard C code and library that can be imported into any operating system and device.

Q. And did Zi Corporation do the same thing or similar thing?

A. So Decuma also eventually before acquired by Zi developed user interfaces. So they made a full solution for different platforms using their own engine libraries. So, for example, for Windows C, the pocket PC operating system called

Win DE and several others, Palm OS, Symbian that Nokia use and Ericsson as well, I think.

And then Zi did another technology that's called predictive text. So if you've heard of T9, it's that type of software.

So in those early days of the mobile phones, before they became smartphones, you could either press a key three times to get the letter C or you could press each key just one time and using a dictionary, it would figure out which word you were using. So I think maybe key 1 on the key pad had ABC, and then key 2, E -- DEF and so on. And so you could type text message faster.

And that type of technology was developed by Zi.

Q. So Zi did both what Decuma did plus this -- in addition predictive text?

A. They added handwriting when they acquired Decuma to their portfolio. So they had predictive text plus handwriting. And handwriting -- there was some synergies because the predictive text

developed a lot of language models to support that technology which could also be used by handwriting.

Q. I remember T9 well. I used to be really fast at that, faster than typing in some ways.

A. Yes.

So what happened when Nuance acquired Zi was that they owned T9, the actual T9 technology, so they were quite similar, but the one that's called T9 was the one that Nuance had already acquired from AOL in 2007, I think. And so they kept the handwriting part, and I think they didn't keep the eZiText, which was Zi's technology. That's a standalone technology. It was called eZiText, the product.

So they didn't keep that for -- I don't know how long that remained, but that was sort of merged with the T9, and the T9 then became XT9 which is a product that Cerence has today.

THE COURT REPORTER: Are you saying XT9?

THE WITNESS: It's the next

generation of T9. So, for example, if have you a smartphone, it can trace on top of a soft keyboard swiping. It's called sometimes input text faster than clicking the QWERTY keyboard on the screen.

BY MR. CLARK:

Q. And just for the record it's X, the letter T and the number 9, XT9.

A. Yes.

Q. And also for the record, QWERTY keyboard is Q-W-E-R-T-Y?

A. Yes. That's the type of keyboard we are familiar with which is displayed on the touch sensitive screen and then you tap it on the screen, but you can just trace over it with your finger. That type of product.

Q. All right. Mr. Andersson, you submitted a declaration in support of the patent owner in this matter, correct?

A. Yes.

Q. And the patent owner is Cerence Operating Company. Do you understand that?

A. Yes.

Q. But if I use just the word -- just "Cerence," will you understand that to mean the patent owner in this matter?

A. Yes.

Q. Did someone else draft your declaration on your behalf, Mr. Andersson?

MR. HYDE: Objection to form.

THE WITNESS: So I was asked to first sort of identify if I was a person who could answer questions in this case, and then it was established that this -- this sort of declaration or information needed related to handwriting, which I had experience in.

And then if I recall correctly, answered some questions on how the technology worked, and then was asked to draft a declaration. So I wrote about one page, a declaration, with much longer text than this document. So maybe the same amount of text.

And the legal counsel then did some edits to make it more suitable as to a legal document, I think, and I got back the edits and would review it and -- yeah.

I accepted it.

(Exhibit Number 1 was marked.)

BY MR. CLARK:

Q. And I've introduced as Exhibit 1 your declaration in this matter, Jonas Andersson declaration into exhibit share. Are you able to pull it up and open it?

A. Yes.

Q. And do you recognize this document?

A. Yes. It looks like the document I signed. It has some sort of yellow stamp on it or something to the lower left -- lower right of the first page. But otherwise, yes.

Q. I'll represent that that was just added for today's deposition to identify it as Exhibit 1 for this deposition.

Other than that stamp, this is the declaration -- your declaration, correct?

A. Yeah. I haven't read each word, but I haven't found anything that doesn't look like the declaration.

Q. And do you recall signing it?
A. Yes.
Q. Is that your -- is that your signature, then, on the last page?
A. Yes.
Q. And did you physically sign it or is that an E-signature?
A. It's an E-signature.
Q. Did you apply an E-signature yourself to this document?
A. Yes.
Q. And you applied it on April 24, 2025?
A. Yes. I remember that it was the correct date when I signed it. I can't recall exactly what date I signed it. I assumed that when I signed it, it was the date there of today that I signed it.
Q. And where were you when you signed it?
A. In my home office. I work 100 percent remotely from Sweden at my apartment in Malmö.
Q. You said your apartment is in Malmö, Sweden, right?

A. Yes.

Q. If you look at the top of the signature page, can you explain to me why the header references a different IPR matter and U.S. Patent Number 9,369,081?

MR. HYDE: Counsel, I'll state for the record that's the same issue that happened with the Koskinen declaration. Our paralegal put the base declaration into this sample document shell and just didn't correct the header. I'll take the responsibility for not catching that.

BY MR. CLARK:

Q. And if you look at the footer there, Mr. Andersson, do you see how it says Cerence Operating Company, Exhibit 2008?

A. Yeah, I'm not sure if I had that when I signed it or not. But yeah, I see it now in this document, in the shared folder here.

Q. So you didn't add that, then, correct?

A. No. I'm not sure if I have seen that before. I focused on the text. I

assumed legal counsel was focusing on the format.

Q. So you were -- I'm just going to ask if you understood or knew that this was filed as Exhibit 2009, but the footer says 2008. So I wanted to see if you had any insight on that. But it sounds like you do not.

A. No. I focused just on the declaration text. I don't have insight on that.

(Exhibit Number 2 was marked.)

BY MR. CLARK:

Q. All right. We'll come back to the declaration a little bit more -- a little later, but first I want to also talk about U.S. Patent Number 9,026,428. Is it okay if I refer to that as the "'428 patent"?

A. Yes.

Q. And you mentioned the '428 patent earlier. Have you read the '428 patent in its entirety?

A. Not all. I skimmed through most -- the majority of it, I would say.

Q. Do you remember what parts you skimmed through?

A. Yeah. I focused on, I think the description or the initial description. Then the language becomes maybe -- less concise from a scientific perspective on describing the invention, more to cover a lot of -- how do -- maybe implied scenarios and wording I would say, some parts.

Q. And did you look at the claims at the end?

A. Briefly. Not too much. But yeah.

Q. And I've also introduced as Exhibit 2 the '438 patent. If you need to reference it, it should be in the exhibit share, but do you have a copy of that in front of you as well, the '428 patent?

A. Let me see if I can open it.

Yes.

Q. And do you have a paper copy of that with you as well?

A. Yes.

Q. Do you have any notes on that

paper copy?

A. No.

Q. And do you have a paper copy of your declaration as well with you?

A. Yes.

Q. And do you have any notes on that?

A. No.

Q. So you're fine to look at either the electronic version of these exhibits, or if you prefer to look at the paper copy in front of you, that's fine as well. It's just more of a courtesy that I provided the electronic version. If you want to, you know, for example, search for a word, you can probably use the functionality on the computer. But you're fine to do whatever way you prefer.

A. Yes.

Q. So you were a coinventor of the '438 patent, correct?

A. Yes.

Q. And who are the other coinventors?

A. So it was Jakob Sternby,

Lars Jonas Morwing and Christer Friberg.

Jonas Morwing, he has two given names. I think they also have several given names, but they're all listed there, their primary given name.

Q. And Mr. Andersson, so did you work with these three inventors?

A. Yes.

Q. So they're all in Sweden?

A. Yes.

Q. Were you all part of the same team?

A. Yes.

Q. And for what time period?

A. I joined in 2001 as a master thesis student and in August the same year as an employee. At that time, I think Christer joined as an employee right when I joined as a master thesis student in around January/February 2001.

And Jonas Morwing had worked for maybe a year. He was employed in 2000 -- sometime 2003, had already done a master thesis project there, and being employed maybe a year ahead of me.

Jakob joined a bit later in 2002, I think. And he was doing a Ph.D. at this company during the first years.

Q. Are they still working at Cerence?

A. They are not working at Cerence anymore.

Q. So until what time would you say you were all on the same team at Cerence or its predecessors?

A. This is a bit difficult, but Jonas and Christer left the same year, recently, I think it was in 2022. First Jonas, then Christer. We had been working together as a team for more than 20 years in the same office. That office was closed, and we were remotely, which -- yeah. Some of them could not accept not working in an office, I think. Jakob left a bit earlier. That was around 2017/2018 time, I think.

Q. Okay. So you all worked on the same team for a pretty long time?

A. Yes.

Q. And so in your declaration, you

mentioned that Cerence and its predecessors used different engineering teams in different countries for different language types. Do you recall that?

A. Yes.

Q. And so what team was it that you guys worked on?

A. We worked on the alphabetic handwriting technology.

Q. And was that for this entire time period from when you started there until people left?

A. Yes. I would say that Jonas Morwing and Christer worked, I believe, only on alphabetic -- the alphabetic team the whole time. I worked a very small portion, mainly on implementing a user interface, not the engine for the CJK product. Not CJK core technology. And I did a short project on training a Korean technobase for the CJK team and technology.

Jakob worked in the beginning a bit on -- I don't recall exactly. So it was sort of part time. He did -- he worked --

he was always in the office, but he also did a Ph.D. in parallel with research he did at the company, but he also did real work, and I think he was working on the CJK team for that, but his research were on alphabetic.

And then he was -- much later one of the -- there were not many left in the office that knew or had experience with the CJK technology, so he was one of the primary engineers on that for a few years, around 2010, I would say.

And then later, he switched to alphabetic -- the CJK technology, we hired a team in Beijing of native -- two native Chinese engineers working in an office in Beijing who took over the CJK, Chinese, Japanese, Korean technology, and us four would focus fully on alphabetic, which we had all done except Jakob for a while at that time.

Q. So just to be clear, you're saying CJK, which stands for Chinese, Japanese, Korean; is that correct?

A. Yes. We call -- we've always had two distinct technologies and teams. So

we called one CJK and the other one, which is all the other languages, we called alphabetic.

Q. So there's no teams for Arabic?

A. It's part of the alphabetic team and technology.

Q. So even like the Sanskrit and the different symbols they use in Arabic language, those are part of the alphabetic team?

A. Yes. The alphabetic team, the alphabetic technology and the CJK technology is not one technology. You have to maybe do a hybrid of many technologies within those main technologies.

So, for example, for Arabic, there might be some differences. You might need to add something to the technology, but you still share quite a lot of the basic design to solve the problems recognized in Arabic and Latin, Cyrillic, Greek languages.

And the same with Korean and Japanese and Chinese. There are some differences, but they have the common major

difference to all that other languages in that they use these let's call them Chinese characters that maybe have been exported to a Japanese writing system.

Q. So basic -- are you saying the basic difference between alphabetic and the CJK languages are the characters that are used by Chinese, Japanese, and Korean?

MR. HYDE: Objection to form.

THE WITNESS: Yeah. There are many differences between languages. So there are spoken languages and written languages, and within a country, there might be different spoken languages. And to write, you might use different scripts.

So, for example, Japanese use one script called kanji, which is based on the Chinese characters. They also have a script called hiragana and katakana, which is a different script. And this kanji in Japanese and this hanja in Korean, which also have angle yamal.

And the Chinese script basically which is -- has two versions now you could say, one from mainland or PRC China called

simplified Chinese and they changed some of the characters. And the traditional Chinese used in Taiwan and Hong Kong, which is, I think, the country's more close to.

So these scripts is the big difference in the challenges of handwriting recognition to all the other scripts.

BY MR. CLARK:

Q. And the Arabic does not provide these same challenges as the CJK?

A. No. Arabic has some challenges, but you can think about it like in English. You have 25 letters, A to zed. In Chinese, there are close to 30,000 characters and each character, you can write 1 to 30 strokes. While in English, you might write 1 to 4 strokes or something like that to write one letter.

So these are fundamental differences in how you want to compress models to make it feasible to run on customer hardwares and so on. So you have to compress much harder and maybe give up a

lot and maybe there are some properties of these CJK languages like most of the strokes are straight lines, while they are not that in the Arabic and Latin.

So there are very fundamental differences in the property of the characters used in the different writing systems that requires and enables different technical solutions to the handwriting problem.

Q. And each character in Chinese, Japanese, or Korean, do they represent a different letter?

MR. HYDE: Objection to form.

THE WITNESS: I'm not an ex- -- I work mainly on alphabetic. So I'm not a linguist, and I'm not an expert on the technology we use to recognize the CJK languages. But my understanding is that in these scripts that have these large number of characters. Each character does not represent the sound but the meaning, like three (inaudible) which is why there are so many more characters than in English where the letters or combination

of letters represent sounds to be pronounced.

BY MR. CLARK:

Q. So going back to what you said earlier, just to clarify or confirm, did you say two of the coinventors, Morwing and Friberg, they didn't -- they only were involved in alphabetic languages; is that correct?

A. Yeah. I cannot swear to that, but I cannot recall that they did any work on the Chinese technology, and they were never sort of -- if there was a question on the Chinese technology, you wouldn't ask them. They wouldn't have seen a code line.

So these were two completely different code basis and optimizations and algorithms that were developed at one team. If an engineer worked on the Chinese or the CJK technology, that engineer will be fully into how that technology worked, the model, the database format, the tool change, the algorithms, and we had optimizations to handle the challenges there that were

designed and implemented.

And one working on the alphabetic technology would have no clue in that and would be very into the alphabetic technology or parts of it. Sometimes someone on the alphabetic team was very -- a very big expert on one part, maybe the database side or some part of the engine algorithms.

Q. So where was the team located that did develop the CJK algorithms?

A. So when I joined in 2001, there were already these two distinct teams in the Lund office in Sweden. So Lund is close to Malmö. I lived initially in London and moved to Malmö. So the office has always been in Lund until we became remote, but we -- between three offices that were closely located to each other.

So the CJK team worked then in Lund and used Chinese experts to help them -- help the engineers understand the Chinese script.

Q. And your --

A. In 2011, the team in Beijing was hired and after ramping up them took over

the CJK technology development. And then it stayed in Beijing until those are -- two engineers, one was, I think, let go six, seven years ago and another one replaced. So they were still there until 2024.

Q. So from 2011 until approximately 2024, at least there's -- the CJK team was in Beijing?

A. Yes.

Q. And prior to 2011, you said the CJK team was located in Lund, L-U-N-D?

A. Yes.

Q. And who made up the CJK team in Lund?

A. Yeah. So that has changed over the years, but when I joined, it was two senior engineers with Ph.D.s, I would say, and a couple of newly graduated master students.

So I don't remember. It was 25 years ago. At least two senior with Ph.D.s in their 30s and then two or three -- I can recall two, at least, in their -- yes, around 23 and 28 newly graduated masters.

Q. So there were about four to five people on the CJK team?

A. I would say that were pure engineers, programmers on the engine and the database generation and these things, and there were some working on the linguistics, linguistic experts. So that was called a sinologist or some expert on Chinese, studied Chinese, not lived there for many years but they were Swedish but had studied the language and the country a lot I think, and one Chinese native.

It was sort of dot com boom a bit. It expanded maybe a bit later to that, so there were more people hired on the alphabetic than the Chinese team, and some of these were focused on user interaction, design, user experience, and some of those focused on the Chinese part of the alphabetic part of things that were common or user experience, UI design.

Q. So four to five pure engineers were on the CJK team and then some number of linguistics or people familiar with the languages were also on the team; is that

correct?

A. Yes.

Q. And do you remember the names of anybody that was on the CJK team during that time period, 2011?

A. Well, one of the senior engineers was -- his name is Anders Holmberg. And the manager and the also senior engineer of that team, his name is Martin Lindberg. The two junior engineers that I recall was Fredrik Mattisson and Maria Petersson. And the China expert, his name -- he was a more senior person to all, I would say. His name is Magnus Nordenhake. And -- and Chinese name is Wang Shujing.

THE COURT REPORTER: Might need to spell those.

THE WITNESS: Should I spell?

THE COURT REPORTER: Yes, please.

THE WITNESS: I'm not sure if I know the exact spelling of their names. What did I say first? A-N-D-E-R-S, H-O-L-M-B-E-R-G. Then Martin Lindberg, M-A-R-T-I-N, L-I-N-D-B-E-R-G. And then Fredrik Mattisson, F-R-E-D-R-I-K, not

100 percent certain about his last name spelling, so I'll be guessing. M-A-T-T-I-S-S-O-N. And Maria Petersson, M-A-R-I-A, a bit uncertain if she used double T or not which is the most common way, but I think she used single T, P-E-T-E-R-S-S-O-N.

And Magnus Nordenhake. M-A-G-N-U-S, N-O-R-D-E-N-H-A-K-E.

And Wang Shujing, W-A-N-G, might be the surname first. I'm not sure. Shujing, S-H-U-J-I-N-G. I'm not certain about the spelling there, but I think that's it. And I think that the given name is Shujing in China. When you speak the full name, you speak the surname first.

BY MR. CLARK:

Q. Anyone else that you can remember that was on CJK team in Lund and prior to 2011?

A. Prior to 2011? So this was in 2001. Jakob was on it for a period of -- on the patent. There was a number of people left work for that many years.

Like I said, it was the dot com, so it expanded and contracted. So 25 years ago some of them were there a very long time and not on my team.

I know that a few years later, two Japanese natives were hired. They had moved to Sweden and one joined the user experience team and that focused on user interaction and design, but also served as an expert on the Japanese language to help with that development there. So sort of part-time language expert results in-house.

And another Japanese native, a bit more senior, worked as an account manager in sales -- yeah, some sales and some responsibility -- worked a lot with Japanese customers, I remember, and also provided her native expertise to the -- to help develop the CJK products for Japanese.

Q. And you had mentioned Jakob Sternby as being on the team. Do you remember how long he was on the CJK team?

A. I don't remember. I think he -- he worked a lot on his research the first years. I'm not sure how many years it

was. If it was five or maybe more for a Ph.D. And then there is his dissertation. So yeah, formally, it's five years in Sweden, but in reality, it's almost always a bit longer, I think, before the dissertation. I think he started his maybe in 2002 and then the dissertation, I think, might have been in 2007, and that was technology for recognizing a cursive alphabetic or Arabic writing.

Until then, when he worked on his research at the company and also did some business work, so to speak, I think he was working on the CJK product at that time.

Q. So while he was doing his Ph.D. and dissertation on alphabetic languages, he was working during that period on the CJK team?

A. I think so. What happened was that his research became the base for the next generation alphabetic product. So then the whole team started to work on technologies based on his research, including him, and he -- so then the Chinese was reduced for his part more --

became an expert maybe because he had worked -- he was more senior on the Chinese part, CJK technology at that time but wanted to focus on alphabetic technology.

So he was a bit fluent, I would say, so I was -- I cannot recall that we worked closely together on engine algorithm developments prior to that shift in 2007.

Q. So approximately 2007 is when Mr. Sternby switched from CJK team to the alphabetic team?

A. Yeah. I would say that but still supporting on things needed to be done on the Chinese technology. So maybe not fully still needed to do some work on the Chinese technology. Then when we hired the team in Bejing in 2011, he sort of led them as senior on that technology, and then maybe two years after they had fully taken over the responsibility for that and Jakob could shift focus 100 percent to alphabet.

Q. Okay. So from 2002 to 2011, Sternby was at least in part on the CJK

team, but then in 2007 he primarily worked on the alphabetic team but still kept working with the CJK team; is that --

A. Yeah. But I'm not certain about the share. It might have varied month to month or so, but I cannot say exactly if he worked more on the one than the other during that period.

Q. You mentioned you worked on implementing a user interface for implementing the CJK algorithm.

A. Yeah. So it was around maybe 2003/2004 we found alphabetic side. We had made progress -- we started with single character recognition and developed it into multi character recognition. And on CJK, we still only had single character recognition, and we had sort of developed them to a good level.

And then to show the power of these engines, we wanted to develop really good UIs that utilized all that they could do in a good way and that had good design with user interaction design and language expert teams. So during that period that was a lot

of focus on UI design and implementation, and I worked for a few years on designing and implementing this UI interface. I worked on both the Chinese user interface and the alphabetic user interface. Mostly on the Chinese, I would say.

Q. I'm sorry, you mostly worked on the Chinese interface?

A. Yeah. I think I worked more on the Chinese user interface than on the alphabetic.

Q. So when you -- sorry. Keep going.

A. Maybe I started working mostly on the Chinese and then later worked more on the alphabetic -- it's such a long time ago. So it was for a few years, and then when Zi acquired us in 2005, a bit into that we -- strategies changed the whole time with these different acquisitions also. So we switched -- we started with core engine focus and then wanted to do UI design and really great UI, and then went back to core focus. But yeah.

So for a few years there in the --

around the mid-2000s, I worked on user interfaces as well, both Chinese and alphabetic, and I think the first part was concentrated on the Chinese user interface and the latter part on the alphabetic user interface. At the same time, as I can get things in alphabetic,yeah. And we did many things.

You probably heard of agile. Within the CJK team and alphabetic team, we started -- I don't remember exactly when -- we focused a lot on developing to change and processes also to be -- not just have high-performing products but to have efficient processes so that we would have a high speed of innovation and agility where the different engineers can do different things within the teams.

So you can work on the database or you can work on the tests or you can work on the engine algorithms or on the UI, but it was always a split between the CJK and alphabetical product within those teams, especially alphabetical, we focused a lot on the tool chain efficiency, automating

nightly tests so you could work on that system to be able to run automated nightly tests, for example, as a part of that and being part of that engineering team.

THE COURT REPORTER: Are you saying nightly test?

THE WITNESS: Yeah. So when an engineer writes a new piece of code and that's merged into a code database, then you might have a system that continuously checks is there any new code in this database, and then launches a system that automatically tests this code. And that might run for a long time, and then the engineer gets a report.

It doesn't have to be in the morning, but typically it runs your code during the day and then it's tested by this automated system during the night. So it's called nightly test, but we call it continuous testing system because it picked up the code as soon as it was merged into this database and automatically started to run all these large, heavy tests on servers

synchronously so the engineer can continue to develop and then get the results from the previous changes a bit later.

BY MR. CLARK:

Q. Mr. Andersson, when Miss Campbell asks you a question, she's just asking you for the spelling. You don't have to go into a long explanation for it. She just wants to know -- she's typing every word you say, so she's just trying to find out like "nightly," is she hearing you correctly. So just let her -- just answer that question because her questions aren't for purposes of the deposition testimony.

A. I see.

Q. So you mentioned this user interface for Chinese. Is that -- when you say "Chinese," are you saying only Chinese or is that for CJK?

A. That was used for CJK. So the CJK technology is shared between Chinese, Japanese, and Korean, but it was initially developed for Chinese. So there are -- I think there are different parts in the technology, but one important part is to

get the data, collect data so you understand how to model the characters. And maybe you develop a system that automatically takes the data and creates models from that.

So that started with Chinese to get the data to create the model and the engine. And then using the same engine and data modules -- models, data was collected and models were created for Japanese and then later for Korean.

Already in 2000, I would say, Chinese was developed. I'm not sure exactly when Japanese was added. It would have been around 2003 or '4, and Korean, 2006, '7 or something like that. But they were not added at the same time, all the CJK languages.

Q. So you worked on the user interface for CJK algorithms.

A. Yeah.

Q. You did not actually work on the algorithms themselves for character recognition, but only the user interface; correct?

A. Correct.

Q. And can you tell me a little bit what user interface is as compared to the character recognition algorithms?

A. Yes. So the user interface integrates the engine. So it calls the engine but it also calls the operating system. So it communicates -- it interacts both with the engine and the operating system.

So it can get events from the operating system saying now the user has moved the finger on the screen -- at these coordinates sample, and then send these coordinates to the engine, ask the engine to recognize this, and the engine recognizes the movements of the finger on the touchscreen as an A, for example, and then the user interface implementation asks the operating system to show A as a candidate that can be selected for the user.

so sampling touch events and painting things on the screen, implementing that part, and communicating with the engine, getting these events -- touch events

and getting the results to the display.

Q. And would you characterize the '428 patent is more about the user interface or the algorithms for character recognition?

MR. HYDE: Objection to form.

THE WITNESS: I don't think I can characterize it that categorically. So it's -- the full solution for the user experience involves both user interface, how it's designed. And to be able to design a good user interface, you need to have an engine with certain capabilities that allows that.

And I cannot speak to this patent or categorize it, but in general, a solution that's good for the user requires both user interface design and implementation and capabilities. And to be able to realize that user interface, you need an engine that has capabilities supporting that.

BY MR. CLARK:

Q. So earlier you -- when we asked who was on the CJK team in Lund, you

didn't mention yourself, but it sounds like you did some work related to the CJK languages. Would you consider yourself as part of that team?

A. I said that Jonas Morwing and Christer, I don't think I ever did anything on the CJK. I worked on that user interface, but I had no idea about how the engine or the database worked, how the database format was, how it was designed, trained, the engine algorithms. I didn't need to know that for the user interface design.

The only thing I need to know what's the function code called, where I send the sample points, what's the function called where I get the recognition results. And so I'm not sure what's happening under the hood.

And then I worked on Korean database training also. That work was more about these two chains that I mentioned where we train models, but I wasn't designing the model or the format. I was setting up data that we had collected and

training parameters on how this data should be -- how this model should be trained on this data. But I wasn't developing the model itself.

Q. Did Mr. Sternby work on the engines for the CJK team?

A. Yes. He worked on database and algorithm design, I would say, yeah.

Q. Do you -- we have been going for an hour and a half. Would you like to take like a 10-minute break?

A. Yeah. Yeah, sure.

(Recess.)

BY MR. CLARK:

Q. Mr. Andersson, in your declaration, you discuss SCR and MCR. Do you recall that?

A. Yes.

Q. And SCR stands for single character recognition?

A. Yes.

Q. And MCR stands for multiple character recognition, correct?

A. Yes.

Q. In paragraph 5 of your

declaration, Exhibit 1, you state that MCR is a second higher-level process.

Do you see that?

A. Yes.

Q. And when you say "higher-level," you're indicating it is a higher level than SCR; is that correct?

A. Yes.

Q. And you also say in paragraph 5 that this higher-level process "attempts to recognize a sequence of strokes that represents one or more characters."

Do you see that?

A. Yes.

Q. So MCR can be for a single character or multiple characters?

A. Yes. When you write a few strokes, say to write two strokes, a vertical stroke and then a horizontal stroke on top of that. So SCR would only recognize TF maybe. MCR would recognize T, a single character, F maybe, but also L hyphen or L minus or 1 minus.

So MCR does not assume that it's accepting one character. It could be one

character, but it could also be more characters that the strokes represent.

Q. So does the system need both SCR and MCR to function?

MR. HYDE: Objection to the form.

THE WITNESS: I mean, that depends. The system absolutely needs both modules to perform MCR, the MCR feature. As this system is designed to perform single character recognition and recognizing everything as if it was a single character, you don't need MCR part.

BY MR. CLARK:

Q. So why did you choose to write about SCR and MCR in your declaration?

MR. HYDE: Objection to form.

THE WITNESS: I was asked to describe the architecture of the technology.

BY MR. CLARK:

Q. And that's the technology of the '428 patent?

MR. HYDE: Object to form.

THE WITNESS: No. I was not asked to declare anything about the '428

patent. I was asked to declare things about the technology I developed as an engineer.

BY MR. CLARK:

Q. And have you previously mapped the SCR functionality to any of the claims of the '428 patent?

MR. HYDE: Objection to form.

THE WITNESS: I'm not sure I understood that question.

BY MR. CLARK:

Q. Yeah. So when I say have you previously mapped, I mean have you compared -- looked at the '428 patent claims and determined which limitations and which claims use the SCR functionality?

MR. HYDE: Objection to form.

THE WITNESS: I don't think I can speak to that. I was asked to describe the technology and the -- in particular, how it differs between -- the challenges and solutions differ between different languages. The patent cannot be categorically described as being only

about UI or engine or SCR or MCR. It's -- I just skimmed, but it's quite clear that it covers everything.

BY MR. CLARK:

Q. But you did not look at the '428 patent claims to see which limitations use SCR functionality, correct?

MR. HYDE: Objection to form.

THE WITNESS: No. I did not look at the patent and done an analysis.

BY MR. CLARK:

Q. And same with the MCR functionality, you didn't look at the patent claims to see which claims included the MCR functionality?

MR. HYDE: Objection to form.

THE WITNESS: No. I've never viewed the patent as being specific to one of these two parts of the architecture. It's a broader patent.

BY MR. CLARK:

Q. When you say "these two parts of the architecture," you're referring to the SCR and MCR?

A. Yeah. So SCR can be used

standalone, but the MCR includes the whole SCR and has more on top of that. So an application based on the patent would use all user interface and engine including all parts, the SCR and MCR, but it needs a user interface, some sort of user interface and the engine. It could use both.

The SCR is always required. I have not analyzed if the patent is -- yeah, if it's assumed that MCR is used or SCR along with the MCR. My assumption is it covers that also. It doesn't say that the engine needs to have MCR functionality.

Q. So it's possible the claims just require SCR, for example, you haven't analyzed it otherwise?

MR. HYDE: Objection to form.

THE WITNESS: No. No. The claims can be used for technology, for an engine using only SCR, or an engine using MCR. So the engine can support both. So you can configure it to say that it should run in SCR mode only or MCR only. And the patent could be applied to both of those

modes.

I just skimmed it. If I'm to guess -- if I was to do such an analysis, it's possible to make various applications of the patents and one such could be based on SCR only or another one could be based on the MCR mode.

BY MR. CLARK:

Q. But you have not done that analysis previously, correct?

A. I have not done that analysis. So it's just from -- yeah, from the patent, it doesn't limit it to either of those. So it -- so it can be applied for both. That's my view of the cursory reading of it.

Q. In paragraph 6 of your declaration, you talk about something called segmentation problem.

Do you see that?

A. Yeah.

Q. And that it's a problem that needs to be solved at the MCR stage, correct?

A. Yes. That's a problem solved at

the MCR stage.

Q. And do the claims of the '428 patent address the segmentation problem?

MR. HYDE: Objection to form.

THE WITNESS: I cannot say. I haven't read it. In the patent, it's not really -- it describes another invention, I would say, than what I talk about in these paragraphs. I mean, it's related, of course, but the invention is about something else.

BY MR. CLARK:

Q. When you say the invention is about something else, what is it about?

MR. HYDE: Objection to form.

THE WITNESS: I mean, it's not about the single character recognition problem, the main idea with the invention. You need a single character recognition for doing an application of action, and it's not about solving the segmentation problem specifically. So it's about something called -- it's mainly -- I mean, it covers a lot of things, but the main theme is about how to -- how to

automatically committing.

So when the user has written something, the engine has multiple hypothesis on what the user could have written, so the user might start writing something that looks something like an A or something between an A and a U. So it would present two candidates or more. A might be the -- U might be the best candidate. A might be the second-best candidate.

And then something else is written following that, and then with the use of the language model and the -- and the stroke models all together, it becomes more probable that that first level was one of the two, maybe A becomes more probable after three letters have been written.

And then at some stage, when enough has been written, it's concluding that maybe all hypothesis of the engine start with the same two letters and the engine also looking at the language models, the spoke models, it determines

that it's not very likely that future candidates based on future inputs would change that.

So those two first letters are quite clear. So those can be locked in the memory for keeping that in a buffer in the engine can be released and the -- and you can have more memory efficient solution that allows also writing a lot of writing fast and fluently.

So I have not read the whole patent, and I've been involved in the conception of the original idea and one part of the patent, I think it's maybe the main theme of the patent, and that's this auto commit. So I'm describing sort of my idea that I've had that I've seen reflected in this patent, but I cannot speak to the whole patent because I have not written it and I haven't read all of it.

THE COURT REPORTER: Are you saying ID or idea?

MR. HYDE: ID like invention disclosure.

MR. CLARK: Wait. I'm confused now. I thought it was idea.

MR. HYDE: Maybe I'm confused Mr. Andersson, are you saying ID as in the letters I-D for invention disclosure or were you saying idea?

THE WITNESS: I think I was saying the word idea, I-D-E-A, but my idea was present or discussed with my colleagues and maybe that's an invention disclosure.

BY MR. CLARK:

Q. So your understanding is the '428 patent is more about this auto commit feature, correct?

MR. HYDE: Objection to form.

THE WITNESS: I would say it's not about -- it's about many things. As I said, I cannot speak to what it's about in total. The auto commit feature is part of it, and then the one that I recognize from contributing in the collaboration around the ideas that would be included in this patent. From what I've seen, it doesn't -- and the main theme, at least,

is not how to do single character recognition. It's a critical component or it's a part of a handwriting system to recognize characters to do -- first they have to recognize characters to have this auto commit invention in the main thing.

BY MR. CLARK:

Q. To be clear also, you do not see anything in the patent that talks about the solution for a segmentation problem, correct?

MR. HYDE: Objection to form.

THE WITNESS: I would say both single character recognition and the solution to the segmentation problem are parts of the patent, and they're involved in what the patent is trying to achieve, but the patent is not about -- as I said, I cannot speak fully to the patent.

But in my view, the patent is not focused as a main theme on the solution to the SCR problem and the segmentation problem, but they are maybe solutions to the -- a part of the solution of the invention, maybe another way around.

BY MR. CLARK:

Q. And you haven't analyzed any of the claims to see if they include this segmentation problem?

MR. HYDE: Objection to form.

THE WITNESS: No. I don't -- I don't know the claims, no, but the claims might include the premise which you need to solve the single character recognition problem and you need to solve the segmentation problem to get to this -- to be able to do this auto commit solution. At least the single -- you need to have some form of recognition that's based on the main theme of the auto commit.

So that could be covered in the claims, maybe, because I'm not sure. I haven't read it completely, so the invention is more than the ideas I contributed, so that it might cover much more than -- more than I know. And I cannot really speak to the patent. I focused on the declaration and the topics I was asked to cover.

/ / /

BY MR. CLARK:

Q. So when I asked you about the segmentation problem, you talked about single character recognition, but in paragraph 6, you say that the segmentation problem is for the MCR stage.

A. Yes. So the segmentation problem is when the recognition result can be more than one character. It's to know -- say that you have written three strokes. You need to know if one of these strokes starts a new character.

So the first stroke it might be obvious if there's nothing before that that starts a new character. And then maybe the second stroke is a continuation of that character, and then the third stroke starts a new character.

So this problem of where the transition -- character transitions for the strokes are made is to be solved. And it's not always obvious. So it can present different candidates that have different segmentations.

So if I write a vertical stroke and

a horizontal stroke slightly crossing that, I get a T. And then I write the third vertical stroke to the right of that, I might get the upper case H and I might get TL. So those are two recognition candidates in MCR mode that have different segmentations.

So the first one has segmented all strokes, all three strokes belonging to one character, upper case H. The other recognition candidate that have segmented the strokes as the two first belonging to one character recognized as T, and the second stroke is one character that's L. And there can be more candidates which have variation within these segmentations. So you can have upper case A, maybe, and you can have F, L, T, 1, et cetera.

So this segmentation problem does not exist in the SCR layer. And there you just assume all strokes given to the engine is exactly one character. So if you're giving one three strokes, you recognize uppercase H, maybe uppercase A, but you will not recognize T, L.

Q. So we are going to go back to the -- sorry. Strike that.

If you look paragraph 7 of your declaration, you talk about Cerence utilizing the different engineering teams for alphabetic languages as opposed to CJK. We've talked a lot about this already, but I had a couple of follow-up questions.

What is the difference in skill sets needed between these two engineering teams, the alphabetic team and the CJK team?

MR. HYDE: Objection to form.

THE WITNESS: That might be hard to say. The main skill is to be a software engineer, I would say, but you also need the language knowledge of the -- the languages to develop -- I mean -- so if you're developing -- recognized for English, it's easier if you have ever seen the English alphabet, the letters of English and so on to understand how they can be varied and so on.

But you collect also a lot of

user data where you can see, you can do engineering studies or analysis of this data to see how natives write.

So it's -- you need primarily engineering skills, but you have a lot of benefit from being native to the script that you're designing solutions for, I would say.

So if we take Chinese, for example, you would know at school -- you learn that you should write the characters in a specific stroke order so that you can remember how they will be written and the -- and if you have to learn 2,000 or more characters, that's a way to do that, and then you might utilize this knowledge.

Typically a user would write the strokes in a certain order as they have learned in school, and they'd be optimized, this Chinese solution.

You also know all the characters. You know that the -- the 245th most common character has some variations or exceptions maybe to how the characters are usually composed, if they're usually

having straight lines or maybe squares and so on.

So by just knowing the script a lot, you can probably more efficiently come up with ideas and design better solutions.

BY MR. CLARK:

Q. So would you say that Mr. Sternby was native in one of the scripts for Chinese, Japanese, or Korean?

A. He was not native but he can speak -- I don't remember if it was both Chinese and Japanese. He had studied these languages and he lived in these countries. Not to the extent as the sinologist Magnus Nordenhake, but he was a very skilled engineer and smart person who understood how these scripts were engineered, you could say, by learning these languages.

Q. And how about yourself? Are you native in any of those languages?

A. I'm not native in any of those languages. I did go to Shanghai at the university to study for one month just

because I worked at the company that worked with Chinese. I didn't work with them but, like I said, I worked a bit on the user interface and so on and thought it might be a good skill to know some -- because Chinese is so much different than English. That's why I know that you learn it in this way in school, the stroke orders when you start learning to write your first characters and so on.

Q. So a software engineer could be on either team, either the CJK team or the alphabetic team, correct?

MR. HYDE: Objection to form.

THE WITNESS: Yeah. I mean, it depends. If a -- a junior engineer could probably easily -- more easily contribute to the engine where he's native, he or she is native. So a Swedish person might understand the nature of the problem and the other possible solutions and would be better working on the alphabetic technology than a CJK native, a bit better in challenges and opportunities to design solutions for the CJK recognition.

And there's nothing preventing an engineer from working on the one that is not having that benefit. It's just -- yeah, you don't have that bonus of speaking -- of being native to the script that you're designing solutions for.

BY MR. CLARK:

Q. You said there is nothing from preventing an engineer from working on the one that is not having that benefit meaning --

A. That engineer can get the information needed from experts and so on. The engineer is mainly working on mathematical algorithms, writing low-level code to track them and so on.

Q. So an engineer working with a native speaker or sinologist could be on either team?

MR. HYDE: Objection to form.

THE WITNESS: I mean, it would be very beneficial to stay on the team where you have gained experience and where you have the expertise. It would be much less efficient than switching to work on the

other technology. It would take a long time for an engineer to get into that and be an efficient contributor.

But, I mean, it's possible that -- but the ones who work on the alphabetic team are very -- have very high expertise in that and are becoming efficient on working on that. So it wouldn't be efficient to swap around engineers between these teams.

But if you take one engineer, it's not impossible to take that one engineer and assign it to one of the two teams.

BY MR. CLARK:

Q. And on the CJK team, were there team members that were not native in the languages?

A. Yes. In Lund, when I joined in 2001, it was Swedish natives. I mentioned the name before, the software engineers, and then they had native language expert working together with them and the Chinese expert also.

Q. So across both teams, the level

of expertise for a software engineer was about the same and the main difference was just the knowledge of the languages that they're working with?

MR. HYDE: Objection to form.

THE WITNESS: I mean, each engineer is different. They have different skills, experience. Some are more research oriented, some are more product quality and performance oriented.

So they were software engineers, but they all were not equal, so to speak, in everything.

BY MR. CLARK:

Q. And do you believe that you have the skills required to be both on the English team and the CJK team?

MR. HYDE: Objection to form.

BY MR. CLARK:

Q. Sorry, let me rephrase that.

Do you have the skills required for both the alphabetic team and the CJK team?

A. I definitely have tons of experience for the alphabetic and would be

very efficient in making changes and new innovations for that. If I were to do something for CJK, it would take me a very long time to understand how it's all designed and implemented, and I might not know all the rationales about all the design decisions that have been made before and see some code that maybe makes some sense, but I don't understand why it makes sense and so on.

So as an engineer, I'm skilled to work on many things engineering related, but I would be much more efficient in the things I have a lot of experience in and have been designing myself and optimizing myself and implementing myself and so on. And yeah, it also helps that I know the scripts of alphabetic.

If I don't have help, and even if I have help, maybe I need to learn a lot about the scripts also. So it would be a threshold to switch work. But as an engineer, I can work on different engineering tasks, but the efficiency will be different based on my experience and what

I'm skilled and trained on.

Q. So what would you say would allow someone to do both the CJK team and the alphabetic team?

MR. HYDE: Objection to form.

THE WITNESS: Yeah. I don't think it would be efficient for someone to work on both. It will be more efficient to have one engineer focus on one or the other. That's how we've always organized the teams. I mean having one team or even one technology would be cost efficient, so it would make a lot of sense if there wasn't more something more important preventing that.

And I think you first have to be competitive to sell before you optimize costs. So to be competitive, focused teams are needed to drive the innovation at the competitive rates.

BY MR. CLARK:

Q. So you mentioned before that Mr. Sternby was on both teams at different times.

A. Yeah.

Q. Why was he able to do it, where you're saying others -- why was it an option for him to do, I guess?

MR. HYDE: Objection to form.

THE WITNESS: It was not something that was decided, I think. So he ended up focusing on alphabetic, and we solved that by hiring two Chinese natives that could focus on the CJK technology unlocking him from his split, yeah, and difficulty to focus on driving the innovation of one technology.

BY MR. CLARK:

Q. When you say hiring Chinese natives, that was when you shifted the team to Beijing?

A. Yes.

Q. And that was in 2011ish?

A. Yes.

Q. And Mr. Sternby spent the first two years about helping training them or getting them up to speed, correct?

A. After the first two years, I would say. I'm not sure exactly how it was -- it was a gradual -- he was managing

them or leading them or mentoring them or supporting with them with answers to questions for a while, and then they became completely independent. He was never sort of needed to spend any time on that after, I would say, two years.

Q. And before it shifted to Beijing, Mr. Sternby was at least partially on both teams?

MR. HYDE: Objection to form.

THE WITNESS: So he did his research at the university and at the company combined. Yeah, you can do your Ph.D. at the company. That's a combined budget for the cost of that Ph.D., you could say, and the company gets access to the technology. But researchers are developing or researching.

So he did that and during that time, he did -- he also worked part time. I don't know how much. If it was 50 percent to do his research, his Ph.D., but actual work in the projects and development projects we had at the company. And at that time, I think he was

working on the CJK team.

And then after his dissertation, he had done his research. He had designed an innovation, you could say, for the next generation of the technology. This was prototyped in something called math lab, and he was leading or teaching us other engineers on how to -- about this technology and so that we could design and implement that in C programming language which we could port to many different devices.

And that -- I would say also continuing researching that and improving that, in parallel with -- I think he was still contributing to the CJK team at that time. The CJK team got reduced around -- acquisition by Zi in 2009. So his focus on CJK maybe went up a bit as that team got reduced by necessity but not decided by anyone really until we got the new team expansion in place in Beijing after 2011.

BY MR. CLARK:

Q. And so what was his -- Mr. Sternby's skill set that allowed him

to be on both of these teams?

MR. HYDE: Objection to form.

THE WITNESS: Yeah. It was not maybe something -- I don't know why he was on the CJK team. Maybe there were -- he needed to spend 50 percent of his time on some projects, and there was -- it makes sense that he worked on the project for the -- I don't have any insight into that, so even if it would have been more efficient that he worked on alphabetic, maybe that wasn't what was needed at the time.

Maybe they had customers and needed more engineers on the CJK. But he was also, as I said, very smart in both languages and technology and had studied the CJK languages. So might have been driven on an interest on his side or from the company's. I cannot speak to that because it becomes a guess, as I would say.

BY MR. CLARK:

Q. Would you say that any software engineer that has studied the CJK

languages could be on the CJK team?

MR. HYDE: Objection to form.

THE WITNESS: As I have said, it's a matter of efficiency and what you need. So I don't know who made decisions and why they made decisions, but if someone knows, we have a lot of interest from the market now for the CJK project -- products and we need more people working on that. It's much less efficient, their productivity will be lower than if they work on alphabetic, but it makes sense, even with the lower productivity now, to allocate someone to the CJK team or vice versa.

It's not always -- things happen on the market and on the team that -- the ideal situation is not there. You want correctly balanced focused alphabetic and CJK team, and then that could be this switch, as you say, that someone works where it's less efficient temporarily.

BY MR. CLARK:

Q. But the skills needed as a software engineer are the same whether

you're on the CJK team or the alphabetic team, right?

MR. HYDE: Objection. Form.

THE WITNESS: That could be a portion of the technology, which is agnostic maybe to knowing the language and portions of the technology where it's more important that you understand the nature of the script and the challenges and opportunities.

So if you're working on, let's say -- like I said before, we had test systems and these things that are completely agnostic. It could be tasked in the core engine or the database systems to display the content of the database to help engineers do analysis, and you need these tools on one of the teams' database viewer, let's call it. It's not that you need the expertise for all tasks that needs to be done. I mean the linguistics expertise. It's an important part of the system design.

BY MR. CLARK:

Q. So, I guess, I'm still confused

and trying to understand here is, someone brand new, never worked in linguistics at all comes to work for Cerence and has basic -- the correct -- the necessary software engineering skills, could he be assigned -- he or she be assigned to either the CJK team or the alphabetic team, or are there some engineering skills that are necessary that are different between the CJK team and the alphabetic team?

MR. HYDE: Objection to form.

THE WITNESS: I would say that if it's a CJK native, you would like to assign that person to work on the CJK technology because that resource would be more capable of doing more of the tasks that need to be done. You always look at all resources you have, what are they good at, what are the expertise.

If they're very good at data science, maybe they work on the data. If they're very good at algorithm, maybe want to have them working on the algorithm tasks. But if there are no algorithm

tasks, maybe that person is very good at networks. That's something else even if that's less efficient than what you desire.

So for engineering skills specifically, I would say there is probably a lot of differences but I cannot say -- it also depends on how the systems have evolved and are designed and what kind of engineering expertise is optimal for each technology, but I don't think I can name -- there might be -- I cannot say that there's some specific type of engineer.

I mean, if we put in the linguistic knowledge and all that's related to the scripts aside for one of the team, it's the experience and knowledge of all that technology that you want to keep within the teams and develop there so you can get this innovation right.

BY MR. CLARK:

Q. So you said there is probably a lot of differences for the engineering

skills between the teams, but you just can't name any of them?

MR. HYDE: Objection to form.

THE WITNESS: Yeah. I mean, the technologies is not -- I mean, what did technology look like in 2002 as a snapshot? It then has evolved in 2022, so there might be different components of the technology that it's beneficial to have certain skill to understand those components.

But the technologies are evolving, so it's -- I can't really say that you need a certain type of engineer forever on the Chinese pure algorithms part compared to the alphabetic algorithms part, I would say, but at a certain time that will be the case. But the technology changes, those skill set requirements can change also.

BY MR. CLARK:

Q. And you were also partially on the CJK team or at least you did the UI work for that. Did your skill set for that differ from your skill set used on

the alphabetic team?

MR. HYDE: Objection to form.

THE WITNESS: I mean, I didn't know the language which I developed software for. I felt a bit like I lacked something compared to when I worked the alphabetic, I would say. If I would compare myself to a Chinese engineer who would -- I mean, just a test doesn't work. I need to write the different Chinese characters and not be able to do that and make these variations that I know Chinese people do in their writing and these things that I could do in alphabetic.

So if I write it a bit more cursively or slant or some people do write like this, I could sort of have a better sense or intuition and feeling of how well the product worked for alphabetic than for CJK.

BY MR. CLARK:

Q. Did any of your work involve combining multiple languages?

MR. HYDE: Objection. Form.

THE WITNESS: What do you mean

"combining"?
BY MR. CLARK:
Q. Did your user interface, for example, with the CJK languages combine the systems use of alphabetic and CJK?
A. The user interface only used CJK engine, as I recall it.
Q. Did any of your work involve the use of both CJK and alphabetic engines together?
A. No. I think all -- most of the time in these 25 years we developed the engines only separately. But when we did user interfaces, it was always separate interfaces, user interfaces with different designs, and they always used -- there was this CJK user interface that used CJK and then the alphabetic interface used the alphabetic engine.
Q. So in your declaration, for example, the last sentence in paragraph 11 you talked about the challenges for attempting to combine multiple language models.
MR. HYDE: Objection to form.

BY MR. CLARK:

Q. Do you see that?

A. Paragraph 11.

Q. Last sentence.

A. Yes.

Yeah. Paragraph 11 talks about the challenges at the SCR stage.

Q. Sorry. Go ahead.

A. Yeah. So imagine that you need to do a single character recognized search. So if you only have to recognize digits 0 to 9, you could focus on the distinctions between the 0 and the 6 and -- yeah, all these digits. And then you add that you have to recognize 0 to 9 and A to Z, and then maybe Arabic and Cyrillic and Greek.

And then there's ambiguity. There are circle-like shapes in both Cyrillic and Latin letters and Greek, for instance. So then it becomes much more challenging to present the correct recognition when there is more possible outcomes. The more ambiguity, it's more difficult to optimize for something narrow. You can't optimize

for something very narrow, so you need to have a more sophisticated solution to have higher accuracy.

Q. So prior to 2012 when the patent was filed -- strike that.

Prior to October 15th, 2012, did you have any experience in combining multiple language models?

MR. HYDE: Objection to form.

THE WITNESS: Do you mean enable the user to write multiple languages at the same time?

BY MR. CLARK:

Q. Is that what you meant when you said -- when you talked about combining multiple language models in paragraph 11?

A. Yeah. So in the alphabetic product, the ending can be set to enable one or more languages so you can enable English and German. So maybe you're a German who writes English sometimes. And what was the question again?

Q. Do you have any experience in combining multiple language models?

A. Yes. So we've had this feature

in the alphabetic where you can set different languages. So not all. So the Arabic languages might be in one database and we might have the Latin languages in another database, and you can enable several of those Latin languages at the same time.

So, yes, I think we had that feature -- did you say before 2012?

Q. Yeah. October 15, 2012.

A. Yeah. You could activate recognition in multiple languages before that I think in alphabetical.

Q. And you have experience in working on combining multiple language models with that?

MR. HYDE: Objection. Form.

THE WITNESS: I mean, the alphabetic model, it's more about the scripts than the languages. So the Latin script, which uses the A to zed plus couple of extra letters for other European languages. So Swedish uses A to zed and then three more letters A with a ring above, A with two dots above, and O with

two dots above.

So most of the letters in Swedish and English are the same because they're using the same script, the Latin script. So having a model that supports two or more languages on the same script makes sense. So it typically for alphabetic developed and the database to include support of a script, and it could have characters -- both the extra German characters and the extra Swedish characters in that model in the database. So maybe that's combining languages.

So it's different from the language model which would be used in predictive text. So we talk more about stroke models or handwriting shape models that are used in scripts, not languages. In predictive text, you model more what kind of words, sequence of letters are used in different languages.

So our models are not like that. They are not -- the stroke models of the product. And then we use the language models also to improve the recognition to

disambiguate. I said there was ambiguity and then you can reduce the ambiguity with knowing that some character sequences are more probable if you're writing in a certain language.

So if I write something, like I said before, A and it looks like A or U, maybe A is the first candidate. And then M, and then I start a new word and maybe I -- CAM is much more probable than UM in the language is English.

BY MR. CLARK:

Q. And so you had experience with combining all these languages. Is that what you're saying?

MR. HYDE: Object to form.

THE WITNESS: Yeah. The stroke models, so the stroke of the letter A, the stroke of the letter B in the model, those are used for both English and Swedish and German. So we collect the data. Then we needed to add more to the model, enhance the model of A, the model of B based on the knowledge of these other languages.

They might write with different

styles in France than in UK and the same in US and the UK and the same language and letters maybe have to have some different styles. Maybe two-stroked K is more common in one country and one-stroked K is more common in another country and so on.

BY MR. CLARK:

Q. Sorry. My question was -- and you're saying you had experience combining these languages --

A. Yes.

Q. -- is that correct?

MR. HYDE: Objection. Form.

THE WITNESS: In the way that I described, I have experience working with model side, the database side which included support, for example, multiple left in script based languages like German and Swedish and English.

BY MR. CLARK:

Q. And you experienced combining the alphabetic languages with CJK languages?

A. No. I don't have any experience with those.

Q. Prior to October 15th, 2012, did

Cerence or its predecessors combine alphabetic languages with CJK languages?

A. It does combine to support English only. I think it has done that for quite some time. I don't know for how long. But I would say that the English, then, is not using the alphabetic technologies so that the performance is very inferior to the English recognition from the alphabetic product.

But to be able to allow users to at the same time write Chinese letters and English letters, and that feature has been available in the CJK product for quite some time.

Q. And prior to October 15th, 2012?

A. I'm not sure for how long it's been available. It would be a guess, I would say, to answer that.

Q. So turning to paragraph 10 of your declaration, can you read for me what you wrote in paragraph 10?

A. Paragraph 10:

"Indeed, due to the added complexities of a higher-level MCR process

for CJK languages, the engineering team working on the CJK handwriting recognition technologies did not fully develop a higher-level MCR process for CJK languages until more than a decade after a higher-level MCR process was developed for alphabetic-type languages like English."

Q. So when did Cerence or its predecessors develop the MCR for the alphabetic-type languages like English that you reference here?

A. I wasn't involved when that development started. I think when I joined in 2001, that had already been started in some way. I'm not sure if it was fully designed, partially implemented, and partially designed. I don't think it was fully complete at that time, but it was complete when I worked there in 2001 in the first version, or maybe 2002. But it started then.

Q. So I'm sorry, so it started in 2001 or it was --

A. I'm not sure because I joined in February 2001. I did a master thesis

project. I was not really part of the company. I just sat there and worked on my master thesis project. And then in August I was employed and --

But I think the notion of MCR and that this was discussed, MCR. I don't know what the other people were working on at that time. I think I heard that already in 2001. My guess is that the plan and the work in some way, planning work and design, the decision to create MCR was made before I joined as a master thesis student in February 2001, and it was a completed version, first release to the market was after I arrived. I'm not sure if it was later in 2001 or in or 2002 or exactly what that was.

Q. And so when did Cerence or its predecessors fully develop the MCR process for CJK languages that you reference here?

A. Yeah. So that was released in 2014.

Q. So when you say "released," that was the commercial version of the --

A. Yes. It was finished and made

available to the market, the prototype product first released.

Q. And when you're talking about the alphabetic-type languages, the first release being after you arrived in 2001 or 2002, that's when the first sale would have been?

MR. HYDE: Objection to form.

THE WITNESS: And that's when the first sale, did you say?

BY MR. CLARK:

Q. Sale. Yeah. And when you say first release, you said there was a -- the first release for the MCR process for alphabetic-type languages was later in 2001 after you arrived or 2002.

My question is: When you say "first released," do you mean first available for sale or internal, it was an internal version?

A. Yeah. First available to sell, deliver, based on a contract.

I was not very involved in -- it's such a long time ago, so I can't -- the process, the documents, everything was

different. It was several -- for different companies. I know when we released the MCR functionality for CJK, but I don't know when it -- I'm guessing that it was at that time.

Q. But at least 10 years before the release of the CJK?

A. Yes.

Q. And the CJK was released in 2014?

A. Yes.

MR. CLARK: All right. Can we take just like five minutes. I think I might be done, but just give me five minutes to review my notes.

(Recess.)

BY MR. CLARK:

Q. So Mr. Andersson, you said earlier that the CJK product was released in 2014. How much time prior to that release would you say that the MCR process had been fully developed for the CJK module?

A. So we typically release a new version of the product two, three, maybe four times every year, and that's the result of a project that we have run for

maybe three to six months to add new capabilities, features, or to focus on some performance increases or new languages or something.

So in one of those 2014 releases, one of the new features was to the MCR capability or MCR functionality for CJK.

So typically that would have been completed quite close to the release, but I don't know how that -- the details of how the project was run, if there were a few other bullet points of features are part of that release that were completed at the end and some were completed early, but typically, most would be complete -- completed, like, close to the end of the project and then release process, qualifying, and everything.

So it wouldn't have been -- typically, it wouldn't have been long before the release that it was completed.

Q. So for sure in 2013, at least, the MCR process would have been fully developed for the CJK?

MR. HYDE: Objection to form.

THE WITNESS: I don't remember which month it was now in 2014, but I don't -- this would be a guess -- I don't think the MC functionality was fully developed in 2013 if it was released in 2014. Maybe it was released 1st of January 2014, that would be the case, but I don't remember the exact month, so a qualified guess would be that it was not ready in 2013.

BY MR. CLARK:

Q. In general, it would have been three to six months before the release?

A. That work when it started, but if it's a bigger task, it can run longer. So it's -- I can't say when the work on the CJK/MCR functionality started and when it was basically completed. I just know that it was released in 2014. I can check my computer and see if the release --

Q. You don't have to check your computer. That's fine.

A. Okay.

Q. So do you know when the MCR process was begun for the CJK module?

A. I don't know when that work started. I don't know much about that work, actually. They had already become a completely isolated, separate team. We didn't have much contact around that time.

Q. Do you know if it had started before it transferred to Beijing, the CJK team transferred to Beijing?

A. No. I think a day came up -- the new team engineers came up -- the new Beijing engineers came up with the design and solution design to that.

Q. But you weren't involved in that?

A. No.

Q. And I think I asked this already, and I apologize if I have, but I can't look at my notes. With regards to the CJK team prior to transferring to Beijing, you only worked on user interface and not the recognition engines for the CJK team?

A. Yes. I cannot recall that I've been working on the engine. That was a long time ago, but I cannot recall working on the engine.

Q. To your knowledge, did

Mr. Sternby work on the recognition engines in both the CJK team and the alphabetic team?

A. Yes. First in the CJK. I think -- I cannot recall -- I don't know for a fact exactly, but I think he became an expert or experienced developer, worked on the CJK code first, and then worked on the -- he worked on alphabetic research, as I said, but alphabetic product code, the engine code he has worked on also, and that was later.

I mean, I would say that I'm fairly sure that he became an expert on the CJK code before he became -- maybe not an expert, but a bit skilled in the alphabetic code.

Q. And when you say "CJK code," that would be the code for the recognition engine?

A. For the engine primarily.

Q. When you say "engine," is it the recognition engine or is there a recognition engine and a different engine or are they all only one engine?

MR. HYDE: Objection to form.

THE WITNESS: The engine is the name we have for a core library that has a set of API functions that can be ported to any system that performs this recognition task. But it cannot retrieve or send anything to the user, so it needs the user interface implementation to send it what strokes to use, and then it processes those, send back the recognition result, and then the user interface needs to present that to the user.

So we call this library -- platform independent library or operator system independent library, the engine that performs this recognition task.

BY MR. CLARK:

Q. And prior to October 15, 2012, did you personally work on the recognition engines for the alphabetic team?

A. Yes. I worked on the alphabetic engine prior to 2012.

Q. And you also worked on the user interface for the alphabetic team prior to 2012?

A. Yes. And that was a bit longer. I mean, this is a long time ago, but yes.

Q. So you worked on all aspects of the code for the alphabetic team?

MR. HYDE: Objection to form.

THE WITNESS: I would say I worked on several aspects of the code. So fairly broad knowledge of the alphabetic, but there's part of the code that I haven't been involved in much still, so fairly broad experience with alphabetic -- all alphabetic components of the code, alphabetic product components.

BY MR. CLARK:

Q. So prior to October 15, 2012, what parts of the alphabetic code did you not have experience with?

MR. HYDE: Objection to form.

THE WITNESS: That's a complex question. So as I described before, the architecture only, there's the SCR component or module and then the MCR on top of that. So I've been involved in both of those. So the MCR component, a new generation of that based on Jakob's

research was implemented, so I was implementing that from the start, that whole component I have very deep knowledge in, you could say.

And then SCR component was developed before I started to work on it, but I've been in there and continued to develop it and optimize it and fix it and improve its capabilities and these things. So I know that code quite well, too.

And then in 2007, based on Jakob's research, the next level for alphabetic after MCR was able to handle connected letters. So when you write cursive, so when maybe write the word "and" in just a single stroke, you never lift the pen or the finger.

So this was a very big, new challenge to handle that and quite different from having these isolated strokes, going from -- assuming that these isolated letters, all strokes are one letter and then all the letters are separated, there's always a new stroke starting -- when you start a new letter,

everything could be connected.

So this is a problem you don't have with the CJK languages. CJK only has CR and MCR. It's relevant. We call it the new mode which is also multi character recognition that it allows the characters to be connected. Use CR and constrained so you can write more freely as you would write the English. You don't have to print or lift a finger between each character.

And that was a separate module, and it used this similar technology as the MCR module. But yeah, with some changes or quite a lot, but some similarities in the fundamental pieces.

So I worked on both those alphabetic modules quite a lot during the period there from around 2006 and after, yeah, 2012.

MR. CLARK: That's all the questions I have.

MR. HYDE: I just have a few short questions and we can finish up.

/ / /

BY MR. HYDE:

Q. Mr. Andersson, Mr. Clark asked you some questions about whether the '428 patent claims cover certain technologies or features. Do you remember that?

A. Yes.

Q. Are you a patent lawyer?

A. No.

Q. Did you assist in drafting the claims of the patent?

A. No.

Q. Are you comfortable testifying about the scope of the '428 patent claims or what they cover?

A. No. I can't say what the claims are.

Q. Mr. Clark asked you some questions about what the '428 patent is about. Do you remember that?

A. Yeah. So I know the theme of the patent because it was based on invention ideas that I was involved in. It's based on more than my ideas, but one of the main themes of the patent, I think you could

call it the main theme, I had contributed a lot to the ideas there, I would say. I think that's my role.

I don't know much about the patent, how it's written and everything it contains, but I know something about the ideas. It was written years ago, but I still remember something about it.

Q. And when you're talking about the main theme, you're talking about the portion or idea that you contributed?

A. Yeah. Yes.

Q. Okay. And are you comfortable testifying about the full contents of the patent and what the entire invention covers?

A. No.

Q. Okay.

MR. HYDE: No more questions for me.

MR. CLARK: No more for me. I think that should be it.

(Whereupon, the proceedings concluded at 10:30 a.m.)

* * * * *

CERTIFICATE OF REPORTER

STATE OF CALIFORNIA)
) SS:
COUNTY OF LOS ANGELES)

I, Monice K. Campbell, a duly commissioned and licensed court reporter, Los Angeles County, State of California, do hereby certify: That I reported the taking of the deposition of the witness, Jonas Andersson, commencing on Wednesday, July 15, 2025, at 7:00 a.m.;

That prior to being examined, the witness was, by me, duly sworn to testify to the truth. That I thereafter transcribed my said shorthand notes into typewriting and that the typewritten transcript of said deposition is a complete, true, and accurate transcription of said shorthand notes.

I further certify that I am in no way related to any of the parties, nor am I in any way interested in the outcome thereof.

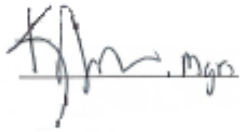
( ) Review and signature was requested.

( ) Review and signature was waived.

(X) Review and signature was not

requested.

IN WITNESS THEREOF, I have hereunto set my hand in my office in the County of Los Angeles, State of California, this 18th day of July, 2025.



Monice K. Campbell, CCR No. 14171

DOUGLAS CLARK, ESQ.

douglas.clark@arnoldporter.com

July 18, 2025

RE: Samsung Electronics Co v. Cerence Operating Company

7/16/2025, Jonas Andersson, (#7471154).

The above-referenced transcript has been completed by Veritext Legal Solutions and review of the transcript is being handled as follows:

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__ Per CA State Code (CCP 2025.520 (a)-(e)) – Locked .PDF Transcript - The witness should review the transcript and make any necessary corrections on the errata pages included below, notating the page and line number of the corrections. The witness should then sign and date the errata and penalty of perjury pages and return the completed pages to all appearing counsel within the period of time determined at the deposition or provided by the Code of Civil Procedure. Contact Veritext when the sealed original is required.

__ Waiving the CA Code of Civil Procedure per Stipulation of Counsel - Original transcript to be released for signature as determined at the deposition.

__ Signature Waived – Reading & Signature was waived at the time of the deposition.

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xx Federal R&S Not Requested - Reading & Signature was not requested before the completion of the deposition.

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1

1 1:25 3:11 16:13 20:2,4 20:19 32:18,19 53:1,23 66:18 111:1
10 52:11 93:20 93:22,23 97:5
100 21:22 39:1 42:22
106 3:5
10:30 107:24
11 86:21 87:3,6 88:16
111 1:25
12424 2:18
12th 2:19
14171 1:22 109:10
15 89:10 102:18 103:15 108:11
1501 5:16,24
15th 88:6 92:25 93:16
16 1:18 2:2 4:2
18 110:3
18th 109:4
1b 5:15,23
1st 99:6

2

2 3:13 16:14 23:12 24:16
2,000 68:14
20 3:11 27:15
2000 26:22 48:12
2000s 45:1
2001 13:5,8,10 26:15,20 35:11 39:23 72:20 94:14,19,23,25 95:9,13,16 96:5,16
2002 27:1 41:7 42:24 84:6 94:20 95:16 96:6,16
2003 26:23 48:15
2003/2004 43:13
2005 14:2 44:18
2006 48:15 105:19
2007 17:13 41:8 42:9,10 43:1 104:11
2008 22:17 23:6
2009 15:1 23:5 78:18
2010 29:11
2011 35:24 36:7,11 38:5 39:21,22 42:18 42:24 78:22
2011ish 76:18
2012 88:4,6 89:9,10 92:25 93:16 102:18 102:22,25 103:15 105:20
2013 98:22 99:5,10
2014 95:22 97:8,18 98:5 99:2,6,7,19
2017/2018 27:20
2019 15:2
2022 27:13 84:7
2024 36:6,8
2025 1:18 2:2 4:2 21:13 108:11 109:5 110:3
2025.520 110:9 110:12
21149 5:17
213.243.4000 2:12
23 3:13 36:25
24 21:12
245th 68:22
25 32:15 36:21 40:2 86:12
25505 109:9
28 36:25

3

30 32:18 111:1
30,000 32:16
30s 36:23

4

4 3:4 32:19 48:15
428 23:18,21,22 24:19 50:3 54:22,25 55:7 55:14 56:5 59:2 62:13 106:4,14,19
438 24:16 25:21
44th 2:10

5

5 52:25 53:9
50 77:22 79:6

6

6 58:17 65:5 87:13

7

7 48:15 67:3
7/16/2025 110:5
7471154 1:23 110:5

777 2:9
7:00 2:2 4:3 108:11

9

9 18:8 87:12,15
9,026,428 1:14 3:13 23:17
9,369,081 22:5
90017 2:11
90025 2:20

a

a.m. 2:2 4:3 107:24 108:11
ab 6:16 11:17 11:23 12:1,5 12:14,14,16,17 13:9,10,16,16 14:4,7,9,10,11 14:16,16
abc 16:14
ability 9:17
able 6:14 9:14 20:7 46:2 50:11,20 64:12 76:1 85:11 93:11 104:13
above 5:18 89:25,25 90:1 110:6
absolutely 54:7
accept 27:18
accepted 20:1
accepting 53:25
access 77:16
account 40:14
accounting 13:2
accuracy 88:3
accurate 9:11 108:18
achieve 63:17
acquired 12:7,8 12:10 13:16 14:4,6,10 15:1 15:21 16:22 17:9,12 44:18
acquisition 14:11 78:18
acquisitions 44:20
action 59:20
activate 89:11
actual 17:10 77:23
actually 14:25 48:22 100:3
add 22:22 30:19 87:15 91:22 98:1
added 16:21 20:18 48:14,17 93:24
addition 16:20
address 5:10,12 5:12,14,20,22 59:3
addressed 4:23
afternoon 4:11
agile 45:9
agility 45:16
agnostic 81:6 81:14
ago 11:7 36:4 36:22 40:2 44:17 96:24 100:23 103:2 107:7
ahead 4:24 26:25 87:8
algorithm 42:8 43:11 52:8 82:23,24,25
algorithms 34:19,24 35:8 35:10 45:21 48:20,23 49:4 50:4 51:11 71:15 84:15,16
allocate 80:14
allow 75:2 93:11
allowed 78:25
allows 50:14 61:9 105:6
alphabet 13:21 42:23 67:22
alphabetic 28:8 28:15,16 29:5 29:13,18 30:3 30:5,9,11,12 31:6 33:16 34:8 35:2,4,6 37:16,20 41:10 41:16,21 42:4 42:12 43:2,13 44:5,11,16 45:3,5,7,10 67:6,12 70:13 70:22 72:6 73:22,25 74:18 75:4 76:7 79:11 80:12,19 81:1 82:7,10 84:16 85:1,7 85:14,19 86:5 86:9,18,19 88:17 89:1,19 90:7 92:22 93:2,7,10 94:7 94:10 96:4,15 101:3,9,10,16 102:20,21,24 103:4,8,11,12 103:13,16 104:13 105:18
alphabetical 45:23,24 89:13
ambiguity 87:18,24 91:1 91:2
america 1:7
amount 19:21
analysis 56:10 58:3,10,11 68:2 81:17
analyzed 57:10 57:17 64:2

anders 38:7
andersson 1:17 2:1 3:3,11 4:5 4:11,15,17,20 5:6,6,7 9:20 18:18 19:6 20:6 22:15 26:6 47:5 52:15 62:4 97:16 106:3 108:10 110:5
android 15:14
angeles 2:11,20 108:3,7 109:4
angle 31:22
answer 8:7,21 9:5 19:10 47:12 93:19
answered 8:23 19:16
answers 7:18 7:22 9:18 77:2
anybody 38:4
anymore 27:7
aol 17:13
apartment 5:16 5:23 21:23,24
api 102:4
apologize 100:16
appeal 1:3
appearances 2:6
appearing 110:18 111:7
application 57:3 59:20
applications 58:4
applied 21:12 57:25 58:14
apply 21:9
approximately 10:18 13:24 36:7 42:10
april 21:12
arabic 30:4,8 30:17,21 32:11 32:13 33:4 41:10 87:16 89:3
architecture 54:18 56:19,23 103:21
arnold 2:8
arnoldporter.... 2:14 110:2
arrived 95:15 96:5,16
aside 83:17
asked 9:22 10:13 19:8,17 50:24 54:17,25 55:1,20 64:24 65:2 100:15 106:3,18
asking 47:6
asks 47:6 49:19
aspects 103:3,7
asset 12:19
assign 72:13 82:15
assigned 82:6,6
assist 106:10
assume 9:6 53:24 66:21
assumed 10:3 21:17 23:1 57:11
assuming 9:13 104:21
assumption 57:12
attempting 86:23
attempts 53:10
audible 7:18
august 2:17 26:16 95:4
auto 61:16 62:14,20 63:6 64:12,15
automated 46:2,19
automatically 46:13,24 48:4 60:1
automating 45:25
available 15:13 93:14,18 96:1 96:19,21
aware 13:1

b

b 3:8 38:23,24 91:19,23 111:1
back 19:24 23:14 34:4 44:24 67:1 102:10
balanced 80:19
base 22:9 41:20
based 9:23 31:17 41:23 57:3 58:5,6 61:2 64:14 74:25 91:23 92:18 96:22 103:25 104:11 106:22,23
basic 30:20 31:5,6 82:4
basically 31:23 99:18
basis 34:18
becoming 72:7
beginning 28:23
begun 99:25
behalf 19:6
beijing 29:14 29:16 35:24 36:2,9 76:16 77:7 78:22 100:7,8,11,18
bejing 42:18
believe 14:3 28:15 73:15

belonging 66:9 66:12
beneficial 71:22 84:9
benefit 68:6 71:3,10
best 60:9,10
better 69:5 70:22,23 85:17
bhyde 2:22
big 32:6 35:6 104:18
bigger 99:15
bit 23:15 27:1 27:11,20 28:23 37:13,14 39:4 40:13 41:5 42:6 44:18 47:3 49:2 70:3 70:23 78:19 85:5,15 101:16 103:1
board 1:3
bonus 71:4
boom 37:13
boulevard 2:18
bradley 2:21
brand 82:2
break 8:18,22 52:11
breaks 8:15 10:12
briefly 24:13
broad 103:8,11
broader 56:20
budget 77:15
buffer 61:6
bullet 98:12
business 41:13

c

c 5:22 13:11,13 14:18 15:15,15 15:25 16:10 78:10
ca 1:22 110:9 110:12,21
calgary 13:17
california 2:4 2:11,20 108:2 108:7 109:4
call 15:9 29:24 31:2 46:20 81:19 102:13 105:4 107:1
called 5:15 15:25 16:5 17:11,17 18:3 30:1,2 31:17 31:19,25 37:8 46:20 51:15,17 58:19 59:23 78:6
calls 49:6,7
cam 91:10
campbell 1:21 2:3 47:5 108:5 109:10
canada 13:18
candidate 49:20 60:10,11 66:11 91:8
candidates 60:8 61:2 65:23 66:5,15
capabilities 50:13,19,21 98:2 104:9
capability 98:7
capable 82:17
careful 7:21
carefully 7:5
case 1:13 19:10 66:4,10,17 84:18 99:7
catching 22:12
categorically 50:8 55:25
categorize 50:16
ccp 110:9,12
ccr 1:22 109:10
cerence 1:10 6:16,17,18,22 6:25 9:24 11:17,18,20,23 11:24 12:1,9 12:10,17,18,24 13:5 15:2 17:22 18:22 19:2 22:16 27:5,6,9 28:1 67:4 82:3 93:1 94:8 95:18
110:4
certain 39:1,12 43:4 50:13 68:18 84:10,14 84:17 91:5 106:5
certificate 108:1
certified 2:3
certify 108:8,20
cetera 66:18
chain 45:25
chains 51:22
challenge 104:19
challenges 32:7 32:12,13 34:25 55:22 70:24 81:9 86:22 87:7
challenging 87:21
change 34:23 45:12 61:3 84:20
changed 32:1 36:16 44:19
changes 47:3 74:1 84:19 105:14
character 32:17 33:11,21 43:15,16,17 48:23 49:4 50:4 52:20,23

53:16,22,25 54:1,10,12 59:17,19 63:1 63:14 64:9 65:4,9,12,15,17 65:18,20 66:10 66:13,14,22 68:23 87:10 91:3 105:5,11

characterize 50:2,8

characters 31:3 31:7,18 32:2 32:17 33:7,21 33:24 48:2 53:12,16 54:2 63:4,5 68:11 68:15,21,24 70:10 85:11 90:10,11,12 105:6

check 99:19,21

checks 46:11

china 31:25 38:12 39:15

chinese 29:15 29:16,22 30:24 31:2,8,18,23 32:1,3,16 33:11 34:12,14 34:20 35:20,21 37:9,9,12,16,19 38:15 41:25 42:3,15,17 44:4,6,8,10,15 45:2,4 47:17 47:18,19,21,23 48:6,13 68:9 68:20 69:10,13 70:2,6 72:23 76:8,14 84:15 85:8,10,12 93:12

choose 54:14

christer 26:1 26:18 27:12,14 28:14 51:6

circle 87:19

city 5:13,17 6:5

civil 110:19,21

cjk 28:19,19,21 29:4,9,13,16,22 30:1,12 31:7 32:12 33:2,18 34:21 35:10,19 36:1,8,12,14 37:2,23 38:4 39:20 40:19,22 41:14,18 42:3 42:11,25 43:3 43:11,17 45:10 45:22 47:19,20 47:21 48:17,20 50:25 51:2,7 52:6 67:7,12 70:12,23,25 72:16 73:17,22 74:3 75:3 76:9 78:1,16,17,19 79:5,15,18,25 80:1,8,14,20 81:1 82:7,10 82:14,15 84:23 85:20 86:4,5,6 86:9,17,17 92:22 93:2,14 94:1,2,4 95:20 97:3,6,8,17,20 98:7,24 99:17 99:25 100:7,17 100:20 101:2,4 101:8,14,18 105:3,3

claims 24:11 55:6,15,16 56:6,14,14 57:15,20 59:2 64:3,7,7,17 106:5,11,14,16

clarify 34:5

clark 2:13 3:4 4:10 6:1 18:6 20:3 22:13 23:13 32:10 34:3 39:18 47:4 50:23 52:14 54:13,20 55:4,11 56:4 56:11,21 58:8 59:12 62:1,12 63:7 64:1 65:1 69:7 71:7 72:15 73:14,19 75:21 76:13 78:23 79:23 80:23 81:24 83:23 84:21 85:21 86:2 87:1 88:13 91:12 92:7,20 96:11 97:10,15 99:11 102:17 103:14 105:21 106:3,18 107:21 110:1

clear 14:21 29:21 56:2 61:5 63:8

clicking 18:4

close 5:4 32:5 32:16 35:14 98:9,16

closed 27:17

closely 35:18 42:8

clue 35:3

code 5:16 15:10 15:15 34:15,18 46:8,9,11,13,17 46:22 51:15 71:16 74:8 101:8,10,11,15 101:17,18,19 103:4,7,9,12,16 104:10 110:9 110:12,19,21

coinventor 25:20

coinventors 25:24 34:6

collaboration 11:10 62:22
colleagues 11:11 12:23 62:10
collect 48:1 67:25 91:21
collected 48:9 51:25
com 37:13 40:1
combination 33:25
combine 86:4 86:23 93:1,3
combined 77:13,14
combining 85:23 86:1 88:7,15,24 89:15 90:13 91:14 92:9,21
come 23:14 69:5
comes 82:3
comfortable 6:9 106:13 107:13
coming 4:12
commencing 108:10
commercial 95:24
commissioned 108:6
commit 61:16 62:14,20 63:6 64:12,15
committing 60:1
common 30:25 37:20 39:5 68:22 92:5,6
communicates 49:8
communicating 49:24
communication 14:10
communicati... 12:16 14:4,8 14:16,18
companies 97:2
company 1:10 11:21,24 12:5 14:12 18:23 22:16 27:3 29:3 41:12 70:1 77:13,14 77:16,25 95:2 110:4
company's 79:20
compare 85:8
compared 49:3 55:14 84:16 85:6
competitive 75:17,18,20
compile 15:11
complete 94:18 94:19 98:15 108:18
completed 95:13 98:9,13 98:14,16,21 99:18 110:7,17 111:6
completely 34:17 64:18 77:4 81:14 100:4
completion 111:11
complex 103:19
complexities 93:25
component 63:2 103:22,24 104:3,5
components 84:8,11 103:12 103:13
composed 68:25
compress 32:22 32:25
computer 25:17 99:20,22
conceived 11:10
concentrated 45:4
conception 61:13
concise 24:6
concluded 107:23
concluding 60:21
condition 9:14
configure 57:23
confirm 34:5
confused 62:1,3 81:25
connected 104:14 105:1,7
consider 51:3
considered 7:14
constrained 105:7
contact 100:5 110:9,20
contain 15:12
contains 107:5
content 81:16
contents 107:14
continuation 65:16
continue 47:1
continued 104:7
continuing 78:14

continuous 46:21
continuously 46:10
contract 6:25 12:4,6,13,21 96:22
contracted 40:2
contracts 4:18 12:19
contribute 70:17
contributed 64:20 107:1,11
contributing 62:22 78:16
contributor 72:3
coordinates 49:14,15
copy 24:18,22 25:1,3,11
core 15:9 28:19 44:22,24 81:15 102:3
corporation 13:17,25 14:5 14:22 15:18
correct 6:20,22 13:6 15:3 18:20 20:22 21:15 22:11,23 25:21 29:23 34:9 38:1 48:25 49:1 52:23 53:7 56:7 58:10,24 62:15 63:11 70:13 76:22 82:4 87:22 92:12
corrections 110:14,15 111:3,4
correctly 19:15 47:12 80:19
cost 75:12 77:15
costs 75:18
counsel 8:7 10:9,16,19,23 19:22 22:6 23:1 110:18,22 111:7
countries 28:3 69:15
country 5:13 6:13 31:13 37:11 92:5,6
country's 32:4
county 108:3,7 109:3
couple 36:19 67:8 89:22
course 59:10
court 2:3 5:19 7:11,19 17:23 38:16,19 46:5 61:22 108:6
courtesy 25:13
cover 24:7 64:20,24 106:5 106:15
covered 64:16
covers 56:3 57:12 59:24 107:16
cr 105:4,7
create 48:7 95:11
created 12:18 48:10
creates 48:4
critical 63:2
crossing 66:1
crr 1:22
current 6:15
currently 11:17
cursive 41:9 104:15
cursively 85:16
cursory 58:15
customer 32:24
customers 40:17 79:14
cyrillic 30:22 87:17,19

d

d 3:1 5:8 13:12 13:13 36:12 38:22,24,25 39:9 62:5,8
data 48:1,1,4,7 48:8,9 51:25 52:1,3 68:1,3 82:21,22 91:21
database 34:23 35:7 37:5 45:19 46:9,12 46:23 51:9,10 51:21 52:7 81:15,16,18 89:3,5 90:8,12 92:16
date 21:15,16 21:18 110:16 111:5
david 13:12
day 46:18 100:9 109:4
days 16:7
de 16:1
decade 94:5
decided 76:6 78:20
decision 95:11
decisions 74:7 80:5,6
declaration 3:11 9:23 10:2 10:4,5 11:1,5 13:3 18:19 19:6,12,18,19 20:5,6,21,21,25 22:8,9 23:10 23:15 25:4 27:25 52:16 53:1 54:15 58:18 64:23

67:4 86:20 93:21
declare 54:25 55:1
decuma 12:5,8 12:14,14 13:9 13:10,16 14:1 14:7,10,15,24 15:7,20 16:19 16:22
deep 104:3
def 16:15
definitely 73:24
deliver 96:22
depends 54:7 70:16 83:8
deposed 7:1 10:13
deposition 1:16 2:1 7:8,10 8:17 10:6 11:3 20:18,19 47:14 108:9,17 110:19,23,25 111:8,11
describe 54:18 55:20
described 11:15 55:25 92:15 103:20
describes 59:7
describing 24:7 61:16
description 3:9 24:4,4
design 30:20 37:18,21 40:9 43:23,24 44:1 44:23 50:12,18 51:13 52:8 69:5 70:24 74:7 78:9 81:23 95:10 100:11,12
designed 35:1 50:11 51:11 54:9 74:5 78:3 83:9 94:16,17
designing 44:2 51:24 68:7 71:6 74:15
designs 86:16
desire 83:4
details 13:1 98:10
determined 55:15 110:18 110:23 111:7
determines 60:25
develop 35:10 40:18 43:21 47:2 48:3 67:19 83:20 94:3,9 95:19 104:8
developed 15:21 16:18 17:1 34:19 43:15,18 47:23 48:13 55:2 85:4 86:12 90:8 94:6 97:20 98:24 99:5 104:6
developer 101:7
developing 45:12 52:3 67:20 77:18
development 36:1 40:11 77:24 94:13
developments 42:9
device 15:17
devices 78:12
dictionary 16:12
differ 55:23 84:25
difference 31:1 31:6 32:7 67:10 73:2
differences 30:18,25 31:11 32:22 33:6 83:7,25
different 8:3 9:4 12:24 15:22 22:4 28:2,3,3 30:8 31:14,15,20 33:7,8,13 34:18 44:20 45:17,17 47:24 55:23 65:23,23 66:6 67:5 70:6 73:7,8 74:23 74:25 75:23 78:11 82:9 84:8 85:10 86:15 89:2 90:14,21 91:25 92:3 97:1,1 101:24 104:20
differs 55:22
difficult 8:2 27:11 87:24
difficulty 76:11
digits 87:12,14
disambiguate 91:1
disclosure 61:25 62:5,11
discuss 10:6 52:16
discussed 62:9 95:6
display 50:1 81:16
displayed 18:13
dissertation 41:2,6,7,16 78:2
distinct 29:25 35:12
distinctions 87:13

document 11:8 19:20,24 20:11 20:12 21:10 22:10,20
documents 4:18 11:2 96:25
doing 7:7 27:2 41:15 59:20 82:17
dot 37:13 40:1
dots 5:18 6:3 89:25 90:1
double 39:5
douglas 2:13 110:1
douglas.clark 2:14 110:2
draft 19:5,18
drafting 106:10
drive 75:19
driven 79:19
driving 76:11
due 93:24
duly 108:5,13

e

e 3:1,8 5:2,5,8 5:22,22,22 13:11,13 14:18 16:14 18:11 21:7,8,9 38:22 38:23,24,25 39:7,7,9,9 62:8 110:9,12 111:1
earlier 23:22 27:20 34:5 50:24 97:17
early 16:7 98:14
easier 67:21
easily 70:17,17
edits 19:23,25
efficiency 45:25 74:24 80:4
efficient 45:15 61:8 71:25 72:3,8,9 74:1 74:13 75:7,8 75:12 79:11 80:10,22 83:3
efficiently 69:4
either 16:9 25:9 58:13 70:12,12 71:19 82:7
electronic 25:10,14
electronics 1:6 1:7 110:4
employed 12:6 26:22,24 95:4
employee 26:17 26:18
employer 6:15 6:24 12:2
enable 88:10,18 88:19 89:5
enables 33:8
ended 76:7
engine 15:23 28:19 35:8 37:4 42:8 44:22 45:21 48:7,8 49:6,7,9 49:15,15,16,25 50:13,21 51:9 51:11 56:1 57:4,7,13,21,21 57:22 60:3,22 60:24 61:7 66:21 70:18 81:15 86:7,19 100:22,24 101:11,20,21 101:22,23,24 101:24,25 102:2,15,22
engineer 9:24 34:20,21 38:8 46:8,15 47:1 55:3 67:17 69:17 70:11,16 71:2,9,12,14,17 72:2,11,13 73:1,7 74:11 74:23 75:9 79:25 80:25 83:14 84:14 85:8
engineered 69:19
engineering 28:2 46:4 67:5 67:11 68:2,5 74:12,24 82:5 82:8 83:5,10 83:25 94:1
engineers 29:10,15 35:21 36:3,18 37:4 37:22 38:6,10 45:17 72:10,21 73:11 78:8 79:15 81:17 100:10,11
engines 43:21 52:6 86:9,13 100:20 101:2 102:20
english 6:9,14 32:15,18 33:25 67:21,22,23 70:7 73:17 88:20,21 90:3 91:11,20 92:19 93:4,6,9,13 94:7,10 105:9
enhance 91:22
entire 28:10 107:15
entirety 23:23
entities 14:14
entity 6:25 12:13,22
equal 73:12
ericsson 16:2
errata 110:14 110:16 111:3,5

especially 45:24
esq 2:13,21 110:1
established 19:11
et 66:18
european 89:22
events 49:11,22 49:25,25
eventually 15:20
evolved 83:9 84:7
evolving 84:13
ex 33:15
exact 6:23 38:21 99:8
exactly 14:8 21:16 28:24 43:6 45:11 48:13 66:22 76:24 95:16 101:6
examination 3:4,5 4:9 106:1
examined 4:8 108:12
example 15:24 18:1 25:15 30:17 31:16 46:3 49:18 57:16 68:10 86:4,21 92:17
except 29:19
exceptions 68:24
excuse 12:9
execerisgatan 5:15
exhibit 3:11,13 20:2,4,6,19 22:17 23:5,12 24:16,17 53:1
exhibits 25:10
exist 66:20
existed 14:9
expanded 37:14 40:2
expansion 78:22
expect 8:17
experience 9:24 19:14 29:8 37:18,21 40:7 50:10 71:23 73:8,25 74:14 74:25 83:18 88:7,23 89:14 91:13 92:9,15 92:23 103:11 103:17
experienced 92:21 101:7
expert 33:17 35:7 37:8 38:12 40:9,12 42:1 43:24 72:22,24 101:7 101:14,16
expertise 40:18 71:24 72:7 73:1 81:20,22 82:20 83:10
experts 35:20 37:7 71:13
explain 22:3
explanation 47:8
exported 31:3
extent 69:15
extra 89:22 90:10,11
ezitext 17:15,17

f

f 38:25 53:22 66:18
fact 101:6
fail 7:13
fair 7:23 9:8
fairly 101:13 103:8,11
familiar 11:12 11:14 18:13 37:24
fast 17:5 61:10
faster 16:16 17:5 18:4
feasible 32:23
feature 54:8 62:15,20 88:25 89:9 93:13
features 98:2,6 98:12 106:6
february 26:20 94:25 95:13
federal 111:1,8 111:10
feeling 85:18
felt 85:5
figueroa 2:9
figure 16:12
filed 23:5 88:5
find 47:10
fine 25:9,12,18 99:22
finger 18:16 49:13,17 104:17 105:10
finish 8:6 105:24
finished 95:25
first 4:25 7:3 8:21 12:13 19:9 20:15 23:16 27:3,13 38:22 39:11,17 40:24 45:3 60:16 61:4 63:4 65:13 66:8,12 70:10 75:16 76:20,23 91:8 94:20 95:14 96:2,4,6 96:10,13,14,18 96:18,21 101:4 101:8
five 37:1,22 41:1,3 97:11

97:12
fix 104:8
floor 2:10,19
fluent 42:6
fluently 61:10
focus 29:18 42:4,22 44:1 44:22,24 75:9 76:9,11 78:18 87:12 98:2
focused 22:25 23:9 24:3 37:17,19 40:8 45:12,24 63:21 64:23 75:18 80:19
focusing 23:1 76:7
folder 22:21
follow 67:8
following 60:13
follows 4:8 110:8
footer 22:14 23:5
forever 84:15
form 19:7 31:9 33:14 50:6 54:5,16,23 55:8,18 56:8 56:16 57:18 59:4,15 62:16 63:12 64:5,14 67:14 70:14 71:20 73:5,18 75:5 76:4 77:10 79:2 80:2 81:3 82:12 84:3 85:2,24 86:25 88:9 89:17 91:16 92:13 96:8 98:25 102:1 103:5,18
formal 6:24
formally 41:3
format 23:2 34:23 51:10,24
formed 12:15
found 20:24 43:13
four 29:17 37:1 37:22 97:24
france 92:1
frcp 111:1
fredrik 38:11 38:25
freely 105:8
friberg 26:1 34:7
front 24:19 25:12
full 4:13,25 5:12,14 14:11 15:22 39:16 50:9 107:14
fully 29:18 34:21 42:16,20 63:19 94:3,16 94:18 95:19 97:20 98:23 99:4
function 51:15 51:16 54:4
functionality 25:17 55:6,17 56:7,13,15 57:14 97:3 98:7 99:4,17
functionally 12:25
functions 102:4
fundamental 32:21 33:5 105:16
further 108:20
future 61:1,2

g

g 5:22 38:23,24 39:9,10,12
gained 71:23
general 50:16 99:12
generally 8:15
generation 18:1 37:5 41:21 78:5 103:25
german 88:20 88:21 90:10 91:21 92:18
getting 49:25 50:1 76:22
give 7:18,22 8:10,11 9:5,11 9:17 32:25 97:12
given 4:16 26:2 26:3,5 39:14 66:21
giving 66:23
go 4:24 7:4 8:17 36:3 47:7 67:1 69:24 87:8
going 23:3 34:4 44:13 52:9 67:1 104:21
good 4:11 43:19,21,23,23 50:12,17 70:5 82:19,21,23 83:1
gradual 76:25
graduated 36:19,25
great 44:23
greek 30:22 87:17,20
ground 7:5
groups 12:24
guess 14:14 58:3 76:3 79:21 81:25 93:18 95:9 99:3,9
guessing 39:2 97:4
guys 28:7

h

h 3:8 38:23 39:9,12 66:4 66:10,24
half 52:10
hand 109:3
handle 34:25 104:13,19
handled 110:8
handwriting 9:25 15:8 16:21,23,24 17:3,14 19:13 28:9 32:8 33:9 63:3 90:17 94:2
hanja 31:21
happen 80:16
happened 17:8 22:8 41:19
happening 51:18
hard 67:15
harder 32:25
hardwares 32:24
head 7:21,22
header 22:4,11
heard 11:20,22 16:6 45:9 95:8
hearing 47:11
heavy 46:25
held 2:2
help 10:7 35:20 35:21 40:10,18 74:19,20 81:17
helping 76:21
helps 74:17
hereunto 109:2
high 15:5 45:14 45:16 72:6
higher 53:2,5,6 53:10 88:3 93:25 94:4,6
highlighted 4:22
hiragana 31:19
hired 29:13 35:25 37:15 40:6 42:17
hiring 76:8,14
hold 12:18
holmberg 38:7
home 21:21
hong 32:3
hood 51:19
horizontal 53:19 66:1
hour 8:16 52:10
hours 10:20
house 40:12
hybrid 30:14
hyde 2:21 3:5 8:7 19:7 22:6 31:9 33:14 50:6 54:5,16 54:23 55:8,18 56:8,16 57:18 59:4,15 61:24 62:3,16 63:12 64:5 67:14 70:14 71:20 73:5,18 75:5 76:4 77:10 79:2 80:2 81:3 82:12 84:3 85:2,24 86:25 88:9 89:17 91:16 92:13 96:8 98:25 102:1 103:5,18 105:23 106:2 107:19
hyphen 53:23
hypothesis 60:4 60:22

i

idea 11:9,9,14 51:8 59:18 61:13,17,23 62:2,6,8,8 107:11
ideal 80:18
ideas 62:23 64:19 69:5 106:23,24 107:2,6
identify 19:9 20:18
imagine 87:9
impair 9:17
implement 78:10
implementati... 44:1 49:19 50:19 102:8
implemented 35:1 74:5 94:16 104:1
implementing 28:18 43:10,11 44:3 49:23 74:16 104:2
implied 24:8
important 7:17 7:25 9:1 47:25 75:14 81:8,22
imported 15:16
impossible 72:12
improve 90:25 104:9
improving 78:14
inaudible 33:23
include 64:3,8 90:8
included 56:14 62:23 92:17 110:14 111:3
includes 57:1
including 41:24 57:4
increases 98:3
independent 77:4 102:14,15
indicating 53:6

inferior 93:9
information 10:23 19:12 71:13
initial 24:4
initially 35:14 47:22
innovation 45:16 75:19 76:12 78:4 83:21
innovations 74:2
input 18:4
inputs 61:2
insight 23:7,10 79:9
instance 87:20
integrates 49:6
interaction 37:17 40:8 43:24
interacts 49:9
interest 79:19 80:7
interested 108:22
interface 28:18 43:10 44:3,4,5 44:8,10 45:4,6 47:17 48:20,24 49:3,5,19 50:4 50:10,12,18,20 51:8,13 57:4,6 57:7 70:4 86:3 86:6,17,18 100:19 102:8 102:11,24
interfaces 15:21 45:2 86:14,15,15
internal 96:19 96:20
introduced 20:4 24:15
intuition 85:18
invention 11:14 24:7 59:7,10 59:13,18 61:24 62:5,10 63:6 63:25 64:19 106:22 107:15
inventors 11:6 26:7
involve 85:22 86:8
involved 34:8 61:12 63:16 94:12 96:23 100:13 103:10 103:23 106:23
involves 50:10
ios 15:14
ipr 22:4
ipr2024-01267 1:13
isolated 100:4 104:20,22
issue 22:7

j

j 5:3 39:12
jakob 25:25 27:1,19 28:23 29:19 39:23 40:20 42:22
jakob's 103:25 104:12
january 26:20 99:7
japanese 29:17 29:23 30:24 31:4,8,16,21 33:12 40:6,10 40:13,16,19 47:22 48:10,14 69:10,13
job 1:23 8:2
joined 26:15,18 26:19 27:1 35:11 36:17 40:7 72:19 94:14,24 95:12
jonas 1:17 2:1 3:3,11 4:5,15 4:17,20,21 5:2 5:2 20:6 26:1,2 26:21 27:12,14 28:14 51:5 108:10 110:5
july 1:18 2:2 4:2 108:11 109:5 110:3
junior 38:10 70:16

k

k 1:21 2:3 5:5 38:25 39:9 92:4,5 108:5 109:10
kabat 2:17
kanji 31:17,20
katakana 31:19
kaye 2:8
keep 17:15,18 44:12 83:20
keeping 61:6
kept 17:13 43:2
key 16:9,11,13 16:14,14
keyboard 18:3 18:5,11,12
kind 7:7 83:10 90:20
knew 23:4 29:8
know 6:23 8:19 9:3 11:24,25 13:3 14:8 17:19 25:15 38:21 40:5 47:9 51:12,14 64:7,21 65:9 65:11 68:10,21 68:22 70:5,7 74:6,17 77:21 79:4 80:5 85:4 85:12 93:5 95:6 97:2,3 98:10 99:18,24 100:1,2,6

101:5 104:10 106:21 107:4,6
knowing 69:3 81:6 91:3
knowledge 67:18 68:16 73:3 83:16,19 91:24 100:25 103:8 104:3
knows 80:7
kong 32:3
korean 28:21 29:17,23 30:23 31:8,21 33:12 47:22 48:11,15 51:20 69:10
koskinen 22:8

l

l 5:5,17 6:2 36:12 38:23,24 53:22,23 66:14 66:18,25
lab 78:6
lacked 85:5
language 6:12 17:1 24:5 28:4 30:9 37:11 40:10,12 43:24 60:14,24 67:18 72:22 78:10 81:6 85:4 86:23 88:8,16 88:24 89:15 90:15,24 91:5 91:11 92:2
languages 30:2 30:22 31:1,7 31:11,12,13,14 33:2,19 34:8 37:25 41:16 48:18 51:3 55:24 67:6,19 69:14,20,22,24 72:18 73:3 79:17,18 80:1 85:23 86:4 88:11,19 89:2 89:3,4,6,12,20 89:23 90:6,13 90:18,21 91:14 91:24 92:10,18 92:22,22 93:2 93:2 94:1,4,7 94:10 95:20 96:4,15 98:4 105:3
large 33:20 46:25
lars 26:1
latin 30:22 33:4 87:20 89:4,6 89:20 90:4
launches 46:12
law 7:11
lawyer 106:8
layer 66:20
leading 77:1 78:7
learn 68:11,14 70:7 74:20
learned 68:19
learning 69:19 70:9
led 42:18
left 20:15 27:12 27:19 28:12 29:7 39:25 92:18
legal 6:23 13:2 19:22,24 23:1 110:7
letter 13:21 16:10 18:8 32:20 33:13 91:18,19 104:23,25
letters 32:15 33:25 34:1 60:18,23 61:4 62:5 67:22 87:20 89:22,24 90:2,20 92:3 93:12,13 104:14,22,23
level 15:5 43:19 53:2,5,6,10 60:16 71:15 72:25 93:25 94:4,6 104:12
libraries 15:10 15:24
library 15:15 102:3,13,14,15
licensed 108:6
lift 104:17 105:10
likely 61:1
limit 58:13
limitations 55:15 56:6
lindberg 38:9 38:23
line 34:16 110:15 111:4
lines 33:3 69:1
linguist 33:17
linguistic 37:7 83:16
linguistics 37:7 37:24 81:21 82:2
listed 4:19 11:6 11:11 12:2 26:4
little 8:11 23:15 23:16 49:2
live 6:8
lived 6:13 35:14 37:9 69:14
llp 2:8
located 35:9,18 36:12
locked 61:5 110:12 111:1
london 35:15
long 8:17 10:18 11:7 17:19 27:23 40:3,22

44:16 46:14 47:8 72:1 74:4 93:6,17 96:24 98:20 100:23 103:2
longer 19:19 41:5 99:15 103:1
look 20:25 22:2 22:14 24:11 25:9,11 56:5,9 56:13 67:3 82:18 84:6 100:17
looked 55:14
looking 10:2 60:24
looks 20:12 60:6 91:7
los 2:11,20 108:3,7 109:3
lot 17:1 24:8 30:20 33:1 37:12 40:16,24 43:25 45:12,24 59:24 61:9 67:7,25 68:5 69:4 74:14,20 75:13 80:7 83:7,25 105:15 105:18 107:2
low 71:15
lower 20:14,15 80:11,13
lund 35:13,13 35:16,19 36:12 36:15 39:20 50:25 72:19

m

m 5:5,17,17 6:2 6:2 13:11,13 38:23,24 39:3 39:4,9 91:9
made 10:2 15:22 36:14 43:14 65:21 74:7 80:5,6 95:11,25
magnus 38:14 39:8 69:16
main 30:15 59:18,24 61:15 62:25 63:6,21 64:15 67:16 73:2 106:24 107:1,10
mainland 31:25
major 30:25
majority 23:25
make 9:22 14:21 19:23 32:23 58:4 75:13 85:12 110:14 111:3
makes 8:2 74:8 74:10 79:7 80:12 90:6
making 74:1
malmö 5:17 6:2 21:23,25 35:14 35:15
manager 38:8 40:14
managing 76:25
mapped 55:5 55:13
maria 38:11 39:3
marked 20:2 23:12
market 80:8,17 95:14 96:1
martin 38:9,23
master 26:15 26:19,23 36:19 94:25 95:3,12
masters 36:25
math 78:6
mathematical 71:15
matter 18:20 19:3 20:5 22:5 80:4
mattisson 38:11,25
mc 99:4
mcr 52:16,22 53:1,15,21,24 54:4,8,8,12,15 56:1,12,15,24 57:1,5,11,12,14 57:22,24 58:7 58:23 59:1 65:6 66:6 93:25 94:4,6,9 95:5,6,11,19 96:14 97:2,19 98:6,7,23 99:17,24 103:22,24 104:13 105:4 105:14
mean 12:1,3 19:3 54:6 55:13 59:9,16 59:23 67:19 70:15 71:21 72:4 73:6 75:11 81:21 83:15 84:4,5 85:3,9,25 88:10 89:18 96:18 101:13 103:2
meaning 33:22 71:11
meant 88:14
medical 9:13
medications 9:16
meet 10:19
members 72:17
memory 61:6,8
mention 51:1
mentioned 11:5 13:4 23:21

28:1 40:20 43:9 47:16 51:22 72:20 75:22
mentoring 77:1
merged 17:20 46:9,23
message 16:16
michael 5:4
mid 45:1
middle 8:20
mikael 4:20 5:4
minus 53:23,23
minute 52:11
minutes 97:11 97:13
mobile 16:8
mode 57:24 58:7 66:6 105:5
model 34:22 48:2,7 51:24 52:2,4 60:14 89:19 90:5,12 90:15,19 91:19 91:22,23,23 92:16
models 17:1 32:23 48:5,9 48:10 51:23 60:15,25,25 86:24 88:8,16 88:24 89:16 90:17,17,22,23 90:25 91:18
modes 58:1
module 97:21 99:25 103:22 105:12,14
modules 48:9 54:8 105:18
monice 1:21 2:3 7:18 108:5 109:10
monice's 8:2
month 43:5,6 69:25 99:2,8
months 98:1 99:13
morning 46:17
morwing 26:1 26:2,21 28:14 34:6 51:5
moved 12:13 35:15 40:6 49:13
movements 49:17
multi 43:16 105:5
multiple 4:16 52:22 53:16 60:3 85:23 86:23 88:8,11 88:16,24 89:12 89:15 92:17

n

n 3:1 5:3,8,8,22 14:18,18 36:12 38:22,24,24 39:3,7,9,9,9,10 39:12
name 4:14,15 4:17,21,22,25 26:5 38:7,9,12 38:14,15 39:1 39:15,16 72:21 83:12 84:2 102:3
names 4:16 26:3,4 38:3,21
narrow 87:25 88:1
native 6:12 29:14,14 37:12 40:13,18 68:6 69:9,11,22,23 70:18,19,23 71:5,18 72:17 72:22 82:14
natives 40:6 68:3 72:20 76:8,15
nature 70:20 81:8
necessary 8:12 82:4,9 110:14 111:3
necessity 78:20
need 8:18 24:16 30:18 38:16 50:12,21 51:12 51:14 54:3,12 59:19 64:8,10 64:13 65:11 67:18 68:4 74:20 80:5,9 81:17,20 82:18 84:14 85:10 87:9 88:1
needed 19:13 42:14,16 67:11 71:13 75:19 77:5 79:6,12 79:15 80:24 91:22
needs 7:19 54:7 57:5,14 58:23 81:21 102:7,11
networks 83:2
never 6:13 34:13 56:17 77:5 82:2 104:16
new 46:8,11 65:12,15,18 74:1 78:21 82:2 91:9 97:22 98:1,3,6 100:10,10 103:25 104:18 104:24,25 105:5
newly 36:19,25
night 46:19
nightly 46:1,2,6 46:20 47:11
nod 7:21
nokia 16:2

nordenhake 38:14 39:8 69:16
notating 110:15 111:4
notes 24:25 25:6 97:13 100:17 108:15 108:19
notion 95:5
nuance 12:9,11 12:16 14:4,6,8 14:10,14,16,17 14:18,22,25 15:1,3 17:8,12
number 3:9,13 5:24 18:8 20:2 22:5 23:12,17 33:21 37:23 39:24 110:15 111:4

o

o 5:3,8,17 6:2,3 38:23 39:3,7,9 89:25
oath 4:8 7:10
object 54:23 91:16
objecting 8:8
objection 8:12 19:7 31:9 33:14 50:6 54:5,16 55:8 55:18 56:8,16 57:18 59:4,15 62:16 63:12 64:5 67:14 70:14 71:20 73:5,18 75:5 76:4 77:10 79:2 80:2 81:3 82:12 84:3 85:2,24 86:25 88:9 89:17 92:13 96:8 98:25 102:1 103:5,18
obvious 65:14 65:22
october 88:6 89:10 92:25 93:16 102:18 103:15
office 1:1 21:21 27:16,16,19 29:1,8,15 35:13,15 109:3 110:11
offices 35:17
okay 7:4 8:24 23:18 27:22 42:24 99:23 107:13,18
once 8:16
ones 72:5
open 20:8 24:20
operating 1:10 11:21,24 15:11 15:16,25 18:23 22:16 49:7,10 49:12,20 110:4
operator 102:14
opportunities 70:24 81:10
opposed 67:6
optimal 83:10
optimizations 34:18,24
optimize 75:17 87:24,25 104:8
optimized 68:20
optimizing 74:15
option 76:3
order 68:12,18
orders 70:9
organized 75:10
oriented 73:9 73:10
original 61:13 110:10,20,22
originally 12:4 12:6
os 16:1
outcome 108:22
outcomes 87:23
own 15:23
owned 17:9
owner 1:11 2:16 18:20,22 19:3

p

p 5:2 39:7
pad 16:14
page 3:3,9 19:19 20:15 21:4 22:3 110:15 111:4
pages 1:25 110:14,17,17 111:3,6,6
painting 49:23
palm 16:1
paper 24:22 25:1,3,11
paragraph 52:25 53:9 58:17 65:5 67:3 86:21 87:3,6 88:16 93:20,22,23
paragraphs 59:9
paralegal 22:9
parallel 29:2 78:15
parameters 52:1
part 14:22,25 17:14 26:11 28:25 30:5,9 35:7,8 37:19 37:20 40:11 41:25 42:3,25 45:3,5 46:3,4

47:25 49:24 51:4 54:12 61:14 62:20 63:3,24 77:20 81:22 84:16,17 95:1 98:12 103:9
partially 77:8 84:22 94:16,17
particular 55:21
parties 108:21
parts 12:24 24:1,10 35:5 47:24 56:19,22 57:5 63:16 103:16
passport 4:19 5:1
patent 1:1,3,11 1:14 2:16 3:13 11:4,7,11,13 18:20,22 19:3 22:5 23:17,19 23:21,22 24:16 24:19 25:21 39:24 50:3,15 54:22 55:1,7 55:14,24 56:6 56:10,14,18,20 57:3,10,25 58:13 59:3,6 61:12,14,15,18 61:19 62:14,24 63:9,16,17,18 63:19,20 64:22 88:4 106:5,8 106:11,14,19 106:22,25 107:4,15
patents 58:5
patient 8:5
pause 8:11 10:10
paycheck 12:3
paying 12:21
pc 15:25
pdf 110:12 111:1
pen 104:17
penalty 110:16 111:5
people 8:4 28:12 37:2,15 37:24 39:25 80:9 85:13,16 95:7
percent 21:22 39:1 42:22 77:22 79:6
perform 54:8,9
performance 73:10 93:8 98:3
performing 45:14
performs 102:5 102:16
period 26:14 28:11 38:5 39:23 41:17 43:8,25 105:19 110:18 111:7
perjury 7:14 110:17 111:6
person 19:9 38:13 69:17 70:19 82:15 83:1
personally 102:19
perspective 24:6
petersson 38:11 39:3
petitioners 1:8 2:7
ph.d. 27:2 29:2 41:2,15 77:14 77:15,22
ph.d.s 36:18,22
phase 11:9
phones 16:8
physically 21:6
picked 46:22
piece 46:8
pieces 105:16
place 78:22
plan 95:9
planning 95:10
platform 102:14
platforms 15:23
please 4:13 38:19
plus 16:20,23 89:21
pocket 15:25
points 51:16 98:12
population 4:21
port 78:11
ported 102:4
porter 2:8
portfolio 16:22
portion 28:17 81:5 107:11
portions 81:7
possible 57:15 58:4 70:21 72:4 87:23
power 43:20
prc 31:25
predecessor 13:5
predecessors 27:10 28:2 93:1 94:9 95:19
predictive 16:5 16:20,23,25 90:16,19
prefer 25:11,18
premise 64:8
prepare 9:21 10:7,19 11:2

prepared 10:1
present 60:8 62:9 65:22 87:22 102:12
press 16:9,11
pretty 27:23
preventing 71:1,9 75:15
previous 47:3
previously 55:5 55:13 58:10
primarily 43:1 68:4 101:21
primary 26:5 29:9
print 105:10
prior 36:11 39:20,22 42:9 88:4,6 92:25 93:16 97:18 100:18 102:18 102:22,24 103:15 108:12
probable 60:16 60:18 91:4,10
probably 25:16 45:9 69:4 70:17 83:7,24
problem 33:10 58:19,22,25 59:3,18,22 63:10,15,22,23 64:4,10,11 65:3,6,7,19 66:19 70:20 105:2
problems 30:21
procedure 110:19,21
proceeding 6:9
proceedings 107:23
process 53:2,10 93:25 94:4,6 95:19 96:14,25 97:19 98:17,23 99:25
processes 45:13 45:15 102:9
product 15:6 17:17,21 18:17 28:19 41:14,21 45:23 73:10 85:19 88:18 90:24 93:10,14 96:2 97:17,23 101:10 103:13
productivity 80:11,13
products 40:19 45:14 80:9
programmers 37:4
programming 78:10
progress 43:14
project 26:24 28:20 79:8 80:8 95:1,3 97:25 98:11,17
projects 77:23 77:24 79:7
pronounced 34:2
properties 33:1
property 33:6
prototype 96:1
prototyped 78:6
provide 10:23 15:7 32:11
provided 15:8 25:14 40:17 110:19 111:8
pull 20:7
pure 15:14 37:3 37:22 84:15
purposes 10:24 47:14
put 22:9 83:15

q

qualified 99:9
qualifying 98:18
quality 73:10
question 8:6,21 8:22 9:7 34:13 47:6,13 55:10 88:22 92:8 96:17 103:20
questions 8:9 9:2 10:4 19:10 19:16 47:13 67:9 77:3 105:22,24 106:4,19 107:19
quite 17:10 30:20 56:2 61:5 93:5,14 98:9 104:10,19 105:15,18
qwerty 18:5,10

r

r 5:2,8,22 18:11 38:22,23,24,24 38:25,25 39:4 39:7,9
r&s 111:1,10
raklaw.com 2:22
ramping 35:25
rates 75:20
rationales 74:6
read 20:23 23:22 59:6 61:11,20 64:18 93:21
reading 58:16 110:24 111:10
ready 99:10
real 29:3
reality 41:4
realize 50:20
really 7:17,25 8:2 17:5 43:21 44:23 59:7 64:22 78:21 84:13 95:1

reason 9:10
recall 19:15 21:1,16 28:4 28:24 34:11 36:24 38:10 42:7 52:17 86:7 100:21,23 101:5
recently 27:13
recess 52:13 97:14
recognition 15:9 32:8 43:15,16,18 48:24 49:4 50:5 51:17 52:20,23 54:10 59:17,19 63:2 63:14 64:9,14 65:4,8 66:5,11 70:25 87:22 89:12 90:25 93:9 94:2 100:20 101:1 101:19,23,24 102:5,10,16,19 105:6
recognize 20:10 33:18 49:16 53:11,21 53:21 62:21 63:4,5 66:23 66:25 87:11,15
recognized 30:21 66:13 67:20 87:10
recognizes 49:16
recognizing 41:9 54:11
record 4:14 18:7,10 22:7
reduce 91:2
reduced 41:25 78:17,20
refer 23:18
reference 24:17 94:11 95:20
referenced 110:6
references 22:4
referring 56:23
refers 9:13
reflected 61:18
regards 100:17
register 4:21
related 11:23 19:13 51:2 59:9 74:12 83:17 108:21
release 95:14 96:5,13,14 97:6,19,22 98:9,13,17,21 99:13,20
released 61:7 95:21,23 96:2 96:18 97:2,8 97:17 99:5,6 99:19 110:22
releases 98:5
relevant 6:11 105:4
remained 17:19
remember 13:24 14:24 17:4 21:14 24:1 36:21 38:3 39:19 40:17,22,23 45:11 68:13 69:12 99:1,8 106:6,20 107:7
remote 35:17
remotely 21:22 27:17
rephrase 9:3 73:20
replaced 36:5
report 46:15
reported 1:21 108:8
reporter 2:4 5:19 7:19 17:23 38:16,19 46:5 61:22 108:1,6
represent 20:17 33:12,22 34:1 54:2
represents 53:12
requested 108:23 109:1 111:1,10,11
require 57:16
required 57:9 73:16,21 110:20
requirements 84:19
requires 33:8 50:17
research 29:2,5 40:24 41:12,20 41:23 73:9 77:12,22 78:3 101:9 104:1,12
researchers 77:17
researching 77:18 78:14
resource 82:16
resources 82:19
responsibility 22:12 40:16 42:21
result 65:8 97:25 102:10
results 40:12 47:2 50:1 51:17
retrieve 102:6
return 110:17 111:6
review 11:2 19:25 97:13 108:23,24,25 110:8,10,13

111:2
right 14:19 18:18 20:15 21:25 23:14 26:18 66:3 81:2 83:22 97:10
ring 89:24
rmr 1:22
role 11:9 107:3
rules 7:5 111:8
run 15:11 32:23 46:2,14 46:24 57:24 97:25 98:11 99:15
runs 46:17
russ 2:17

s

s 3:8 5:3,8,8,22 38:22 39:3,3,7 39:7,9,12
salary 12:21
sale 96:6,10,12 96:19
sales 40:15,15
sample 22:10 49:14 51:16
sampling 49:22
samsung 1:6,7 110:4
sanskrit 30:7
sat 95:2
saying 8:4 9:5 17:23 29:22 31:5 46:6 47:18 49:12 61:23 62:4,6,8 76:2 91:15 92:9
says 4:19 22:16 23:6
scenarios 24:9
schedule 110:10
scholer 2:8
school 68:10,19 70:8
science 82:22
scientific 24:6
scope 106:14
scr 52:16,19 53:7,20 54:3 54:15 55:6,16 56:1,7,24,25 57:2,5,9,11,16 57:21,24 58:6 63:22 66:20 87:7 103:21 104:5
screen 18:5,14 18:15 49:13,23
script 31:17,19 31:20,23 35:22 68:6 69:3 71:5 81:9 89:21 90:4,4,6,9 92:18
scripts 31:15 32:6,9 33:20 69:9,18 74:17 74:21 83:17 89:20 90:18
sealed 110:20
search 25:15 87:11
second 53:2 60:10 65:16 66:14
see 22:15,19 23:6 24:20 47:15 53:3,13 56:6,14 58:20 63:8 64:3 68:1 68:3 74:8 87:2 99:20
seen 22:24 34:15 61:17 62:24 67:21
segmentation 58:19 59:3,21 63:10,15,22 64:4,11 65:3,5 65:7 66:19
segmentations 65:24 66:7,16
segmented 66:8 66:11
selected 49:21
sell 75:17 96:21
send 49:14 51:16 102:6,8 102:10
senior 36:18,22 38:6,8,13 40:14 42:2,19
sense 74:9,10 75:13 79:8 80:12 85:18 90:7
sensitive 18:14
sentence 86:21 87:4
separate 86:14 100:4 105:12
separated 104:24
separately 86:13
sequence 53:11 90:20
sequences 91:3
served 40:9
servers 46:25
services 15:6
set 78:25 84:19 84:24,25 88:18 89:1 102:4 109:2
sets 67:11
setting 51:25
seven 36:4
several 16:1 26:3 89:6 97:1 103:7
shake 7:21
shanghai 69:24
shape 90:17
shapes 87:19

share 20:7 24:18 30:20 43:5
shared 22:20 47:21
shell 22:10
shift 42:9,22
shifted 76:15 77:7
short 28:20 105:24
shorthand 108:15,19
show 43:20 49:20
shujing 38:15 39:10,12,15
side 35:7 43:13 79:19 92:16,16
sign 21:6 110:16 111:5
signature 21:4 21:7,8,9 22:3 108:23,24,25 109:9 110:22 110:24,24 111:10
signed 20:13 21:15,16,17,18 21:20 22:19
signing 21:1
similar 9:14 15:19 17:11 105:13
similarities 105:15
simplified 32:1
single 39:6 43:15,17 52:19 53:15,22 54:10 54:12 59:17,19 63:1,14 64:9 64:13 65:4 87:10 104:16
sinologist 37:8 69:16 71:18
situation 80:18
six 36:4 98:1 99:13
skill 67:10,16 70:5 78:25 84:10,19,24,25
skilled 69:17 74:11 75:1 101:16
skills 68:5 73:8 73:16,21 80:24 82:5,8 83:5 84:1
skimmed 11:4 23:24 24:2 56:2 58:2
slant 85:16
slightly 66:1
small 28:17
smart 69:17 79:16
smartphone 18:2
smartphones 16:9
snapshot 84:7
soft 18:3
software 9:24 15:10 16:6 67:17 70:11 72:21 73:1,11 79:24 80:25 82:5 85:5
solution 15:22 50:9,17 61:9 63:10,15,21,24 64:12 68:20 88:2 100:12
solutions 33:9 55:23 63:23 68:7 69:6 70:21,25 71:6 110:7
solve 30:21 64:9,10
solved 58:23,25 65:21 76:8
solving 59:21
soon 46:22
sophisticated 88:2
sorry 44:7,12 67:2 73:20 87:8 92:8 94:22
sort 10:11 17:20 19:9,12 20:13 28:25
34:13 37:13 40:11 42:18 43:18 57:6 61:16 77:5 85:17
sound 8:23 33:22
sounds 23:7 34:1 51:1
south 2:9
speak 6:14 9:15 10:10 39:15,16 41:13 50:15 55:20 61:19 62:19 63:19 64:22 69:12 73:12 79:20
speaker 71:18
speaking 71:5
specific 56:18 68:12 83:13
specifically 59:22 83:6
specifics 15:13
speed 45:16 76:22
spell 4:24 5:11 5:20 13:19 38:17,18
spelled 13:11 14:17
spelling 38:21 39:2,13 47:7
spend 77:5 79:6

spent 76:20
split 45:22 76:10
spoke 60:25
spoken 31:12 31:14
spun 12:11,18 15:3
squares 69:1
ss 5:7 108:2
stage 58:23 59:1 60:20 65:6 87:7
stamp 20:14,20
standalone 17:16 57:1
standard 15:15
stands 29:22 52:19,22
start 60:5,23 70:9 91:9 104:2,25
started 13:9 14:23 28:11 41:6,22 43:14 44:14,21 45:11 46:24 48:6 94:13,15,21,22 99:14,17 100:2 100:6 104:6
starting 8:6 104:25
starts 65:12,15 65:17
state 2:4 4:13 22:6 53:1 108:2,7 109:4 110:9,12
states 1:1
stay 71:22
stayed 36:2
sternby 25:25 40:21 42:11,25 52:5 69:8 75:23 76:20 77:8 101:1
sternby's 78:25
stipulation 110:21
straight 33:3 69:1
strategies 44:19
street 2:9 5:12 5:14,20,21,23
strike 67:2 88:5
stroke 53:19,20 60:15 65:13,16 65:17,25 66:1 66:3,14 68:12 70:8 90:17,23 91:17,18,19 104:16,24
stroked 92:4,5
strokes 32:18 32:19 33:2 53:11,18,18 54:2 65:10,11 65:21 66:9,9 66:12,21,23 68:18 102:9 104:21,22
structure 6:24 7:7 13:2
student 26:16 26:19 95:12
students 36:20
studied 37:9,11 69:13 79:17,25
studies 68:2
study 69:25
styles 92:1,4
submitted 18:19
subsidiary 6:19 6:21 11:18 14:7
subsidy 6:17,18
suitable 19:23
support 17:2 18:19 57:22 90:9 92:17 93:3
supporting 42:14 50:22 77:2
supports 90:5
sure 14:21 22:18,24 38:20 39:11 40:25 48:13 51:18 52:12 55:9 64:17 76:24 93:17 94:15,24 95:15 98:22 101:14
surname 39:11 39:16
swap 72:9
swear 34:10
sweden 4:16 6:6,7,8,14 12:16 14:9,16 21:22,25 26:9 35:13 40:7 41:4
swedish 6:12 6:16,18,25 11:18 12:12,19 12:22 14:13 37:10 70:19 72:20 89:23 90:2,11 91:20 92:19
swiping 18:3
switch 74:22 80:21
switched 29:12 42:11 44:21
switching 71:25
sworn 4:6 108:13
symbian 16:2
symbols 30:8
synchronously 47:1
synergies 16:25

system 15:12 15:16,25 31:4 46:2,10,12,19 46:21 48:3 49:8,10,12,20 54:3,7,9 63:3 81:23 102:5,15
systems 33:8 81:13,15 83:8 86:5

t

t 3:8 5:22 13:11 18:8,11 38:24 39:3,3,5,6,7 53:22 66:2,13 66:18,25
t9 16:6 17:4,9 17:10,11,20,20 18:1
taiwan 32:3
take 7:20 8:15 8:22 22:11 52:11 68:9 72:1,11,12 74:3 97:11
taken 42:21
takes 48:4
talk 8:1 10:15 23:17 58:18 59:8 67:4 90:16
talked 65:3 67:7 86:22 88:15
talking 96:3 107:9,10
talks 63:9 87:6
tap 18:15
task 99:15 102:6,16
tasked 81:14
tasks 74:24 81:20 82:17,25 83:1
teaching 78:7
team 26:12 27:9,15,23 28:6,16,22 29:4,14 30:5 30:10,11 34:19 35:6,9,19,24 36:8,12,14 37:2,16,23,25 38:4,9 39:20 40:4,8,21,22 41:18,22 42:11 42:12,18 43:1 43:2,3 45:10 45:10 46:4 50:25 51:4 52:6 67:12,13 70:12,12,13 71:19,22 72:6 72:16,17 73:17 73:17,22,23 75:3,4,11 76:16 78:1,16 78:17,19,21 79:5 80:1,14 80:17,20 81:1 81:2 82:7,8,10 82:11 83:18 84:23 85:1 94:1 100:4,8 100:10,18,20 101:2,3 102:20 102:24 103:4
teams 28:3 29:25 30:4 35:12 43:25 45:18,23 67:5 67:12 72:10,14 72:25 75:11,19 75:23 77:9 79:1 81:18 83:20 84:1
technical 33:9
technicality 12:23
technobase 28:21
technologies 29:25 30:15,16 41:23 84:5,12 93:8 94:3 106:5
technology 9:25 16:4,17 17:2,10,16,16 19:17 28:9,20 28:22 29:9,13 29:17 30:6,12 30:13,13,19 33:18 34:12,14 34:21,22 35:3 35:4 36:1 41:9 42:3,5,15,17,19 47:21,25 54:19 54:21 55:2,21 57:20 70:23 72:1 75:12 76:9,12 77:17 78:5,9 79:17 81:5,7 82:16 83:11,19 84:6 84:9,18 105:13
tell 7:13 49:2
temporarily 80:22
test 46:6,20 81:12 85:9
tested 46:18
testified 4:8
testify 4:6 10:7 108:13
testifying 9:21 10:24 106:13 107:14
testimony 9:12 47:14
testing 46:21
tests 45:20 46:1 46:3,13,25
text 16:5,15,20 16:23,25 18:4 19:19,21 22:25 23:10 90:16,19
tf 53:21

thank 4:12 5:9
theme 59:25 61:15 62:25 63:21 64:15 106:21 107:1 107:10
themes 106:25
thereof 108:22 109:2
thesis 26:16,19 26:24 94:25 95:3,12
thing 8:19 15:19,19 51:14 63:6
things 10:9,11 10:14 12:19 37:5,20 42:14 45:7,8,18 49:23 55:1 59:24 62:18 74:12,13 80:16 81:13 85:14 104:9
think 10:20 11:25 13:15 14:2,9,12 16:3 16:13 17:13,14 19:24 24:3 26:3,17 27:2 27:13,19,21 29:4 32:4,14 36:3 37:12 39:6,13,14 40:23 41:5,6,8 41:13,19 44:9 45:3 47:24 50:7 51:6 55:19 61:14 62:7 75:7,16 76:6 77:25 78:15 83:11 86:11 89:8,13 93:4 94:13,17 95:5,8 97:11 99:4 100:9,15 101:5,6 106:25 107:3,22
third 65:17 66:2
thought 62:2 70:4
three 16:10 26:7 33:23 35:17 36:23 60:18 65:10 66:9,23 89:24 97:23 98:1 99:13
threshold 74:22
time 7:3 8:4,18 11:7 12:12 16:11 26:14,17 27:8,21,23 28:10,16,25 29:20 38:5 40:3,11 41:14 42:3 44:16,20 45:6 46:14 48:17 72:2 74:4 77:5,20 77:20,25 78:17 79:6,13 84:17 86:12 88:12 89:7 93:5,12 93:15 94:18 95:8 96:24 97:4,18 100:5 100:23 103:2 110:10,18,25 111:7
times 8:8 16:10 75:24 97:24
tl 66:5
today 4:12 7:7 9:3,12,18,21 10:8,24 11:3 17:22 21:18
today's 7:8 20:18
together 27:15 42:8 60:15 72:23 86:10
told 10:9,10
tons 73:24
took 14:1,23 29:16 35:25
tool 34:23 45:25
tools 81:18
top 6:3 18:2 22:2 53:20 57:2 103:23
topics 64:23
total 62:20
touch 18:14 49:22,25
touchscreen 49:18
trace 18:2,16
track 71:16
trademark 1:1
traditional 32:2
train 51:23
trained 51:11 52:2 75:1
training 28:21 51:21 52:1 76:21
transcribed 108:15
transcript 108:17 110:6,8 110:10,13,13 110:22 111:2,2
transcription 108:18
transfer 14:12 14:15
transferred 12:17 100:7,8
transferring 100:18
transition 65:20
transitions 65:20

translator 6:10
trial 1:3
true 108:18
truth 4:6,7,7 7:14 9:15 108:14
truthful 9:11
try 8:3
trying 47:10 63:17 82:1
turning 93:20
two 5:7,18 6:2 8:3 10:20 14:13 26:2 29:14,25 31:24 34:6,17 35:12 36:3,17,22,23 36:24 38:10 40:5 42:20 51:22 53:18 56:19,22 60:8 60:17,23 61:4 66:5,12 67:11 72:13 76:8,21 76:23 77:6 89:25 90:1,5 92:4 97:23
type 8:3 15:5,6 16:6,15,17 18:12,16 83:13 84:14 94:7,10 96:4,15
types 28:4
typewriting 108:16
typewritten 108:16
typically 46:17 68:17 90:7 97:22 98:8,15 98:20
typing 17:5 47:9

u

u 13:11,13 14:18 36:12 39:9,12 60:7,9 91:7
u.s. 1:14 3:13 22:5 23:17
ui 37:21 44:1,3 44:22,23 45:21 56:1 84:23
uis 43:22
uk 92:1,2
um 91:10
uncertain 39:4
under 4:8 7:10 51:18
understand 6:8 7:6,9,12,15 8:13 9:2,6 11:16 18:23 19:2 35:21 48:2 67:23 70:20 74:4,9 81:8 82:1 84:10
understanding 12:20 33:19 62:13
understood 9:7 23:4 55:10 69:18
united 1:1
university 69:25 77:12
unlocking 76:10
upper 66:4,10 66:17
uppercase 66:24,24
use 15:13 16:2 19:1 25:16 30:8 31:2,15 31:16 33:18 55:16 56:6 57:3,7 60:14 86:5,9 90:24 102:9 105:7
used 4:18 17:3 17:4 28:2 31:8 32:3 33:7 35:20 39:4,6 47:20 56:25 57:11,20 84:25 86:6,16,17,18 90:15,18,21 91:20 105:13
user 15:21 28:18 37:17,18 37:21 40:7,8 43:10,24 44:4 44:5,10 45:1,4 45:5 47:16 48:19,24 49:3 49:5,12,19,21 50:3,9,10,12,17 50:18,20 51:8 51:12 57:4,6,6 60:2,4,5 68:1 68:17 70:4 86:3,6,14,15,17 88:11 100:19 102:7,7,11,12 102:23
users 93:11
uses 89:21,23
using 15:23 16:11,13 48:8 57:21,21 90:4 93:7
usually 68:25 68:25
utilize 68:16
utilized 43:22
utilizing 67:5

v

v 1:9 110:4
valid 12:7
variation 66:16
variations 68:23 85:12
varied 43:5 67:24
various 58:4
verbal 7:22
veritext 110:7,9 110:11,20

versa 80:15
version 25:10 25:14 94:20 95:14,24 96:20 97:23
versions 31:24
vertical 53:19 65:25 66:3
vice 80:14
videoconfere... 1:16 2:1
view 58:15 63:20
viewed 56:18
viewer 81:19

w

w 18:11 39:10
wait 8:5,11 62:1
waived 108:24 110:24,24
waiving 110:21
wang 38:15 39:10
want 14:13 23:16 25:15 32:22 80:18 82:23 83:20
wanted 23:6 42:4 43:21 44:22
wants 47:9
way 9:4 11:13 25:18 39:6 43:23 63:25 68:15 70:8 92:14 94:15 95:10 108:20 108:22
ways 17:6
we've 29:24 67:7 75:10 88:25
wednesday 1:18 2:2 4:2 108:10
went 44:23 78:19
wilshire 2:18
win 16:1
windows 15:14 15:24
witness 5:21 17:25 19:8 31:10 33:15 38:18,20 46:7 50:7 54:6,17 54:24 55:9,19 56:9,17 57:19 59:5,16 62:7 62:17 63:13 64:6 67:15 70:15 71:21 73:6 75:6 76:5 77:11 79:3 80:3 81:4 82:13 84:4 85:3,25 88:10 89:18 91:17 92:14 96:9 99:1 102:2 103:6,19 108:9 108:13 109:2 110:13,16 111:2,5
word 6:20 7:20 16:12 19:1 20:23 25:16 47:9 62:8 91:9 104:15
wording 24:9
words 90:20
work 11:17 13:9 21:21 26:7 29:3 33:16 34:11 39:25 41:13,22 42:16 45:19,20 45:20 46:1 48:22 51:2,21 52:5 70:2 71:25 72:5 74:12,22,23 75:8 77:23 80:12 82:3,15 82:22 84:24 85:9,22 86:8 95:10,10 99:14 99:16 100:1,3 101:1 102:19 104:6
worked 19:17 26:21 27:22 28:7,8,14,16,23 28:25 34:20,22 35:19 40:14,16 40:24 41:11 42:2,8 43:1,7,9 44:2,4,7,9,15 45:1 48:19 51:7,9,20 52:7 70:1,2,3 77:20 79:8,11 82:2 85:6,19 94:19 95:2 100:19 101:7,8,9,11 102:21,23 103:3,7 105:17
working 10:1 12:23 13:4 27:4,6,14,19 29:4,15 35:2 37:6 41:14,17 43:3 44:14 70:22 71:2,9 71:14,17 72:8 72:23 73:4 78:1 80:9 81:11 82:24 89:15 92:15 94:2 95:7 100:22,23
works 10:12 80:21
write 31:15 32:18,19,20 53:17,18 54:14 65:25 66:2 68:3,11,17 70:9 85:10,15

85:16 88:11 91:6,25 93:12 104:14,15 105:8,9
writes 46:8 88:21
writing 31:4 33:7 41:10 60:5 61:9,10 71:15 85:13 91:4
written 11:8,13 12:4 31:12 60:2,5,13,19,21 61:20 65:10 68:13 107:5,7
wrote 19:18 93:22

x

x 3:1,8 5:22 18:7 108:25
xt9 17:21,24 18:8
xx 111:10

y

y 18:11
yamal 31:22
yeah 4:24 6:7 14:15 19:25 20:23 22:18,19 24:3,14 27:18 31:10 34:10 36:16 40:15 41:3 42:13 43:4,12 44:9 44:24 45:7 46:7 48:21 52:8,12,12 55:12 56:25 57:10 58:12,21 70:15 71:4 74:16 75:6,25 76:10 77:13 79:3 84:4 87:6 87:9,14 88:17 89:10,11 91:17 95:21 96:12,21 105:14,20 106:21 107:12
year 13:25 26:16,22,25 27:12 97:24
years 12:8 27:3 27:15 29:10 36:4,17,22 37:10 39:25 40:2,5,25,25 41:3 42:20 44:2,17,25 76:21,23 77:6 86:12 97:5 107:7
yellow 20:13

z

z 13:20,22 87:16
zebra 13:22
zed 13:20 32:15 89:21,23
zi 12:8,10,14 13:16,17,19,25 14:4,6,7,7,10 14:11,15,22 15:1,18,21 16:4,18,19 17:9 44:18 78:18
zi's 17:15
zip 5:16