IN THE COMPETITION APPEAL TRIBUNAL

Case No: 1403/7/7/21

Salisbury Square House
8 Salisbury Square
London EC4Y 8AP

Wednesday 29th January 2025

Before:
Ben Tidswell
Dr William Bishop
Tim Frazer

(Sitting as a Tribunal in England and Wales)

BETWEEN:

Dr. Rachael Kent **Class Representative**

v

Apple Inc. and Apple Distribution International Ltd **Defendants**

APPEARANCES

Mark Hoskins KC, Tim Ward KC, Michael Armitage, Matthew Kennedy, Antonia Fitzpatrick, (Instructed by Hausfeld & Co. LLP) On behalf of Dr. Rachael Kent

Marie Demetriou KC, Brian Kennelly KC, Daniel Piccinin KC, Hugo Leith, Hollie Higgins (Instructed by Gibson, Dunn & Crutcher UK LLP) On behalf of Apple Inc. and Apple Distribution International Ltd

Wednesday, 29 January 2025

(10.30 am)

(Open session)

PROFESSOR AVIEL RUBIN (continued)

Cross-examination by MR KENNEDY (continued)

THE CHAIRMAN: Mr Kennedy.

MR KENNEDY: Sir, I propose to do about an hour in open, and then I would like to go into closed for a short period, perhaps following the transcriber's break in terms of running order.

THE CHAIRMAN: Yes, thank you.

MR KENNEDY: Good morning, Professor Rubin.

A. Good morning.

Q. You recall that yesterday afternoon we were looking at the various participants in the payment process for in-app purchases, yes?

A. Yes.

Q. We saw that the third parties that were involved in the actual world, so people like the card schemes, would remain involved in the counterfactual world, but that different entities would be involved in providing merchant of record services or other payment related services, do you recall that?

A. Right.

Q. So I want to pick it up by focusing on the entities that

would change in the counterfactual, so the alternative providers of merchant record or other payment services.

It is your evidence, Professor Rubin, that in the absence of the Payment System Restrictions, the security of iOS device users' personal and financial information would be compromised because they may be required to share those details with other entities, some of which may not be as secure as Apple, is that a fair summary?

A. That is one of my opinions, yes.

Q. When you refer to personal information, are you referring to iOS device users' names and addresses in this context?

A. I think those would have been included.

Q. Anything else?

A. Their credit card numbers, various transaction details.

Q. When you refer to financial information, are you referring to credit card numbers and debit card numbers?

A. Yes.

Q. Also transaction information that you just referred to?

A. Right.

Q. Professor Rubin, you accept that any entity that collects and/or retains payment card information and associated personal information must be PCI-DSS certified, yes?

A. Yes.

Q. PCI-DSS is an information security standard designed to reduce payment card fraud by increasing security controls around cardholder data, yes?
A. Yes.
Q. The PCI-DSS are administered by the Payment Card Industry Security Standards Council, yes?
A. Yes.
Q. So any third party that provided merchant of record or other payment related services to app developers and iOS Device users in the counterfactual would need to be PCI-DSS compliant, yes?
A. Yes.
Q. But your evidence is that PCI-DSS compliance is not sufficient?
A. Well, it is not as good.
Q. Not as good as?
A. As IAP.
Q. I want to look, Professor Rubin, at what Apple has required in circumstances in which it has relaxed the Payment System Restrictions, and if we can pick it up at {D2/1792}, and that is going to be tab 40 of the white bundle you have in front of you.

If I could just take you to start on page 1 so we can see what the document is, please. This is an extract from Apple's developer website and it concerns

changes that Apple has made in the Netherlands in respect of distributing dating apps, and for dating apps in the Netherlands you are no longer required exclusively to use IAP, do you recall that?

A. Yes.

Q. If we go over the page to page 2 {D2/1792/2}, we can see a heading, heading 3. Can we zoom in on heading 3, please. We see:

"Enter your payment processing information."

These are instructions for the developer who wishes to avail themselves of the new options.

"Enter the name and website of your payment service provider (PSP). Before your entitlement can be assigned, you must certify that your PSP meets the following criteria."

First bullet:

"Meets level 1 payment card industry (PCI) compliance for handling credit and debit card data, or complies with the payment services directive when not handling credit and debit card data".

"PCI" in that bullet appears to be a reference to PCI-DSS that we have just been discussing, yes?

A. Yes.

Q. If we go to {D2/203/1}, and that is the next tab for you, Professor Rubin, it is tab 31. Again, this

document is a screenshot of Apple's developer website. In this case it is discussing use of alternative payment options on the App Store in the European Union, so this is in light of the changes Apple has made under the DMA, and you are aware that following those changes, it is also possible in the European Union to use an in-app payment services provider, other than IAP, yes?

A. Yes.

Q. Let us pick it up on page 8. {D2/203/8}. If we could look at the second half of the document, "Submitting Your App for Review in App Store Connect".

We see:

"When submitting your new app binary for review in App Store Connect, make sure to follow these submission requirements as well as the alternative terms addendum for apps distributed in the European Union, the App Review Guidelines and the Apple Developer Program Licence Agreement.

Then if we skip down to the final black bullet, we see:

"The name of your payment service provider (PSP) is included in the review notes. Make sure the PSP is ready to complete transactions in your app. Your PSP must ..."

First sub-bullet:

"Meets Level 1 Payment Card Industry (PCI) compliance for handling credit and debit card data."

Again, that appears to be a reference to PCI-DSS that we have just been discussing, yes?

A. Yes.

Q. Then finally, South Korea, if we go to {D2/497/3}. This is going to be electronic only, because the hard copy got cut off. Can we pick it up on page 1 again so we can see what the document is. {D2/497/2}. Again, an extract from Apple's developer website, this time concerned with the changes made in South Korea, and you are familiar with those changes which allowed developers to use in-app payment services other than IAP, yes?

A. Yes.

Q. Let us go to page {D2/497/3}. Can we go back over to page 2 just briefly and we will pick it up right at the bottom, and you will see that there are four PSPs that are currently qualified to provide a payment processing system, and then if you pick it up after the bullets it says:

"If you prefer to use a different PSP, enter their name and website information for consideration [etc]."

Then if we pick it up at the end of the paragraph, it says:

"Your PSP will need to offer the following ..."

If we could flick on to the next page, we see:

"Privacy, security, and fraud prevention services consistent with industry standards."

Would you agree that "consistent with industry standards" would include consistent with PCI-DSS?

A. I think it should include that. Probably should have said that.

Q. So what we see, Professor Rubin, is that when Apple has relaxed the Payment System Restrictions in other jurisdictions, it has required developers to use a payment service provider that complies with PCI-DSS level 1, yes?

A. Yes.

Q. Staying on the topic of South Korea and the Netherlands, Dr Lee has said in his evidence that he is not aware of any attacks that have arisen as a result of the changes that Apple has made to the Payment System Restrictions in South Korea and the Netherlands, yes?

A. He did.

Q. You have not identified any attacks which have arisen as a result of those changes either, correct?

A. Correct.

Q. And those changes in each case were introduced in 2022, correct?

A. I think so.

Q. If we could pick up {D2/1023.1}. It is tab 47 for you, Professor Rubin. Just to make the date good. If we could zoom in a little bit. This is again an extract from Apple's website and if we pick it up we see the date is March 30, 2022, and:

"Since February of this year, developers of dating apps on in the Netherlands have been able to use the Store Kit External Purchase Entitlement."

Which is the reference to changes regarding IAP, yes?

A. Yes.

Q. Then {D1/1304}, and 48 for you, Professor Rubin, we see an update on apps distributed in South Korea, dated June 30, 2022, and if we look at the second paragraph we see:

"The Telecommunications Business Act in South Korea was recently amended to mandate that apps distributed by app market operators in South Korea be allowed to offer an alternative payment processing option within their apps."

So again, 2022.

A. Yes.

Q. If we could look at what you say in your report, Professor Rubin, about why PCI-DSS is not sufficient, we will pick it up in second Rubin at para 211 and that is

{C3/6/95}. You say:

"Moreover, although PCI-DSS level 1 does require an external audit for compliance, different auditors may have different standards and auditors may still miss issues. Further, just because a company was complying at the time of an audit, does not mean that the company will remain in compliance afterwards. Indeed, many well-known companies that have suffered data breaches claimed to be PCI-DSS level 1 compliant. Such companies include Target, Home Depot, Adobe, TJX, Equifax and others."

Yes?

A. Yes.

Q. But you do not in this paragraph point to any specific examples of companies providing PCI-DSS audit services applying different standards, correct?

A. I do not call that out in this paragraph.

Q. You do not identify any specific examples of companies providing PCI-DSS audit services missing issues, correct?

A. What was the last word?

Q. You do not identify any companies providing audit services missing issues?

A. Missing issues?

Q. You say they may apply different standards and may still

miss issues.

A. Missing issues. Okay. I do not.

Q. Let us look at the two examples you give, Dr Rubin, of companies that have suffered data breaches. The first is in 213, and it is Home Depot, and this data breach exploited a weakness in Home Depot's point of sale system, correct?

A. Yes.

Q. A point of sale system refers to the physical payment console which is used in a physical store, yes?

A. Yes.

Q. So this was not an attack which affected in-app transactions for digital goods, correct?

A. That is right.

Q. Let us look at the second example, it is over the page, and you say, this is 214 {C3/6/96}:

"Even entities that comply with industry standards may not engage in sufficient data protection or suffer from other vulnerabilities, including but not limited to human errors, insider threats and failures in other parts of a transaction workflow. By way of example, Cornerstone Payment Systems is a credit card processing company that advertises itself as offering 'a full compliment of merchant processing services', where it will 'authorise and settle transactions for all major

credit cards' [and so on]."

Then the next sentence:

"In 2022, it was discovered to be using an insecure database to store its transaction records and customer information."

Yes?

A. Yes.

Q. Is it your evidence that Cornerstone Payment Systems was compliant with PCI-DSS, notwithstanding the data breach that it suffered?

A. I do not say anything about that in my report and I do not have specific information, but I believe that to operate in the size and scale that they do, you would have to have that.

Q. But at the time of the breach, do you think that they were complying with PCI-DSS or not complying? If the answer is "I do not know", then the answer is "I do not know".

A. I want a clarification on the question. Are you asking if they would have passed a PCI-DSS audit or if their behaviour was in compliance with the standard?

Q. The confusion, Professor Rubin, arises from your report. You say in the introductory sentence "Even entities that comply with industry standards", and then you say "by way of example", which I take to refer back to the

previous sentence, and then the example is Cornerstone Payment Systems. But as you have said, what you do not go on to do is say: and the data breach was as a result of non-compliance with PCI-DSS or otherwise. So I am simply seeking to clarify your evidence.

A. Right. So I think it would have been better for me to say even entities that have passed PCI-DSS audits, as opposed to saying that they are actually complying.

Q. Okay. Let us have a look at who Cornerstone Payment Systems are. We can pick it this up at {D1/820}. Let us pick it up at 1. It is tab 39 for you, Professor Rubin. We can see the title of the article, "A Christian-friendly payments processor spilled 6 million transaction records online".

If we read paragraph 1:

"A little-known payments processor, which bills itself as a Christian-friendly company that does 'not process credit card transactions for morally objectionable businesses', left online a database containing years' worth of customer payment transactions."

Do you see that?

A. Yes.

Q. If we go over the page, top of 2, {D1/820/2}:

"Security researcher Anurag Sen found the database.

TechCrunch identified its owner as Cornerstone Payment Systems, which provides payment processing to ministries, nonprofits and other morally aligned businesses across the US, including churches, religious radio personalities and pro-life groups."

Yes?

A. Yes.

Q. I will ask you to take it from me, but Cornerstone is not identified by Mr Burelli, Dr Lee or Mr Howell as an entity that is likely to offer payment-related services to iOS App developer in the counterfactual, and I am going to suggest that it is unlikely that Cornerstone provide payment-related services in our counterfactual?

A. That is not something that I can comment on. I do not know if they would offer an app or not.

Q. Let us go to first Rubin, para 323, {C3/2/165}. If we pick it up at 322:

"Deficient, vulnerable or malicious in-app purchase channels would considerably harm iOS users' security and privacy."

Yes?

A. Yes.

Q. Then you say:

"Indeed, external payment platforms have been used as vehicles for stealing a user's financial information.

For example, a user may use a vulnerable or malicious payment website, sometimes which masquerades as a legitimate payment platform, to obtain credit card and banking information."

Then footnote 381, you give an example of an attack on Shopify and BigCommerce, yes?

A. Yes.

Q. Let us have a look at, I think it is the second document that you identify in that footnote. It is {D1/394}. Professor Rubin, that is tab 35 for you. If we pick it up at the bottom of page 1, you see:

"This month we came across a combination of two types of attacks. Hackers are infecting checkout pages on legitimate e-commerce sites ..."

I think that is a reference to the two e-commerce sites that are identified in the footnote, yes? Shopify and BigCommerce, I think.

A. I think that is right, yes.

Q. Then if we go to bottom of {D1/394/4}, we see a heading "Malicious Redirect". Then top of {D1/394/5}, which is the first substantive paragraph under that heading, we see:

"Let's get back to the compromised e-commerce sites."

Again, it appears to be a reference back to Shopify

and BigCommerce.

It says:

"The infection is very simple. Hackers simply add a short JavaScript snippet to checkout pages."

Yes?

A. Yes.

Q. That is -- the nature of the attack was a JavaScript injection attack, is that correct?

A. Yes.

Q. JavaScript is a web programming language, correct?

A. Yes.

Q. JavaScript is interpreted code, correct?

A. Yes.

Q. Native iOS Apps are written in languages like Swift or Objective-C, correct?

A. Yes.

Q. Those languages are compiled rather than interpreted, yes?

A. Yes.

Q. The code for a native iOS app cannot be altered after App Review because of code signing?

A. Not without detection, correct.

Q. Not without deduction. The hash values would be different and it would be rejected from being downloaded or being run on the app, correct?

A. Yes.
Q. It follows that a JavaScript injection attack, such as the ones described in this article, could not be used to steal an iOS device user's financial information if that user was using a fully native iOS app which integrated, using only native code, an alternative payment services provider's payment service instead of Apple's IAP, correct?
A. If I understand your counterfactual here.
Q. I can repeat the question if it is helpful.
I appreciate it is a very long question. If it would be helpful?
A. Please.
Q. It follows that a JavaScript injection attack, such as the ones described in this article, could not be used to steal an iOS device user's financial information if that user was using a fully native iOS app which integrated, using only native code, an alternative payment services provider's payment service instead of Apple's IAP?
A. I do not agree with that.
Q. The MageCart attack which you describe in 323, worked in the same way, correct? That was also a JavaScript injection attack?
A. Yes.
Q. Professor Rubin, you are aware that iOS Apps that sell

physical goods and services must use payment services other than Apple's IAP, yes?

A. I did not hear the whole question.

Q. I am sorry. You are aware that iOS Apps that sell physical goods and services, so we are talking about physical goods and services in-app purchases, they must use payment services other than IAP?

A. Yes.

Q. In your reports you do not present any evidence that suggests that iOS Device users that make in-app purchases of physical goods and services through iOS Apps have had their personal and financial information compromised as a result, do you?

A. No.

Q. If we could stay in first Rubin but go to paragraph 319, which is just over the page to 164 {C3/2/164}, you say:

"IAP offers an architecture in which transaction information is known to be cryptographically signed; this cryptographically signed transaction information is provided to developers to verify proof of purchase of in-app purchases, subscriptions, and other digital content."

Yes?

A. Yes.

Q. Can we go to {D2/1002} and it is tab 49 for you,

Professor Rubin. This is an extract from Apple's website that explains what a transaction is, and this is what you are referring to in paragraph 319, yes?

A. Yes.

Q. We see "Overview":

"A transaction represents a successful in-app purchase. The App Store generates a transaction each time a customer purchases an in-app purchase product or renews a subscription. For each transaction that represents a current purchase, your app unlocks the purchased content or service and finishes the transaction."

Yes?

A. Yes.

Q. If we go over the page, we can see what tasks a developer can perform using a transaction. They can get the transaction history, latest transactions, current entitlements to unlock content and services, and so on.

A. Yes.

Q. So a transaction in this sense provides information about in-app purchases a user has made to the developer of the iOS app in question, yes?

A. That is correct.

Q. This has nothing to do with the encryption of iOS device

users' personal or financial information when it is provided to third parties, such as payment services providers, correct?

A. This section is dealing with developers only, yes.

Q. But transactions in this sense have nothing to do with the provision of information, encrypted or otherwise, to third parties. It is exclusively a service or mechanism that Apple provides to developers that allows communication between the app and the developer so that the developer understands what the user is entitled to in terms of in-app purchase, yes?

A. Correct.

Q. That is its only functionality, correct?

A. As far as I understand it.

Q. Let us talk about fraud detection. A debate has emerged between you and Dr Lee about fraud detection. What I want to do is show you the relevant parts of your reports and ask you some questions, okay?

A. Sounds good.

Q. Let us pick it up at first Lee, para 132, that is {C2/5/76}.

A. Is this in my binder? I do not have Lee's first report.

Q. It may be in your binder. I am using my copy. But if you give me one moment I will tell you if it is in your binder.

Tab 20, Professor Rubin. Try that.

A. Of the white binder?

Q. Of the white binder, yes.

A. I have found it, yes.

Q. What we see is:

"When it comes to detecting and stopping fraud, data from the ASPS is much narrower in scope than that used by large third party payment systems that service numerous customers through numerous channels. As a result, the ASPS may miss the opportunity to detect suspicious transactions early (ie before there is already clear evidence of financial loss to consumers) because the ASPS does not have data regarding the merchant's behaviours in other online commerce activities that can be utilised for fraud detection in in-app purchases. For example, in 2019, Apple facilitated approximately $61 billion in sales of digital goods and services. Stripe, on the other hand, processes hundreds of billions of dollars in transactions each year. Payment companies, in addition to following strict security and privacy standards, have a long history of detecting and stopping a wide range of thefts, scams and fraudulent activities. For example, they have been dealing effectively with credit card frauds for decades. Their rich experiences, diverse

data sources, and large transaction volumes would, if permitted, help them effectively deploy their fraud detection algorithms for all types of in-app purchases on iOS."

Yes?

A. That is what he said, yes.

Q. Dr Lee repeats that opinion in his second report at paragraph 133. We do not need to turn it up. But what Dr Lee says is:

"As I explained in Lee 1, my opinion is that in-app aftermarket service providers, such as Paddle and Stripe, are in fact better at detecting fraud than IAP/ASPS in the actual world."

Yes?

A. He said that.

Q. Let us see what you say about it. It is second Rubin, paragraph 206, and that is {C3/6/92}. You say -- let us pick it up on 93. You will see -- about a third of the way down, you will see a sentence beginning "However"?

A. Yes.

Q. You say:

"However, Dr Lee's opinion about the significance of the volume of transactions is overly simplistic. I have discussed in section VI.C1 above that various aspects of the training dataset affect the performance of machine

learning algorithms, including data quality and relevance. Specifically, Apple's IAP transactions involve transactions on the iOS platform for digital goods. I understand that Apple utilises data collected from IAP transactions to train its own fraud detection tools that continue to analyse IAP transactions on iOS for digital goods."

Then you quote from Mr Schiller's statement.

If we pick it up after the quote:

"Therefore, Apple's transaction data is highly representative of what the fraud detection tools encounter. In contrast, although third-party payment providers may gather larger volumes of data for their machine learning tools (on which Dr Lee never provides evidence), such data is likely to be less precise and relevant to in-app purchases on the iOS platform, particularly those involving digital goods. As Dr Lee also admits, these third party marketplaces 'service numerous customers through numerous channels.'"

Yes?

A. Yes.

Q. Let us just have a look at what you say in your first report about data and training of machine learning algorithms. It is first Rubin, 328. That is {C3/2/118}. That is a bad reference. I will get you

the correct reference.

A. I have found it.

Q. For the EPE, it is {C3/2/168}. We see:

"Use of IAP for all purchases of digital goods and services also builds a large, and continually growing, dataset that can be used by Apple's fraud algorithms to detect fraudulent activity, as well as to learn new patterns of fraudulent activity."

Then if we pick it up two sentences down:

"In other words, a machine learning model performs better where the data it uses to train, or learn from, does not over or under-represent the particular type of behaviour that they are seeking, but also benefits where the data permits them to learn more diverse and nuanced patterns of activity."

Then near the bottom, four lines from the bottom:

"Ensuring the quality and diversity of data inputs is crucial for maximising the effectiveness of machine learning models."

At the risk of over simplification, as I understand your evidence, it is not just about quantity, but it is also about ensuring sufficient diversity of data so there is neither under nor overrepresentation in the dataset; is that a fair summary?

A. Yes, you want the data to match -- you want the training

data to match the detection data as closely as possible.
Q. But diversity is an important element of that?
A. To the extent that diversity will create a representative set of data, then, yes.
Q. What you say here, we saw that from the first sentence, is we are discussing here specifically fraud algorithms in the context of payments, yes?
A. In the context of IAP.
Q. Yes, which is a payment system?
A. Yes.
Q. Professor Rubin, you accept that companies which could provide in app aftermarket services, such as Paddle and Stripe, use fraud detection technology, yes?
A. Yes.
Q. One of the types of fraud that those companies look for is use of stolen credit cards, yes?
A. Surely.
Q. You accept that some of those companies, such as Stripe, process a significantly greater number of transactions as compared to Apple's IAP?
A. Yes.
Q. You accept that some of those companies, such as Stripe, process transactions through numerous channels, not just iOS Apps, yes?
A. Yes.

Q. Some of those transactions are for digital goods and services sold on platforms other than iOS?
A. Yes.
Q. Different purchase channels will likely experience different types of financial fraud?
A. Yes.
Q. Companies that process transactions across various channels, such as Stripe, are therefore likely to have not only a greater quantity of data but also a greater diversity of data on financial fraud than Apple, yes?
A. Yes, I think that is the problem.
Q. Therefore Dr Lee is correct, is he not, that other potential payment services providers, such as Paddle and Stripe, are in fact better at detecting fraud than IAP or ASPS?
A. I would say they are better at detecting generic fraud, but in terms of being a representative dataset to the types of transactions that occur in IAP there is no better source than all the data from IAP, and in fact the data from the other sources that Stripe and Paddle will see will skew the representativeness of the right type of data and actually make them worse at detecting IAP type fraud.
Q. We saw in Dr Lee's first report that Apple facilitated approximately 61 billion in sales of digital goods and

services in 2019, yes?

A. I am sorry, where was that?

Q. It was in Dr Lee's first report, paragraph 312. I can reread you the relevant section. {C2/5/76} for the EPE.

A. Correct, yes.

Q. Halfway down:

"For example, in 2019 ..."

A. I see it.

Q. So that is the figure that we have for Apple in 2019.

Have you heard of Paddle?

A. Yes.

Q. Are you aware that the founder of Paddle, Mr Owens, gave evidence earlier in this trial?

A. Yes.

Q. I want to just show you his evidence on this particular point about fraud detection and digital goods and services specifically. It is Day 3 and it should hopefully be page 123 of the transcript. It is not.

We are running into the same problem we had yesterday, sir. I took the reference from Opus this morning and it is not clear to me why we have different page numbers and line numbers.

THE CHAIRMAN: I am not sure I can do much about that, Mr Kennedy. I mean either you can find a way to ask your question or you cannot, but I am sure Mr Kennelly

is going to say, if you are asking him to look at the transcript, that he needs to look at the transcript.

MR KENNEDY: I am sure he is, sir.

THE CHAIRMAN: If there is some other way of asking the question, then ...

MR KENNEDY: I do not think there is any point in me summarising the effect of Mr Owens' evidence and putting that to Professor Rubin. Perhaps we will try and find a solution over the break and I can come back to the point. Sorry for wasting your time.

Professor Rubin, you gave evidence for Apple in the proceedings brought by Epic Games in the Northern District of California, yes?

A. Yes.

Q. I want to show you the judgment in that case. {AB5/7/1}, and for you, Professor Rubin, it is 51 of the hard copy bundle. Just pick it up on page 1. You will see that this is the Rule 52 Order after trial on the merits, which is what we would call the judgment.

If we pick it up at page 180 {AB5/7/181} very briefly, you will see it is dated 10 September 2021, yes?

A. Yes.

Q. If we go to page 114, {AB5/7/115}, and about two pages into the hard copy for you, Professor Rubin, you will

see a heading, "B Anticompetitive Effects: In-App Payment Restrictions", yes?

A. I see that.

Q. So you get your bearings, we are in the section of the judgment that is dealing with specifically the facts regarding in-app payment restrictions, okay?

A. Okay.

Q. If you go over two pages, 117 for the EPE {AB5/7/117}, and pick it up just above the heading "Business Justifications", we see:

"Apple cites three additional pro-competitive business justifications for its payment processing restrictions:

As with app distribution, Apple cites security, including privacy and fraud prevention, collection of its Commission, and compensation for its intellectual property. The Court addresses each justification --"

A. I am not sure where you are reading.

Q. I am sorry. It is the paragraph just above the heading "2. Business Justifications". Do you have that?

A. Okay.

Q. Do you see:

"Apple cites three additional ..."

A. Okay, thanks.

Q. I will just let you read that. (Pause)

A. Okay.

Q. So three pro-competitive justifications. The first is security. Then if we see subheading (a) just below that, "Security". Do you have that?

A. Yes.

Q. Then we will see:

"Dr Rubin opines that by maintaining all transaction data in one place, ie centralisation, Apple is better able to detect new patterns in fraudulent transactions using algorithms. Dr Rubin also claims that Apple benefits from its visibility into the entire transaction, which allows it to verify certain transactions.

"As explained above, the Court agrees that decentralisation may decrease security in some instances. The other arguments cut both ways. For instance, with respect to scale and fraud mining, Dr Rubin suggests that having more data points will always lead to better fraud detection. Apple admits, however, that IAP is not the largest in-app payment service because it processes at most 3% of in-app purchases. Thus, to the extent that scale allows Apple to better detect fraud, other companies could do it better because they process more transactions."

Yes?

A. Yes.
Q. So the evidence you gave in the United States was to similar effect to the evidence that you have given in these proceedings, yes?
A. Yes.
Q. The court in *Epic* rejected your evidence, yes?
A. I think they said it cuts both ways. So I think they did reject what I said but allowed for the fact that there is merit to my point.
Q. I think they were addressing a different point. If we pick it up in the final sentence:

"Thus, to the extent that scale allows Apple to better detect fraud, other companies could do it better because they process more transactions."

So they rejected your evidence and came to the same conclusion as Dr Lee, yes?
A. Right.
Q. Presumably you were aware that the court in *Epic* had rejected your evidence in this regard?
A. I actually have not seen this before so I did not know that.
Q. Go to first Rubin, paragraph 339. {C3/2/174}. We are back on the topic of fragmentation of information. Picking it up halfway down:

"A similar concern ..."

Do you see that?

A. Yes.

Q. "A similar concern will arise in connection with identifying fraud in in-app payments; payment data for digital goods in the EU will now be fragmented across multiple app marketplaces and payment processors. Every party involved in iOS transactions for digital goods, Apple included, will receive fewer signals of payment fraud or abuse. Every marketplace will inevitably be less efficient in rooting out these threats."

Yes?

A. Yes.

Q. In the actual world, alternative providers of payment services for in-app purchase of digital goods and services cannot provide those services, correct?

A. Which services?

Q. Payment-related services for in-app purchases of digital goods and services, it is only Apple at the moment?

A. Right.

Q. So third parties currently receive no signals associated with those purchases, correct?

A. I could split hairs here and say that the registered credit card for IAP gets to see all the transactions, so I am not sure that is entirely correct.

Q. They receive fewer signals than Apple, certainly.

A. Yes.
Q. But in a counterfactual world, potential alternative providers of payment services could process payments for in-app purchases of digital goods and services, yes?
A. Yes, if it was opened up then they could.
Q. In that world they would receive more signals --
A. Probably.
Q. -- for fraud. So it is not correct to say that every party would receive fewer signals of payment fraud or abuse, is it?
A. That is true.
Q. If those alternative providers were receiving these new additional signals, that should actually improve the datasets that they use to detect fraud, yes?
A. Yes.
Q. It may make them more efficient in identifying fraud?
A. It would make them more efficient.
Q. Or more effective, I should say?
A. Either one.
MR KENNEDY: Sir, we are slightly ahead of time, but that takes me to the private session. I may have a couple of questions I could do in open to take us a bit further along, so that we do not ...
THE CHAIRMAN: Just so I understand, if we did a private session that is not the end of --

MR KENNEDY: It is not the end of it, sir. The private session concerns two Apple documents which are entirely confidential and one of the topics we just covered, and it concerns Apple's ability to carry out fraud detection in the counterfactual, which requires looking at confidential numbers. So it is sort of on the topics that we have been looking at, so the natural place to do it is now, but I also do not want to inconvenience you or ...

THE CHAIRMAN: Well, it is a little bit early, is it not? So unless you think it presents you with a problem, do you mind coming back to them?

MR KENNEDY: I do not mind, sir. If you give me one minute just to find the right place to pick up.

THE CHAIRMAN: Yes, of course. (Pause)

MR KENNEDY: If we go to first Rubin, para 326, so back a couple of pages, page {C3/2/167}.

And pick it up near -- about five lines from the bottom you see:

"The availability of ..."

A. Yes.

Q. "The availability of payment mechanisms could also permit exploitation of the fragmentation of information about the transactions in question; a malicious actor could choose to spread its fraudulent transactions

across multiple payment mechanisms in order to limit the amount of information that each mechanism sees, and thereby reduce the likelihood of detection of a pattern of those fraudulent activities."

A. Yes.

Q. On other digital content platforms, it is possible for developers and users to use multiple different payment methods, yes?

A. Yes.

Q. Where the Payment System Restrictions do not apply, it is possible to use multiple different payment mechanisms for in-app transactions within iOS Apps?

A. If they are available, yes.

Q. But you have not presented any evidence that the type of fraudulent activity you describe here actually takes place where multiple payment mechanisms are available, do you?

A. I do not have examples of that.

Q. Moving away from fraud detection and staying with fragmentation of information, one of the other consequences of fragmentation of information that you identify is you say there will be a burden on developers and users to discriminate between safe and unsafe payment services providers, yes?

A. Yes.

Q. So what I want to do is I want to start with developers. Let us pick it up at first Rubin, paragraph 321. So again, back a couple of pages. {C3/2/165}.

You say:

"The burden of selecting, evaluating, and utilising in-app purchase providers in a fair and secure way falls more heavily upon both users and developers where alternative payment mechanisms can exist alongside IAP."

But you do not refer in this paragraph or anywhere else to any materials in which iOS app developers have indicated they would be burdened if they were able to choose between using IAP or an alternative payment service provider, do you?

A. I do not have any surveys or anything like that.

Q. Let us go to the CMA's report and appendix H. It is {AB6/33/1} and it is tab 52 for you. Are you aware that the Competition and Markets Authority carried out a market study into mobile ecosystems?

A. Yes.

Q. This is appendix H to that study which specifically addressed Apple's and Google's in-app purchase rules, so it addressed, amongst other things, the Payment System Restrictions, okay?

A. Okay.

Q. If we pick it up at paragraph 40 which is page 12.

{AB6/33/12}. It is near the bottom of the page. What we see is:

"Most of the large app developers that responded to our requests for information said that Apple's and Google's payment systems are in various ways limited compared to the alternative payment solutions available from PSPs. Almost all developers said that they would not use Apple's or Google's payment systems if they were not required to. Some highlighted the difference in Commission between the Apple's and Google's systems and third-party PSPs as the main reason. However, many stated that the alternative payment solutions they used elsewhere were preferable, irrespective of the Commission, as they offered greater flexibility and functionality and enabled the developer to offer a more consistent user experience across platforms."

Yes?

A. Yes.

Q. So the reality is that iOS app developers actually want to be able to choose between alternatives to IAP, do they not?

A. I think that is a fair inference from what you read me.

Q. Just as you do not refer to any survey evidence or any evidence as to developers being burdened, you similarly did not refer in your reports to any materials in which

iOS Device users have indicated that they would find it difficult to choose between payment options, do you?

A. I just want to clarify that I did not necessarily focus on the users finding it difficult, but rather that they may not be in a position or may not choose the most secure option. That is the point I am trying to make.

Q. Let us look at Dr Lee's evidence again. Second Lee, paragraph 129, at {C2/13/72}. It is page 72 that we want. That is tab 51 for you, Professor Rubin. The paragraph beginning "Professor Rubin states ..."

A. Okay.

Q. We see:

"Professor Rubin states that there would be a new burden on developers and users in the counterfactual to select secure alternative in-app aftermarket services providers in circumstances where they may not be equipped to make a well-informed choice ..."

Then you see he quotes from your report?

A. Right.

Q. Then if we pick it up over the page, he says:

"I disagree."

Then the next sentence:

"In summary, there would be no additional security/privacy risk in the counterfactual as developers and users would not be required to select

between secure and insecure service providers as alternative services providers are required to comply with strict security standards. Developers would be able and incentivised to choose secure in-app aftermarket service providers to provide a high quality of service to their users, and even if there were insecure service providers in the counterfactual, users are used to making payment-related decisions in their everyday lives (eg in the context of online commerce) and would be able to do it in the same way in these circumstances."

Dr Lee is right about that, is he not?

A. I do not think so.

Q. Professor Rubin, first Rubin, paragraph 292. It is {C3/2/152}. We are back to App Review.

A. Okay.

Q. Just a short question on that. Give me one moment. We see:

"Apple's App Review, combined with its requirement to use IAP, provides significant protections against some common (and relatively easy to instigate) frauds."

Then you give some examples of the types of fraud you are addressing, yes?

A. Right.

Q. In this paragraph, are you addressing the review of

in-app purchases as part of Apple's App Review?

A. In this paragraph I am talking about the combination of having App Review and IAP together.

Q. What is the nature of that combination? That is my question. Sorry if I was not clear.

A. So each one of those serves as a layer of security. So with App Review, you get certain guarantees that Apple will apply a certain level of checking of whether an app does things that do not meet the guidelines, and then with IAP you know that Apple is going to be involved in every transaction. So Apple would have the ability to take the information learned in one layer of security and use it in another layer of security, which is really where the strength of the multi-layer approach lies.

Q. Let us just look at the examples. The first example of fraudulent pricing is where a developer tells the user that a digital item costs $1.99 but then charges $2.99.

A. Right.

Q. Is it your evidence that Apple discovers that through App Review or through IAP or through a combination of the two?

A. It could be post-review monitoring, post-deployment monitoring. It could be -- if it was done in App Review, the app probably would never have been deployed. So I think in this example, this would be something they

would find some other way.
Q. What is the other way?
A. Perhaps users notified of this charge on their credit card statement, so they contact Apple and say, hey, I was led to believe it would be this much but then I got charged this much.
Q. That would have nothing to do with IAP, correct?
A. With IAP they will come back to Apple. If there was an IAP, and there was a third party provider like Visa or someone like that, then they would go to that entity and Apple would not see that.
Q. But that is just due to the nature of it being a different service provider and nothing peculiar to IAP's functionality in that example?
A. Right.
Q. What I am trying to establish is: is there some particular functionality of IAP that allows Apple uniquely to identify the fraudulent pricing schemes that you address in this paragraph?
A. It is just the fact that Apple is the centre point of contact for the users.
Q. When you say centre point of contact are you going back to your email or something else?
A. That is part of it.
Q. So you do not identify any sort of automated

functionality with an IAP that allows Apple to identify the fraud that you identify here?

A. Right.

Q. Likewise, the second example: unauthorised recurring charges where a developer tells the user that an item costs $1.99 but then proceeds to charge $1.99 per week, you do not identify any automated or unique functionality of IAP that allows Apple to identify that type of fraud?

A. That is right. It is really just the fact that the user would always contact Apple in the IAP if they are using IAP but if they are not using IAP Apple may never learn about this and thus will not be able to identify that this developer wrote this app that had this particular feature.

Q. If you go to paragraph 295, which is over the page, Professor Rubin. It is another example of financial fraud. {C3/2/153}. You say:

"In addition to fraud associated with payment schemes, Apple also protects against other forms of financial fraud, including apps that facilitate fraudulent and deceitful behaviour in loan services such as SpyLoan apps that lure users into high-interest-rate loans and harvest the users' financial and personal data ..."

Then you give an example which is the SpyLoan, yes?
A. Yes.
Q. We see that:
"Security company Lookout discovered 35 iOS SpyLoan apps and 251 Android SpyLoan apps."
Yes?
A. Yes.
Q. Which were then removed by Google and Apple respectively?
A. Yes.
Q. So those apps made their way on to the App Store, yes?
A. Yes.
Q. So they were missed by Apple's App Review, yes?
A. Yes.
Q. If we go over the page, just to pick up a point about the DMA, 296 {C3/2/154}:
"SpyLoan apps violate Apple's App Store Review Guideline, such as Guideline 3.2.2 which is crucial to significantly lowering such practices on the iOS platform. However, SpyLoan or similar practices where an app developer creates an app presenting deceitful loan terms for financial gain may now be possible under the DMA, given that that Guideline [...] will not be enforced ..."
Yes?

A. Yes.
Q. If we go back to the counterfactual world we considered yesterday in which Apple is applying not the notarisation for iOS subset of the guidelines but the full set of guidelines, the full set of guidelines would continue to apply and continue to prohibit apps such as the SpyLoan app, yes?
A. Yes.
Q. Sir, we are now sort of moving on to a topic that is quite far removed from what we have just been discussing so I do not know if that is a convenient --
THE CHAIRMAN: Yes, why do we not take a ten-minute break now and when we come back we will start in closed session. So how long do you think you will be with that?
MR KENNEDY: In closed, sir, I think -- give me one moment, I will tell you. It is about ten pages, sir.
THE CHAIRMAN: I am just wondering whether we are going to have a delay at the other end, but I think perhaps not, if we are switching from private to ...
MR KENNEDY: I think there is a delay both ways, sir, of a few minutes.
(Pause)
I may actually be able to cut one bit of the cross-examination short. So why do I not ask one final

question in open, and that may get rid of a whole section. Why do we not do it that way and then we can see, sir.

THE CHAIRMAN: Yes.

MR KENNEDY: Professor Rubin, I want to go to your second report and paragraph 201. That is {C3/6/91}. Let us pick it up at the second sentence of 201:

"IAP functionality, however, provides a number of security and fraud-detection benefits beyond pure payment processing that might be lost if an alternate payment system provider were utilised."

Yes?

A. Yes.

Q. Let us go over the page to 204, page {C3/6/92}, and you say:

"Apple provides the following security mechanisms that accompan[y] various aspects of Apple's IAP workflow. Not all third-parties are guaranteed to apply these security protections."

Yes?

Then you set out a number of items in a table?

A. Yes.

Q. Are these items in the table the security of fraud detection benefits beyond pure payment processing that you say might be lost if an alternate payment system

provider were utilised?
A. Yes.
Q. Just to be clear, you are not saying that no third parties provide these security protections, you are just saying that not all third parties provide these security benefits, is that correct?
A. That not all could or not all would, correct.
Q. But you are not saying that no one who is a third party could provide those security protections?
A. Well, some of them. I do not know how a third party would provide family controls, for example.
Q. We can go and look at the evidence on that, but I am just trying to clarify your position. I will restate the question a different way.

You accept that some third parties can provide either some or all of these security protections?
A. I would agree with some.
Q. Some. Are you familiar with the particular services provided by different third party payment services providers, such as Paddle?
A. To some degree.
MR KENNEDY: To some degree. Sir, that may be a convenient moment before I get into the table and back into Mr Burelli's evidence, sir.
THE CHAIRMAN: Good, thank you. So we will take

a ten-minute break and we will resume again in closed session.

(11.31 am)

(A short break)

(11.43 am)

(Private session)

(12.16 pm)

(Open session)

MR KENNEDY: Professor Rubin, second Rubin, 204, which is {C3/6/92}.

A. Okay.

Q. You recall we were looking at this table, and I asked you whether you were familiar with the service offerings of any third party such as Paddle, and I think your answer was "some"?

A. Right.

Q. So what I want to do is just go through the table and have a look at each of the items and have a look at what other third parties might be able to provide, okay?

A. Okay.

Q. So let us pick it up at item 1 on the left-hand column, "Authentication and ID Technologies". We also see across item 2, under "iOS Developers", we see "ID and Authentication Tools". Are they referring to the same thing?

A. Yes.
Q. Is "authentication" a reference to technologies such as two-factor authentication?
A. Yes.
Q. Is "ID technology" a reference to Touch ID and Face ID?
A. Those would be relevant to that.
Q. If we could go to the joint statement which is {C4/139}. It should be the third tab for you, Professor Rubin. Page {C4/139/39}. It is IC.i-13. We see:

"App Review, Face ID and two-factor authentication, and fraud checks do not inherently require the use of ASPS."

The final column is you, and we see your answer:

"I understand that App Review, Face ID and two-factor authentication on iOS may run without Apple's IAP."

Yes?

A. Yes.
Q. So other providers of payment services in the counterfactual could use two-factor authentication and Face ID or Touch ID, yes?
A. Yes.
Q. Then the second item in the first column is fraud and abuse protections, and I think that you accept that Dr Lee does address that in his evidence?

A. We have some disagreements about it but he does address it.
Q. You accept that alternative providers of payment services provide fraud and abuse protections, yes?
A. I do not accept that they can do it as well as Apple but they could offer such services.
Q. Item 3 in our list, customer support. We are going to have a look at Mr Burelli's evidence on this. It is {C2/6/1}. Let us start on page 1. Tab 31. Expert report of Francesco Burelli. Do you see that?
A. Yes.
Q. Mr Burelli is an expert in payment systems, he is instructed by the Class Representative, and this is his first report in these proceedings, okay?
A. Okay.
Q. Let us go to paragraph 57 which is at page {C2/6/23}. We see:

"Below is a table (table 2) comparing the MoR services ..."

"MoR services" is merchant of record services, okay?
A. Okay.
Q. "... that Apple provides with those [...] of a selection of other MoRs. I have chosen FastSpring, Paddle and BlueSnap for the purposes of this comparator analysis because they are established and reputable MoRs who

provide detailed publicly available/referenceable information about the services they provide.

So what Mr Burelli is doing in this table is looking at some of the sorts of companies that might enter the in-app Aftermarket in the counterfactual and looking at what services they provide?

A. Sure.

Q. The first column, you see services provided by Apple. That column has been populated based on Mr Burelli's review of Mr Schiller's statement and Mr Lloyd's affidavit, okay?

A. Okay.

Q. So that is what we are looking at. Let us go over the page, {C2/6/24}, and pick it up in the second row. We see:

"Customer support including managing refunds, cancellation, chargebacks and disputes."

If we look under each of the three columns that follow, FastSpring, Paddle and BlueSnap we see three ticks, yes?

A. Yes.

Q. So each of those potential alternative service providers provide customer support, yes?

A. Just like with fraud I do not think they can do it as well, but they do provide such services.

Q. Just focusing on one second on refunds you see that that includes refunds?
A. I am sorry.
Q. We are just looking at the left-hand column, "customer support, including managing refunds"?
A. Okay, sure.
Q. I just wanted to focus for one moment on refunds. What we see from this table is in the counterfactual alternative merchants of record could provide refunds to iOS Device users, yes?
A. They could.
Q. I think it may unfortunately be convenient to keep Mr Burelli's evidence open and flick back and forth from your report to Mr Burelli. Item 4 is age verification and authentication; do you see that?
A. Yes.
Q. You do not provide a reference for what that is and it does not appear in Mr Schiller's statement but are you referring to Verify with Wallet API?
A. For purchases that require someone to be of a certain age they provide age verification.
Q. Who provides?
A. Apple.
Q. Is it part of the IAP functionality or was it part of the verify -- we can look at a document if it is going

to help. Let us go to {D2/526.1} and it is 57 of your bundle. This is from Apple's website. You see the heading "Get started with the Verify with Wallet API?"

A. Yes.

Q. You see:

"Apps that require age or identity verification can use the Verify with wallet API."

A. Sure.

Q. Is that what you are referring to?

A. Yes.

Q. This is not part of IAP but rather part of the Apple Wallet app, yes?

A. Yes.

Q. Have you any reason to believe that alternative providers of payment services could not use the Verify with Wallet API?

A. I do not believe there is a problem with that.

Q. Item 5 in your table, "privacy protections". Again, no reference. My question is, are you referring here to the handling of iOS device users' personal and financial information?

A. I am referring to the fact that IAP -- when using IAP the information about the users only goes to Apple and then it can go to -- some of it can go to developers but it is much more controlled than if you were using other

parties that might also get more of the information.
Q. Just to clarify, what information are you referring to?
A. For example, financial, credit card numbers, things like that.
Q. What of that information goes to Apple?
A. All of it.
Q. Because Apple store credit card information on the device?
A. On the device?
Q. On the device.
A. It can.
Q. Does it store it as credit card information or does it store it as something else?
A. I would need to look back at some documents. It might be stored as tokens, but I do not remember off the top of my head.
Q. What information is provided to developers?
A. I cannot say off the top of my head. I would have to look.
Q. So if you are not able to say what information is provided to developers in the actual world, are you able to say what information would be provided to developers in the counterfactual world?
A. So, I recall that there is a list of information that developers get somewhere in my report. I think we even

referenced it, that developers can set up -- for example, if you are buying something in a game the developer would need to know what it is that you bought, so that they could give you that item because that would come from the developer.

Q. Are you referring back to the transaction --

A. Yes.

Q. -- method?

A. Yes.

Q. But you accepted earlier that that had nothing do with the provision of personal and financial information from users to third parties?

A. Correct.

Q. It just concerned users' entitlements to, for example, to access some gold coins, yes?

A. Right.

Q. So it is nothing to do with the credit card information?

A. I do not think the developer would see the credit card information.

Q. Item 6 is family controls. Is this a reference to Apple's Ask to Buy feature?

A. This is a reference to the ability for people in the same family to use the same account. Like if I buy an app my son can download it and not pay for it again if I am using Family Sharing.

Q. So that is Family Sharing rather than Ask to Buy?
A. Yes.
Q. Then item 3 on the developer's lists, so the second column, you see "chargeback management"?
A. Yes.
Q. If we just briefly go back to Mr Burelli's table so it is {C2/6/24}, tab 31 for you, Dr Rubin. Just looking at the second row:

"Customer support, including management refunds, cancellation chargebacks."

Again, three ticks. We have seen that. So other providers of payment services also provide developers with support for chargebacks, yes?
A. Yes.
Q. Item 4, "Risk and fraud tools (such as App Attest and DeviceCheck)."

Can we go to {D2/174}, an extract from Apple's website?
A. I am sorry, which tab is this?
Q. It is not in hard copy, I am afraid. Just on the screen. So an extract from Apple's developer documentation. DeviceCheck. You see "Overview":

"The DeviceCheck service consists of both a framework interface that you access from you app and an Apple server interface that you access from your own

server."

Then we see:

"Using the DCDevice class in your app, you can get a token that you use on your server to set and query two binary digitals of data per device."

Then if we just pick it up in the final sentence:

"The server to server APIs also let you verify that the token you receive comes from your app on an Apple device."

Yes?

A. Yes.

Q. Then if we can scroll down a little bit so we can get the second paragraph more clearly. Just pick it up in the second sentence, so the paragraph starting "someone". Let us look at the second sentence:

"The App Attest service gives your app a way to assert its validity so that your server can more confidently provide access to sensitive resources."

Yes?

A. Yes.

Q. It seems from this document, Professor Rubin, that these services can be used by an iOS App developer regardless of whether they are using Apple's IAP for in-app purchases for digital goods and services; is that correct?

A. That is possible.

Q. Item 5, under "developers", "management information and reporting".

If we go back to Mr Burelli's report, {C2/6/24} staying in Table 2. This time looking at the seventh row. So you will see "currency conversion" and then you will see:

"Recording sales and generating receipts (to sub-merchants (iOS app developers) and customers (iOS Device users), including providing transaction statistics/analytics and summaries)."

Is this the sort of thing you are referring to when you refer to management information and reporting?

A. Yes.

Q. Again, we see three ticks which indicates that these potential providers of payment services also provide those services to iOS app developers, yes?

A. Yes.

Q. Nearly there. Item 6, "developer support" in your list. Then staying with Mr Burelli's Table 2, this time row 5, so two rows above the row we just looked at.

"Ensuring developer compliance with regulatory statutory and tax obligations."

Is this the sort of thing that you are referring to when you refer to developer support?

A. That is part of it. Also including things like if a developer maybe notices that there is a user that is using stolen credit cards, for example, so they have a problem so they could report that to Apple and Apple could help them deal with that.

Q. Then that concludes the table, Professor Rubin. There is just one similar item I wanted to pick up. It is first Rubin, paragraph 324, {C3/2/166}. I have given you a bad reference, Professor Rubin. Forgive me. {C3/2/167}. So over the page. Pick it up at "in addition":

"In addition IAP aids in allowing iOS users to manage recurring payments for digital content subscriptions, by seeing in one place a list of the recurring payments ..."

Yes?

A. Yes.

Q. If we go back to Mr Burelli's report which is {C2/6/24}. It is 31 for you, Professor Rubin.

A. Yes.

Q. It is the third row of the table, "Providing subscription management services". We see two ticks for FastSpring and Paddle and then for BlueSnap there is additional text which says, "Through integrations" with other third parties, yes?

A. Yes.
Q. So again, what we see is that alternative providers of payment services also provide subscription management services, yes?
A. But not nearly as well.
Q. Sir, if you give me one moment because we have been jumping around. I just wanted to make sure we have covered everything we need to cover.
THE CHAIRMAN: Of course. (Pause).
MR KENNEDY: You will be delighted to hear, Dr Rubin, no further questions from me.

Re-examination by MR KENNELLY

MR KENNELLY: Dr Rubin, I want to begin, if I may, with some of your cross-references. Could I ask you to be shown the transcripts from yesterday, page 73. So {Day11/73:17}. I hope my references are okay. Here we go. So if you recall you were being shown paragraph 146 of your first report and if you go to line 17 you have been taken to the sixth sentence of -- there you see -- there is no need to turn it up.
A. Okay.
Q. Just read the transcript.
A. Okay.
Q. You see it is your report and you are reading:
"When Apple's analytical tools determine that an app

improperly collects location data ..."

Do you recall that from yesterday?

A. Yes.

Q. So just read through that, please, and then over the next page. {Day11/74:1}. You said in your report:

"When Apple's analytical tools determine that an app improperly collects location data and sends such data to data brokers without user consent, this app is rejected."

Then you were asked questions about where you got that from; do you recall?

A. Yes.

Q. If you can read down, please, to the end of that page and then over the page, maybe let the document presenter know when you have got to the end of page 74. (Pause).

A. Okay.

Q. Next page, please, {Day11/75:1}. Just read down to line 7.

A. Okay, I have read that.

Q. Can I show you Mr Federighi's witness statement in these proceedings, {B2/3/26}. If you could read paragraph --

A. 86?

Q. Could you read paragraph -- is that the right? Yes, paragraph 85. So it is the previous page. {B2/3/25}. So it begins at 85. So if -- yes, thank you?

A. That is good.
Q. There you go, and you can read the top of page 26. The rest of that paragraph 85.
A. Yes.
Q. Is there anything you want to add if anything to what you said to Mr Kennedy?
A. Yes, so I would cite to this.
Q. Could you now be shown, please, from the transcript yesterday, page 65. {Day11/65:6}. Again, this is a quotation from paragraph 140 of your first report. It is an inverted commas from line 7. Do you see that, Dr Rubin?
A. Yes.
Q. Could you just read down, please, to line 15. (Pause).
A. Okay.
Q. Again, there was a question about where this was coming from. Could you read, please, over the page, {Day11/66:1}. Please read this carefully, Dr Rubin, and let us know when you have finished reading page 66.
A. Okay. (Pause). Okay.
Q. Now page {Day11/67:1}. (Pause).
A. Okay.
Q. The top of page 68, down to line 4. {Day11/68:4}. Do you recall that?
A. Yes.

Q. Could you now be shown Mr Federighi's witness statement again, {B2/3/26}. It is at paragraph 86 and 86(ii) in particular.
A. I see that.
Q. Is there anything you want to say about your answer that the bit about "manipulating users to purchase was an interpretation"?
A. So actually Mr Federighi states it here and it should have cited here, says, "more than 153,000 submissions which were rejected as being, spam, copycats or misleading to users in ways such as to manipulate them into making a purchase", which is the part of the sentence that I was being questioned about, what my source was for that.
Q. On Steam, Dr Rubin, you were asked a question about Steam. Now can we have again from the transcript, {Day11/103:1}. You were taken to a report from the Australian Proceedings, the report of Dr Somayaji. Do you recall that?
A. Yes.
Q. Can you look at page 18, please.
A. Okay.
Q. Can you read down to the bottom of the page.
A. Okay.
Q. (Pause). Next page, please, {Day11/104:1}. No, that is

all you needed to see was the previous page.

Now could you be shown {G1/13/64}. I am sorry, first of all, page 1 just to make sure you understand what you are looking at. Do you recognise this document? {G1/13/1}

A. Yes, this is my report for Australia.

Q. Could you be taken to page 64, please. {G1/13/64}. Over the page, page {G1/13/65}. Could you please read paragraphs 117 to 119. So let the document presenter know, please, when you have got to the end of that page. {G1/13/65-66}.

A. Next page, please. (Pause). I have finished 117.

Q. Sorry, did you read 118?

A. Yes, 118.

Q. So you finished that, have you?

A. I am sorry?

Q. I am asking you to read paragraphs 117 and 118 and 119.

A. Okay. (Pause). Okay, next page. {G1/13/67}. (Pause). Okay.

Q. So having refreshed your memory there, what if anything do you want to add about malware being extremely rare on Steam?

A. Yes, so as I gave in the Australian report there are many factors to consider about why there might be less malware on Steam and I actually do give an example of

malware that was on Steam. The number of apps is very, very small compared to the App Store and they all focus on games. The Apple App Store has apps that are a wide variety of different uses, in addition to games, such as finance, entertainment, transportation, I mean, you name it just about everybody has an app from the iOS store and Steam is just limited.

Steam is also written by a company called Valve which has to interface with Microsoft because the Steam store runs on Windows and there can be interactions between those that would present security challenges for Steam. So altogether I think that looking at a small store for games with a tiny, tiny fraction of the number of apps there are for iOS and claiming there has not been malware on Steam, even though there actually has been, is not a fair comparison.

Q. Doctor, you were asked several questions about a counterfactual world -- we are moving on from Steam now -- in which Apple continues to do full App Review of every app?

A. Right.

Q. On iOS but there is decentralised distribution. I can show you Day 11, just to recall the answer you gave, {Day11/120:14-18}. The question was about what information would not be available to Apple in that

counterfactual of decentralised distribution?

A. Right.

Q. You see that you mention marketing material and user reviews?

A. Right.

Q. I want you to consider the second counterfactual that was put to you by my learned friend which is decentralised payment providers. So the counterfactual where there is decentralised distribution and decentralised payment providers?

A. Okay.

Q. Can I show you {C3/2/168} to refresh your memory. This is your first report. Could you please read 328 and 329. (Pause).

A. Okay, next page. (Pause). {C3/2/169}. Just paragraph 328?

Q. Also 329. (Pause)

A. Okay.

Q. So on a counterfactual on a decentralised distribution and decentralised payment providers what if anything would you add to the answer that you gave my learned friend about the information that Apple would not have?

A. Right, so Apple with the decentralised distribution model loses a lot of signals about what is happening with an app, for example, feedback that comes from users

to the third party store would not be something that Apple would have and with payment systems there are similar concerns that users -- let me give an example.

Say that a user has a child who gets ahold of their phone and knows their pass code and starts making a whole bunch of in-app purchases, Apple can -- the user can complain to Apple and get that resolved somehow. If you have a situation where you have third parties, then the user would have to go to that credit card company and resolve that and Apple might not even know that any of this happened and so they would lose some of the signals that they need and in my report I emphasise the importance of all of the information collectively that Apple gets to train its model and I discussed the success that they have had in stopping so much -- so many fraudulent transactions and preventing 3.9 million stolen credit cards being used.

Q. Looking at the question of incentives, again in this counterfactual, the counterfactual of decentralised distribution first.

A. Sure.

Q. Could I show you your second report, {C3/6/61}. Paragraph 173. Sorry, 137.

A. Okay.

Q. Could you please read that and footnote 170. (Pause).

A. Just 137?
Q. Yes, and footnote 170, please.
MR KENNEDY: Sir, I am sorry to interrupt my learned friend but I think that the supplementary report referred to in 170 is from the Australian Proceedings.
MR KENNELLY: Just the text and the footnote.
MR KENNEDY: Of course Professor Rubin was not sworn on his Australian reports.
MR KENNELLY: I am happy to give up the text in the footnote if that is a problem.
A. Okay.
Q. Thank you, Dr Rubin. So again, we are assuming counterfactual where you have centralised Apple App Review, so Apple is doing all the App Review but there is decentralised distribution and we are thinking about attacker incentives, incentives of attackers?
A. Right.
Q. What change if any would there be to attacker incentives in that counterfactual?
A. So if you look at an attacker who is actually hosting a third party app store their business model may be that they want to have as many downloads as possible, maybe they are selling advertising or they want to bring as many users to their site, and so they would not have the same incentive that Apple has to provide accurate

reviews and to provide a safe app store the way Apple does.

Q. If one were to remove the payment restrictions, so now we have a decentralised distribution system and decentralised payments. Could you go on, please, to page {C3/6/97} in the same report and paragraph 217. Could you read paragraph 217, please. (Pause)

A. Okay, I think it is on page 93. (Pause). Okay.

Q. Again, thinking about attacker incentives in a counterfactual you have decentralised payment providers as well as decentralised distribution. In that counterfactual what change if any would there be to attacker incentives?

A. So in a counterfactual where the in-app purchase is not required and there are third party payment providers, there would be additional incentives for an attacker to attack because the attack surface would be expanded, meaning there would be more points of vulnerability. So now instead of just having to attack Apple as they had to in the past they could succeed by attacking a merchant bank, by attacking a credit card provider or anyone acting as a third party provider like Paddle or someone like that.

Q. Thank you, Dr Rubin. Now, the final question, and it goes again to the counterfactual that has been put to

you. It was suggested to you that the assumptions that you are being asked to make were based on Mr Kosmynka's evidence.

A. Right.

Q. I do want to show you that evidence so you are very clear about the assumptions that were put to you in the counterfactual.

Can I show you first, what Mr Kosmynka said in the chance transcript about post app distribution checks. That is {Day5/219:1}. It is line 7. I am sorry, this is -- should be 219 line 7. It is about Mercury. Just give me a second. So give me a second, sir, because if we search for Mercury we will get the right page.

(Pause).

{Day5/209:7}, please. Mr Kosmynka was giving evidence about the automated tools that Apple would use to check on malicious apps after they had been distributed. You see at line 15 you see that?

A. Yes.

Q. Mr Kosmynka said:

"The Mercury tool would be involved ..."

Then he goes on to mention ratings and reviews but he is saying the Mercury tool would be involved. Do you see that?

A. Yes.

Q. Now can I show you Mr Kosmynka's statement, {B2/6/19}. Could you read, please, again very carefully paragraph 70 and 71, 70 and 71 which goes through the tools, the various ways the feedback loop works that information can be channelled through to Apple.

(Pause).

A. Okay.

Q. Now can we go to the particular question that my learned friend asked you, {Day11/140:9-16}, yesterday. Do you see there where my learned friend said: "professor Rubin, drawing the threads together ..." and he re-stated his question. He said: "In the light of the assumptions I have asked you to make", and that is the assumption where Apple does all the App Review, still running Mercury but there is decentralised distribution?

A. Okay.

Q. Decentralised payment providers as well. What I am going to suggest to you there will be no material reduction in the identification and removal of malicious apps post-distribution in the counterfactual world and you said, "I disagree with that".

Could you explain to the Tribunal why you say in a counterfactual where you have a centralised review by Apple but coupled with decentralised distribution and

decentralised payment providers the loss of security would be material?

A. Yes, so one of the things that Apple does, and Mr Kosmynka discussed in his statement, is post-distribution review, meaning that the security does not stop after the user has downloaded an app and is using it. Apple continues to look at reviews to see if somebody is complaining about the app. They also use their Mercury tool which runs many, many different hardware instances of an app. It runs apps on their large hardware array to see how an app performs and so this is not something that third parties would have access to or be able to do.

So I think that if you were in a third party distribution model you do not know that these third parties are going to do this sort of post-distribution security analysis and vigilance, including using tools like Mercury that Apple's doing.

Q. In addition to the Mercury tool do you see what Mr Kosmynka said about the other tools that Apple would rely on to obtain information post-distribution?

A. Right, so Apple also uses its machine learning tools and it collects information that because it is a central source it is able to see a lot more information than third parties would.

MR KENNELLY: I have nothing further for Dr Rubin.

THE CHAIRMAN: Thank you.

Questions by THE TRIBUNAL

THE CHAIRMAN: I have one question for you, Dr Rubin. I think you have probably answered it in response to a question from Mr Kennelly about the relationship between the two restrictions but could we have a look at the transcript from today, page 24, please.

A. The relationship between what?

THE CHAIRMAN: It is here, I will just show you the question you were asked. Page 24. You see there you have been asked a question -- you are being asked about Paddle and Stripe being better at detecting fraud than iOS or IAP and you say:

"I would say they are better at detecting generic fraud but in terms of being a representative dataset to the types of transactions that occur in IAP there is no better source than all the data from IAP ..."

A. Right.

THE CHAIRMAN: You go on to talk about skew. Can you just explain to me, what you mean by types of transactions that occur in IAP, why it is important to focus on that?

A. Right. So every set of transactions will have certain characteristics to it. If you look, for example, at Amazon where people purchase items and then they get

shipped to their house, you will find certain statistics about how many people in this region are buying this type of thing, how many transactions are between this price and that, and the same with fraud. You will see certain types of fraud will be much more prevalent than other types of fraud.

IAP has certain characteristics that define it because of its nature of being a lot of subscriptions, in-app game features like swords and things that people buy online.

So the type of fraud that you are going to find is going to be very specific to the environment in which it is running and if you were to take all the data Apple collects from IAP and run machine learning on it, you would be very good at identifying similar types of fraud as things that they are used to seeing.

In the term learning machine skew, if you were to take Paddle's database and you say well, they have a lot more financial data than Apple does for IAP, but that data is under different characteristics, different types of transactions. They are not in-app purchases and I feel that that would skew the data to make Apple less accurate at detecting fraud in IAP than it would be with data that was all trained from IAP.

THE CHAIRMAN: So you are saying that if you wanted to

detect fraud in relation to people making digital transactions on iOS the best place to look for data to train the tool is transactions conducted on iOS.

A. I think that makes the most sense.

THE CHAIRMAN: That is the point you make. I understand. That is helpful. Thank you. Are there any points arising from that?

MR KENNELLY: Nothing from me on that point.

THE CHAIRMAN: No. Just checking there is nothing arising from that, Mr Kennedy.

MR KENNEDY: Sorry, sir, arising out of the question you had sir?

THE CHAIRMAN: Yes.

MR KENNEDY: No, sir.

THE CHAIRMAN: Thank you very much. In that case we are finished with Dr Rubin, I think. Dr Rubin, thank you very much for your evidence. You are now released from the witness box.

A. Thank you.

(The witness withdrew)

THE CHAIRMAN: So we are going to move to accounting evidence after lunch and we have got Mr Dudney ready to go at 2 o'clock. Is that the plan?

MR WARD: That is the plan.

THE CHAIRMAN: Okay, we will rise until 2 o'clock.

(1.07 pm)

(Luncheon Adjournment)

(2.00 pm)

Housekeeping

THE CHAIRMAN: Yes, Mr Ward. Just before you get going, there is just one bit of housekeeping. It may be that Mr Kennedy has gone, I think, but there was just the one outstanding point with Dr Rubin, because he produced some corrections, and Mr Ward looks like he does not know anything about it.

MR WARD: I am afraid not, sir.

THE CHAIRMAN: I do not want to leave it as a loose end, because it was left on the basis that we assumed there was not a problem, and Mr Kennedy was going to let us know if there were any issues in relation to the corrections that Dr Rubin gave us and have otherwise gone into the (inaudible). If it is not necessary; I just did not want to lose the point.

MR WARD: I hear from behind me that it is being confirmed now and hopefully we will update you during the court of the afternoon.

THE CHAIRMAN: Yes, that would be helpful, just to make sure we have tied it down, so we all know where we are with that.

MR WARD: Thank you, sir.

MR KENNELLY: I may be able to help you with that, sir. I saw on the screen in the meeting room Mr Kennedy confirmed this morning he had no problem with the corrections.

THE CHAIRMAN: Good. So in that case ...

MR WARD: I will see if he agrees.

THE CHAIRMAN: I am sure he will, because he has told Mr Kennelly, so that is fine. So we are treating that as all been dealt with, and whatever that was, the supplemental report has gone.

MR KENNELLY: Yes, sir.

THE CHAIRMAN: Thank you.

Mr Ward.

MR WARD: Thank you, sir. I would like to briefly raise a short process point relating to the cross-examination which is about to take place, before we call Mr Dudney. It relates to a document we received on Thursday afternoon from Apple. If we could call it up on the screen, it is {CB2/22.1.2}. What you will see is at the top of the page it says "Equations for Dudney". If we could just please scroll very slowly through to the fourth page, you will see that it contains a series of mathematical equations. Thank you. If we just go to the fourth page as well {CB2/22.1.2/4}.

It was served under the cover of an email that

simply said these are matters that Apple "may" wish to put to Mr Dudney, but there was no explanation at all as to where it had come from or what the purpose was or the point that was going to be put to Mr Dudney.

So we were, as I am sure you can appreciate, concerned that this was another attempt to adduce very late expert evidence, and of course had it come during the expert process Mr Dudney could have considered it and responded to it, but instead it came less than a week before his oral evidence.

So as you can imagine, we pushed back. We were told that it is in fact the work product of counsel, and we were given a one-line explanation of what the purpose of all of this was, and we were also told it had not even been discussed with Dr Barnes, so it is not the expert evidence of Dr Barnes.

On that basis we consented to it being added to the trial bundle, but I am sure you can appreciate we are still seriously concerned about the fairness of whatever questions are going to be put on the basis of this document. Mr Dudney has asked for a whiteboard, you can see behind him, because he thinks there may be illustrations that may help deal with it, but my real purpose in raising this is just to make clear that we do reserve our position as to the fairness of any questions

that are put and indeed the weight that could be put on any answers that are given.

That is all I wanted to say at this stage, sir.

THE CHAIRMAN: Yes.

Do you want to say anything at the moment, Mr Piccinin?

MR PICCININ: Not really, sir. It will come up in the course of the cross-examination when we get to it. There is nothing in it other than simple algebra. It was actually us just trying to be helpful to Mr Dudney, because there is no restriction on what I can put to him in the witness box, but it seemed to me it would be helpful to everyone if we gave him a few days' notice.

We gave him a lot more notice than is the practice in the patents court, for example, which is the only jurisdiction forum that I am aware of in which advance notice of cross-examination material is required at all. There it is 48 hours. We gave Mr Dudney almost a week to look at a few equations. There is not even any calculus there, it is literally just algebraic manipulation.

So it is effectively an advance draft of some questions that I was hoping to put to Mr Dudney, expressed in algebraic form.

THE CHAIRMAN: Why do we not see where we get to. No doubt

if there are issues that arise, and the marker has been put down, we will understand.

MR PICCININ: I should say, though, I do apologise to Mr Dudney for the "Equations for Dudney" heading. There should have been a "Mr" there, obviously.

THE CHAIRMAN: It is probably not the point that Mr Ward was concerned about, actually.

Okay, let us see what happens then.

MR LOUIS DUDNEY (called)

THE CHAIRMAN: Shall we swear Mr Dudney in, please.

MR LOUIS DUDNEY (affirmed)

Examination-in-chief by MR ARMITAGE

MR ARMITAGE: Good afternoon, Mr Dudney. I hope you have in front of you a copy of the expert report of Louis Dudney, dated 14 May 2024?

A. Yes, it appears so.

Q. Is that your first report in these proceedings?

A. Yes.

Q. Could we go to the very last page of the document, which is {C2/7/78}. You see "Appendix 7: Signed Declaration and Statement of Truth". Do you have that?

A. I do.

Q. Is that your signature at the bottom of the page?

A. It is.

Q. Could we just go to internal page 42, please, so page 50

in the EPE. {C2/7/50}.

A. Page 42. Is that the report page or is that the numbering system?

Q. It is internal page 42. Then if you look at the Opus numbers in the bottom right, it is {C2/7/50}. I hope it comes up on the screen in front of you as well.

A. Yes, I see that.

Q. Is there a correction you would like to make to this page?

A. Yes. So if look down about two-thirds of the page, the paragraph is numbered A3.1.4, and then there is a subbullet underneath that which is (a). The word "profit" at the end of that statement should read "revenue".

Q. Thank you. Then you should also have a copy of the supplemental expert report of Louis Dudney which is also dated 14 May 2024?

A. Yes.

Q. Is that the second report you gave in these proceedings?

A. Yes.

Q. If we could turn to {C2/9/24}, internal page 18.

A. Yes.

Q. You see the heading "Appendix 2: Declaration and Statement of Truth"?

A. I do.

Q. Again, is that your signature at the bottom of the page?
A. It is.
Q. Do you also have a copy of the supplemental expert report of Louis Dudney dated 9 January 2025?
A. Yes, I do.
Q. Could we then look at page {C2/18/6} of that document. "Appendix 1: Declaration and Statement of Truth".
A. Okay, I am there.
Q. Again, is that your signature at the bottom of the page?
A. Yes.
Q. If we could look at page 4 of this document, please, {C2/18/4}. There are lots of confidential figures and I am going to try and do this without reading anything out. I believe you have some corrections to make to one of the figures in table 1 and then over the page to some of the figures in table 3. So as I say, I do not want to read any of the figures out, and I hope this works.
If we could now go, please, to {CB1/2/1}, which should come up on the screen for you, Mr Dudney. Can you see there is a letter from Hausfeld to the Tribunal dated 27 January?
A. Yes.
Q. If we could go over to page 2, please. {CB1/2/2}.
Can you see that there are two tables on this page? Again, given the confidentiality I will just ask you

this in general terms. Do those tables contain the corrections you wish to make to the tables we just saw in your supplemental report of 9 January?

A. They do.

Q. Thank you. I think I should probably show you the joint experts' statement as well. So if we could go to {C4/6/1}, do you see the joint statement from the forensic accounting experts?

A. Yes, I do.

Q. If we could go to page 6 {C4/6/6}, is that your signature in the bottom left?

A. Yes, it is.

Q. Subject to the corrections that we have been through, do the matters set out in your three reports and here in the joint experts' statement represent your expert opinions in relation to this case?

A. They do.

Q. Insofar as the facts set out in those documents are within your knowledge, are those facts true?

A. To the best of my knowledge, yes.

MR ARMITAGE: If you stay there, Mr Dudney, my learned friend Mr Piccinin will have some questions for you.

A. Okay, thank you.

Cross-examination by MR PICCININ

MR PICCININ: Good afternoon, Mr Dudney.

A. Good afternoon, Mr Piccinin.
Q. I would like to start by orientating ourselves as to what the output of your analysis is and where it is going?
A. Okay.
Q. If you go to {C2/7/12}, please, which is --
A. Is this going to be on the screen or in my binder?
Q. It is probably both, actually, in this case.
A. Both.
Q. Most things will be on the screen.
A. Okay. I will hold off looking it up until you ask your question and then see if I need to look at other parts of my report.
Q. Sure. At the top of the page we have table 2, and that is your calculations of the App Store's profitability in the relevant period, yes?
A. Correct.
Q. You have given three different measures of profitability?
A. Correct.
Q. The first of them is the operating margin or return on revenue?
A. Yes.
Q. The second is return on assets?
A. Correct.

Q. The third is ROCE, or return on capital employed?
A. Yes.
Q. I just note that the numbers up to FY19 are not confidential so we can say those out loud if we need to, but the numbers that you can see in pink from FY20 onwards are confidential, so I am going to try to avoid saying those numbers and I would like to ask you to do the same.

If we need to talk about any confidential numbers then we can go into private, and there will be a session at the end of my cross-examination, I should say, where we will need to do that anyway.

A. I will certainly do my best to not use any of the numbers that are in the pink highlighting as I try to answer your questions, unless I feel I need to. In that case, I will try to identify it so the Tribunal can handle that as appropriate.
Q. Exactly.

Now, all three of your measures have the same numerator, do they not?
A. Yes.
Q. Which is essentially revenue minus costs?
A. Yes. There are categories of costs, but to keep it simple, yes, it is revenue minus what I would refer to as cost of goods sold and operating expenses.

Q. Yes, I am glad you raised the question of categories because I was just going to try and settle some terminology with you as we go.

So when I am going to be talking about costs today I am going to try to distinguish between what I will call cost of sales, by which I mean both COGS and OCOGS together, and OPEX, and I wonder if that is okay with you, this terminology?

A. Yes. I would -- again, I do not have a problem with that.

Q. Now, because your numerators for these three measures are all the same, it follows that the difference between them is in the denominator, yes?

A. There is a different relationship because of what the measure is, so by definition that would be the case.

Q. So for operating margin, the denominator is just the revenue again?

A. Correct.

Q. So operating margin is always less than 100%, is it not?

A. It is in this case.

Q. But it must be, by definition, because the numerator is revenue minus something and it is divided by revenue.

A. I suppose I might be able to conjure a situation where it would be something different, but I do not think that is applicable here.

Q. So ignoring taxes for the moment, essentially what operating margin tells you is what fraction of revenue is available to the company to contribute to the cost of capital and to profits, is that fair?
A. Yes, just to use my terminology -- it is synonymous, though -- I express everything as a percent, but a percent obviously is the result of the application of a fraction. So it would be the same, but typically that measure is expressed as a percentage.
Q. I should have said what percentage of revenue.
A. That would be the common nomenclature that is used for that statistic in all of the statistics that I have shown.
Q. Got it. So for return on assets, the second measure, the denominator is assets?
A. Correct.
Q. So that is telling you how much of the profit you were making as a percentage of the assets that you were deploying to earn those profits?
A. Correct.
Q. Or to put it another way, the return on assets is the annual return that your assets are generating?
A. As measured by the operating margin, being that measurement of return, since there are different ways that one might measure return. But under that

construct, that is the way that I have shown that amount, is using operating margin as the numerator and assets as the denominator.

Q. I see. For the third measure, which is ROCE, the denominator is obviously capital employed?

A. Yes.

Q. Capital employed is defined to be total assets --

A. Correct.

Q. -- minus current liabilities?

A. Correct.

Q. Current liabilities are those that are due in the next 12 months?

A. Correct.

Q. So capital employed is essentially the amount that your investors, including both debt and equity, effectively have to put up to earn these revenues?

A. I think that is the general purpose of the measure, yes.

Q. So, again, it is giving you a measure of return that the company is generating with the capital that investors provide?

A. Yes, I think that is a fair articulation.

Q. Okay. So to create -- to calculate the first measure, operating margin, you need a P&L, parts of a P&L?

A. You can certainly use a P&L and find those figures.

Q. In particular, perhaps just to make it more concrete, we

need three things. The first thing we need is revenue?
A. Correct.
Q. The second thing we need is the cost of sales?
A. Yes. Or, as we discussed earlier, what might be termed the cost of goods sold, because they are synonymous.
Q. Yes, and the third we need is OPEX?
A. In this case, yes.
Q. Just so everyone is clear, you and Dr Barnes agree on the revenue and the cost of sales, cost of goods sales then of the App Store?
A. Yes. The difference between those two would be referred to as the gross margin, and, as I understand it, Dr Barnes and I agree as to that figure for the App Store.
Q. So the only dispute between you that relates to the operating margin concerns the level of OPEX?
A. Generally speaking, yes. I mean, I do not want to speak for Dr Barnes, but I think as a high level matter that is certainly an area of dispute between the two of us, or a difference of opinion.
Q. Okay. For the other two measures, return on assets and ROCE, you still need the inputs that we have just talked about?
A. Correct.
Q. But in addition, you also need to estimate the assets

and the current liabilities of the App Store?

A. Correct.

Q. To do that, you build a balance sheet for the App Store?

A. Yes, I did. Yes, sufficient to make those measures.

Q. Again, just so we are clear, there is a dispute between you and Dr Barnes about whether it is possible to build a balance sheet for the App Store that is meaningful?

A. I think that is a fair characterisation.

Q. So having set out the roadmap where we are going, I would like to start by looking at the P&L items, and so what I am going to do is ask you some questions about the way you have gone about estimating OPEX. Then when we are done with OPEX, we will move on to the balance sheet items, and then we will finish up with the three profitability measures that we will come back to where we just started.

A. However you would like to proceed is perfectly fine.

Q. I would like to start by looking with you at Apple's 2023 Form 10-K, the annual reports, just to put the App Store figures in their proper context.

A. Okay.

Q. So we have that at {D2/288/33}. That is not the right document. (Pause). That is the right document. Happy days.

So this is effectively Apple's P&L, yes?

A. Yes.
Q. If we just go to the third line down from the top, we can see Apple Inc's total revenues of $383 billion, yes?
A. Correct.
Q. Of that, nearly 300 billion is products?
A. Yes, and just for the sake of the record, we are looking at the September 30, 2023 --
Q. I am so sorry, I should have said that.
A. I followed you.
Q. So 300 billion of products, yes?
A. Just shy of, yes.
Q. If we just flick back to page {D2/288/27}, just looking at the top of the page here again at the 2023 figures, about 200 billion of those product sales is made up of iPhones?
A. Correct.
Q. So Apple must sell a lot of iPhones?
A. I think that is a fair statement.
Q. It must be hundreds of millions?
A. I do not know the number but I think it is a significant size or percent of the market, and there are obviously quite a few cellphones in the market.
Q. I was not talking about the percent of the market, but just in terms of the numbers it must be large?
A. I think one can conclude from $200 billion that it is

a significant number of phones that are sold.

Q. Whereas its Mac sales are quite a lot smaller than that, are they not? You can see it there at about 30 billion?

A. Yes.

Q. So going back to page 33, {D2/288/33}, the App Store revenues must be a very small part of the overall picture, yes, of the overall revenues?

A. I mean, there is -- depending on the year, we can go and look at the number, because it is not in dispute between Dr Barnes and me.

Q. We can look at one, then. So on page 11 of your report, that is {C2/7/11}. So table 1 is the --

A. Let me just catch up to you. One moment. So I have the page open since I might want to refer to some of the charts.

Q. Yes.

A. You are referring to the internal numbering or the Opus numbering when you say 11?

Q. I am referring to the Opus numbering.

A. Okay, let me ...

Q. I thought at this point it was -- well, I thought it was the same, maybe it is not.

A. No, the ...

Q. It is page 4 internal, I am told.

A. Okay, thank you.

Q. So seven different.
A. Yes, I am there.
Q. Okay. You can see table 1 then?
A. Yes, I can.
Q. So this is effectively the P&L that you have constructed for the App Store?
A. That is correct.
Q. The revenue numbers are in the top line. I will not read out the number for FY23, because that is marked as confidential, but it is obviously a very small fraction of the bigger number, the 383 billion that we looked at for Apple Inc?
A. Of course we could calculate the percent, but it is a smaller percent, if you will, but the numbers will speak for themselves.
Q. Yes. So if you just want to keep your report open on that page so that we can flick back and forth, but if we can go back now to {D2/288/33}. Thank you.
So just looking at the product sales, going down to the cost of sales line, it is right, is it not, that the product sales have very significant cost of sales, 190 billion?
A. Yes, they have a lower gross margin than some of the other portions of Apple.
Q. So to put it another way, it must cost a lot to make an

iPhone?

A. I do not know what "a lot" means, but if it is relative to the cost of sales associated with services, I would agree that as a percent the gross margin percentage, which is revenue minus direct cost of sales, that margin percent for products is going to be, I believe, lower than what it would be for services.

Q. Significantly lower?

A. I can calculate it if you would like, but it is certainly lower.

Q. That pattern is often the case in services businesses, is it not, that they have higher gross margins?

A. I would not reach a general characterisation like that. It certainly can be. But I do not think it is a given. I think it depends on the nature of the business.

Q. That is fair. But specifically thinking about digital services, I mean, there is not going to be anything to manufacture?

A. Well, if you are asking about a service, it is not traditionally considered a manufacturing activity.

Q. Exactly. Digital services often do not even require labour to deliver them directly to the customer, do they?

A. They may or may not, again depending on what the nature of the services are.

Q. For something like the App Store, although there are obviously lots of employees who do lots of work that is associated with it, in terms of actually delivering the transaction it is not like the work that you or I do, where we spend a lot of time physically delivering the service?

A. To my understanding it is different, yes.

Q. So that is why it is common, is it not, not universal, but it is common for a successful digital service business to have high gross margins, if I can put it that way?

A. I would say that I did not find that characteristic unusual in light of the operations of the business as I understood it, for the reasons in part that you explained, but just more broadly my understanding of how the business operates and how it transacts with its customers.

Q. That is true -- so a digital service business having a high margin could be true whether they are highly profitable overall or not?

A. I am not sure I understand your question. Can you repeat that?

Q. It is possible to have a high gross margin and yet overall at the operating margin level be relatively unprofitable?

A. It depends on, of course, the business and many things, what stage in its life cycle it might be, what are some of those operating expenses that are not direct cost of sales, and that might be considered common costs that would be allocable to that business. It very much might depend on the maturity of the business, the scale of the business, a number of factors.

Q. I see. Just picking up on that answer and looking back at that page we have in front of us on the screen, I did also want to ask you about the OPEX line. So for OPEX, in around the middle of the page, we have got about $55 billion, yes?

A. Yes.

Q. So just in numerical terms as a total, that completely dwarfs the App Store's revenues, doesn't it?

A. I do not know your characterisation of "completely dwarfs", but it is that number, if you are pointing me to the 54.8 million, is that what you are focusing on? For 2023, that is materially larger than the revenues of the App Store, yes.

Q. It breaks down into two parts, one is R&D and the other is -- I am just going to call it SG&A.

A. SG&A, yes.

Q. Both of those components are individually large, relative to the App Store revenues?

A. Yes, because you are comparing the whole business to an individual component of the business. But, yes, just as a matter of numeric comparison, both of those individual categories are larger than the revenue associated with the App Store.

Q. So the big question that we are facing when we are trying to put together a P&L for the App Store is how much of that OPEX we are looking at there, how much of the 55 billion, meets the description "Costs incurred in generating the App Store revenues"; is that fair?

A. I think that is one way to articulate it. It is -- I think there are other ways to articulate it, but I do not have a problem with that articulation.

Q. Okay. So I am going to come on, soon, to the way that you have answered that question, but before we do that I would just like to ask you some questions, some meta questions, if you like, some questions about what the question means.

Let us do that thinking about R&D. So a lot of the costs in this 30 billion of R&D that we are looking at here are just salaries of engineers working on new products or new software, yes?

A. I would presume that is included within that. There could certainly be other costs, but I would assume there are salaries of researchers included in that.

Q. There might, I suppose, also be costs of machinery that they need to use in order to do their research?
A. Correct, it could be third party services that they rely on. It could be other software that they rely on for purposes of developing. It could be a number of things that they believe are properly classified for GAAP accounting presentation purposes as R&D.
Q. So let us keep it simple and focus on one thing. Let us think about the salaries of some engineers who are developing a new and improved sensor, like a gyroscope or an accelerometer for the iPhone?
A. Okay.
Q. Those would be features of the iPhone product, yes?
A. They could be.
Q. Assuming that it is a sensor for an iPhone, it would be?
A. It could be, but it also could apply to, and I am not a technical expert, but it could apply to an iPad. Maybe there is a feature that they would want to use it on an Apple TV, I do not know. So there could be, I presume, or conceptually at least, different applications of things that they develop, and of course things that they develop also may turn into meaningless expenditures because it just did not pan out.
Q. That is all fair. But if it does pan out, then as well as being features of whatever devices they relate to,

they also enable or improve functions that are deployed in third party apps?

A. They may.

Q. So if they do, so for the circumstances where they do, the work that those hardware engineers are doing increases the value of the devices?

A. Let me make sure I understand your question. Are you asking me if there is the development of an accelerometer, and that somehow that has new features that may enhance the value of an iPhone, is that what you are asking me?

Q. Either its price or quantity. Either one.

A. Maybe it does, maybe it does not. It is not part of what -- again, I am not a technical expert, so that is not something I am opining about. But as a conceptual matter it could but it also may not. I do not -- it is not something that I have tried to technically analyse.

Q. Okay. But if it is useful, it could also increase the value of third party apps that are sold on the App Store, at least conceptually?

A. When you say "value", that means something very specific to me. I might say that it could increase the functionality.

Q. Yes.

A. Possibly. It could increase the appeal, therefore, of

that app. It also may not. But value is a different concept for me. So I am happy to talk about it, but I am not sure you meant it in the way I typically think about value.

Q. I think we were using it in much the same way, as it happens.

A. Well, if that is the case, then that is really about: does the application of the additional technology actually result in any incremental financial benefit such that the price of an app would change because of that feature, and that may or may not be the case because of constant development that goes on, even to keep pace with other offerings. There are programs that are being enhanced all the time, but that does not necessarily translate into enhanced cash flow and therefore necessarily enhanced value, just to take that simple example.

Q. There you mentioned the price of the third party apps, but also the quantity --

A. The same would be true for quantity. Again, my point would hold on quantity as well. It may, but it also may not. It may just simply be the price of admission, if you will, to stay relevant and to maintain that app's market share in the particular category that it competes.

Q. These kind of functionalities could increase the value not only of paid apps on the App Store but also of apps that are free to download on the App Store?
A. I think my answer would be the same, that it may or may not. It depends on the app, the feature, and what the competitive offerings would be, just as a matter of concept.
Q. But if they do, so if this is a good piece of R&D that improves the device and improves the apps on the device, then the salaries of the engineers who have created that innovation are simultaneously being incurred to generate iPhone revenue and also App Store revenue; is that fair?
A. Again, subject to the constraints or the conditions that I described, it may be, it may not be. It depends on the particular competitive circumstance, if you will, that that feature comes in, and how that affects the App Store, how that affects the iPhone is a separate question, and then of course those two things also have a relationship, meaning the App Store and the iPhone.
Q. Yes, I understand. So we will get on to the question of how to do an allocation to deal with this issue in a moment, but just to finish this train of thought. If we ask what part of the salaries are incurred by Apple in generating App Store revenues, in one sense the answer is that all of the salaries of these engineers

working on this successful innovation are incurred by Apple in generating both the App Store revenues and device revenues?

A. I would not agree with that, knowing what I know, which is that I know as a matter of factual evidence that there are other projects which do not relate to the iPhone, do not relate necessarily to an app. It may relate to driverless cars, it may relate to what has been referred to as black projects. It may relate to a number of different things.

So that R&D number is the amalgam of all of the research and development that Apple engages in, not just to the iPhone, and any benefits associated with those features may have to a particular app.

Q. I see. Mr Dudney, I think I probably was not clear enough in my question, then. I was not putting to you that the full 30 billion, that the full salary of every engineer who works for Apple, relates to both the device and the App Store. What I was trying to put to you is that if you think about particular engineers who spend a particular period of time working on a particular innovation that benefits both the App Store, through third party apps, and the device, then those salaries, the parts of the salaries that relate to that work that they were doing is simultaneously being incurred in

generating both sets of revenues?

A. Well, the way I would answer your question is to say that to the extent there is a benefit associated with R&D in whatever way it manifests itself, and knowing that you do not always get a benefit from R&D, but R&D is typically engaged in, in order to result in sales, and so it would manifest itself in whatever way it would in the sales of, in the case of your question, iPhones and apps.

Q. In those circumstances, then there is no answer to the question of what proportion of those costs are incurred in generating the App Store revenues as distinct from the iPhone revenues?

A. Well, what I would say is that Apple does not track that information, to my knowledge, and so -- because also you do not know, often, in my experience, on day one, or when you are engaging in activity, in what way it might or might not benefit something, how long that benefit will last, to what extent that benefit actually is tied to a change in financial performance, and so it is quite unusual actually to see that sort of direct articulation or nexus, if you will.

Instead, you typically look at this and consider it with respect to what benefits are being achieved by R&D in general, some of which is yielding some positive

results, some of which may not, but ultimately the design of R&D, both on a short-term basis and a long-term basis, is to produce enhanced sales or competitive advantage which then itself results in sales of a company.

Q. Yes. Just so we can be clear, when we are doing an allocation exercise, then, we are not trying to say, for example, this engineer on Monday to Wednesday was doing work that benefits the App Store and on Thursday and Friday they do work that benefits the device, because that is not a question -- that is not the way that R&D works?

A. Well, when you say "we" in your question, what do you mean?

Q. I mean you.

A. I am sorry. That may be just a difference between the same language.

I do not approach, as I think you know, the allocation that way, in part because of the nature of R&D, but also in part because there is no information in that regard that would allow such an analysis, if even such an analysis would be appropriate, because of the nature of R&D oftentimes not being so specific.

Q. Exactly.

A. Meaning it has a more general application to the overall

activity of Apple.

Q. Exactly. So there are two problems with trying to do it in that way, the Monday to Wednesday, Thursday to Friday way. One problem is a lack of information. We do not have data.

A. That is correct, I do not have that kind of information.

Q. The other problem is a conceptual problem, which is that R&D is not divisible in that way?

A. Well, it is that it is -- it may have multiple applications, I guess is the way I would think about it, and it may manifest benefit as a -- expenses are incurred to, at least in this context, benefit the company under a rational economic act or model. The way that it benefits the company in one way is to of course increase or maintain or otherwise positively influence sales compared to what they would otherwise have been but for the expenditure of that R&D.

Q. Much the same is actually true for the other category of OPEX, is it not, SG&A?

A. Yes, in the sense that, using your Monday to Wednesday and Thursday to Friday example, while there are some businesses that track executive time, for example, or other things, again that is not data I have seen produced in this matter, and it would be atypical of my experience over the last 35 years, but conceptually SG&A

expenses are incurred, much like R&D, for the benefit of the entire entity, and I think it is easy to understand if one were to see the subcategories below SG&A as to why that is the case.

Q. I see. But obviously if we are going to produce a series of P&Ls for the different business units or parts of Apple, and if we are going to produce them in a way that add up to the totals that we see here, then we need to do some sort of allocation?

A. That is correct, I think that is fair.

Q. So now I would like to look at the way that you have done it specifically.

A. Okay.

Q. So your starting point, as I understand it, is to take the P&Ls for Apple services that are set out in the various line of business report documents?

A. Yes.

Q. If we just pull one of these up. I think this is going to be the only spreadsheet I attempt to pull up so hopefully it will come up. It is {F/21}. If we could just go to the top of the page we can see what it is. This is the line of business report, yes?

A. It appears to be, yes.

Q. Did you see or read the transcript of the evidence that Mr Parekh gave about these documents?

A. In this proceeding, yes, I did.
Q. So you saw that these documents are essentially only produced for Apple's legal counsel and not for senior management, yes?
A. I do not want to opine on the ...
Q. I wasn't asking you whether he was right or wrong.
A. Fair enough. I did read that testimony. That is obviously for the panel to consider, you know, the bona fides of that testimony --
Q. Of course.
A. -- but I saw his testimony about it, that it was prepared in some way, shape or form in a legal proceeding.
Q. Sure.
A. Or related to a legal proceeding.
Q. I just really wanted to make sure we were working from the same basis, that is all.
A. I saw that testimony, yes, I did.
Q. Just looking at what these documents do, there are four tabs at the bottom, one for each line of business; that is right?
A. Well, there are four tabs at the bottom. I cannot testify that those are solely the four lines of business. But as it relates to this spreadsheet, there are four tabs that are included, and one of those is

services, which is the tab that I utilised.

Q. So perhaps we should go to that one then. Just click on it. The fourth one. Perfect.

So again, if we could scroll back up so we can see it all. Essentially it is a P&L, is it not?

A. Yes, it is a P&L that, if you look in the bottom left-hand corner of it, it will say, as it relates to OPEX, that that OPEX number is based on an allocation based on revenue.

Q. You are skipping ahead in my list of questions.

So as you say, the OPEX numbers are allocated by revenue. Basically what that means is that for 2023, for example, if we just take the 55 billion that we saw before on the 10-K, and we split it between the various lines of business in proportion to their revenue?

A. Yes, I think that this generally ties up, there might be some small differences, but it reflects a revenue-based allocation of OPEX down to the services level.

Q. What you do with this report is you take that services OPEX figure that we have got here, and you allocate it out to the App Store in proportion to the App Store's share of services revenue?

A. Yes, I continue to apply, if you will, the same methodology which, while I understand this document was prepared for litigation purposes, at least that was the

testimony again, I also appreciated that OPEX allocation based on revenue was a methodology that Apple had deployed in the normal course of business as well.

Q. Mr Dudney, I think we are doing okay for time, but if you could just stick to the answer to the question, then we will have plenty of time to talk about whether the revenue allocation makes sense or does not.

But that is just what you have done; that is all I was asking you?

A. Yes, as a general matter I have applied that allocation percentage based on sales.

Q. So rather than doing this in two stages from Apple Inc down to services, and then from services down to the App Store, you could have just done it in one step, could you not?

A. I think mechanically one could do it, assuming that if the allocations are all mathematically done correctly you should yield the same answer.

Q. If you had done it, you would have got to roughly the same answer?

A. Yes, I believe so.

Q. So when we go back to our little hypothetical about some engineers who are working on some sensors, what you have done here is you have said that the proportion of their salaries that should be allocated to the App Store is

the same as the proportion of Apple's revenues that come from the App Store?

A. I have allocated it with respect to all of the operating expenses that way, so I have used what would be referred to as a benefits methodology where it is using sales as one of the measures. But as you would know, Mr Piccinin, I also considered and looked at other documents where there were allocations, and I looked at other allocation methodologies in order to try to be conservative in my application, but ultimately -- of this analysis. Ultimately, though, I utilised a sales allocation method to allocate R&D as well as all of SG&A.

Q. Okay, we are going to come on to some of those other methodologies. I would say as well, if you think I have missed one before we get to the end, do shout, and we can talk about another one.

A. I will not hesitate. Thanks.

Q. Great. So you mention benefits received as the kind of concept here, and that was what I wanted -- my next question actually is about. So to make it easier, if we could pull up the joint statement, which is at {C4/6/15}. At the top of the page we have got part of the answer to question 7. I do not know if you want to just refamiliarise yourself with the beginning?

A. I am happy to listen to the question and then read it, yes.
Q. So the fourth line down in this box, you say that the literature supports the criterion of cost allocation known as the benefits received criterion, do you see that?
A. I do.
Q. The point is that you "identify the beneficiaries of the outputs of the cost object", yes?
A. Yes.
Q. Just explaining what that means, see if I have got it right, the cost object is the engineer working on a sensor?
A. Think of it as the amount being allocated, which would include the cost in the sensor, but it would include all of the things I am allocating.
Q. All the other things as well. But in relation to the sensor, the cost object is the engineer who is doing the work?
A. In your hypothetical, yes.
Q. The outputs of the cost object, that is the sensor, that is the innovation?
A. Yes, in, again, your example to keep it simple, sure.
Q. So we use the revenues to identify which parts of Apple's business benefit from the sensor?

A. Well, yes, I did it with respect to R&D as a whole --
Q. As a whole.
A. -- recognising all the possible permutations of how R&D can manifest itself from abject failure to wild success to everything in between, so I allocated the R&D as well as the SG&A based on relative sales for each of the Relevant Periods.
Q. Okay. You say here towards the bottom of the box, although, actually, to be fair to you, I think you are quoting, that the rationale for this approach is that divisions with higher revenues presumably benefited more from the OPEX than divisions with lower revenues?
A. That is part of the rationale associated with this approach.
Q. So the idea is that the parts of the business that enjoy the benefit should carry the cost?
A. Since -- yes, since you incurred the cost in order to generate revenues.
Q. Now what I want to do is explore with you some of the consequences of taking that approach in this case?
A. Okay.
Q. I hope you will bear with me. I want to do that by considering with you some hypothetical scenarios that are different from the real world in a simple, stylised way. The reason I want to do that is just to think

about how a revenue allocation would have produced different results for the App Store if the world had been different in some way.

A. Okay, I will do my best.

Q. So the first scenario is imagine that Apple had taken a different approach to deciding what should and should not be subject to commissions on the App Store, and suppose that it excluded some large category of transactions, like subscriptions, for example, that in the real world are subject to commissions, and in this counterfactual world would not be subject to commissions.

Just to make it simple, let us assume that the consequence of that is that all of the same apps exist as in the real world, all of the prices are the same as they are in the real world, but Apple ends up with half the revenue. Do you follow the scenario?

A. I think I do, which is you are telling me -- let me see if I can repeat it back, which is if you assume that they take a different business model that has the result of manifesting half the revenues of what they otherwise would have had because of some choice, what would be the consequence of doing that?

Q. Yes, and the consequence is that you would have allocated roughly, I think it is not quite, but roughly

half as much OPEX to the App Store?

A. It would certainly have a mathematical consequence but, as you know, as I mentioned earlier, I did not just do and apply my approach in a vacuum, I looked at other methods as well and compared them to my application, and my approach yielded the highest application of OPEX, which therefore has the lowest relative operating margin.

Q. So as I said, I am going to come back to the other methods, but just thinking of about what a revenue allocation does, a revenue allocation would allocate roughly half as much OPEX, roughly?

A. I would need to work through it, but I certainly agree that it would reduce the allocation, just on a pure mathematical basis, if one were to just, in a vacuum, think about it that way, sure.

Q. Just thinking about it slightly more, then. The fraction of OPEX that you get is App Store revenues divided by Apple Inc revenues, yes?

A. Correct, in your hypothetical, yes.

Q. No, that is just what a revenue allocation does?

A. Yes, but again recognise, as I said, and I am happy to go through it, but I did not do it in a vacuum like that, I did it in context with other analyses.

But just as it relates to the pure mathematics, if

you lower the numerator, and all else equal in the denominator, by definition then you are going to allocate fewer costs, setting aside the other comparisons that I did to check that analysis.

Q. Okay. So if we could go back to your report {C2/7/11}, which I think is page 4.

A. One moment. (Pause)

Q. Table 1.

A. Let me just go there. Okay, I am there.

Q. So again, forgetting the other methodologies that are not applied in this table, like the other things you discuss in your report, just looking at --

A. I am sorry.

Q. I will finish the question and then you can tell me why it is wrong.

So just looking at what you have got here in this report, if you had done this piece of work, the revenue allocation work to get to this table in the scenario that we are talking about, in 2019, instead of having 1.8 billion of OPEX, you would have had about 900 million?

A. Well, what I would say as a matter of mathematics again, I would be happy to check it, but it would certainly be less, and significantly less I would expect it to be as a matter of mathematics. That said, as you know, in my

application of this method I checked it against other methods, including ones that Apple deploys. But my point is that the application that I made is not done without regard to and consideration of these other things, so in the way I think about it, you have to look at those two things collectively.

Q. Since we keep coming back to this, perhaps you could explain that a little bit further then. So is your point that if you had lived in that counterfactual world you would have done the revenue allocation and come up with something like 900 million in 2019, and then you would have compared that to some other methodology and said, oh, that is a bit low. Is that right?

A. Well, I do not know how far you want me to take the counterfactual world, but if I keep some reality to the question and answer in this regard, I would have looked at the direct cost allocation methods that Apple itself deployed to see what that yielded. I would of course compare it to a revenue allocation as I ultimately deployed to see what that yielded. I would continue to look at a headcount-related allocation methodology. Just in the hypothetical that we are in, I would then, without any other things you want me to consider, but just as a matter of concept, I would have taken the highest one of those in an effort to be as conservative

as possible in light of the data I have available to me, and in light of knowing what I know about Apple's practices with respect to how it allocates its OPEX --

Q. Got it.

A. -- when it does similar types of analyses.

Q. I think we can now take that answer as read.

I certainly understand it; I am sure the Tribunal does too.

I am going to ask you a few more questions just about the revenue allocation, and we can just read into your answers that you would have cross-checked against the other methodologies?

A. Happy to answer with that proviso.

Q. The next scenario I want you to consider is suppose that Apple had done something different, suppose it had banned in-app advertising, just did not allow it, and imagine that the consequence of that was that, again, all the same apps are available but at higher prices than in the real world, because developers want to make up for the lost ad revenue, and suppose the consequence of that was that the total revenue collected by Apple on the App Store was twice what it is in the real world. Got it?

A. I think so.

Q. Good. So then, again, just on the revenue allocation,

you would have ended up with roughly -- a bit less, but roughly twice as much OPEX?

A. Again, as a matter of mathematics that would be the case, because that now is the implication with respect to the business model in your hypothetical that Apple utilises and how it manifests itself in terms of revenues, and that is the manifestation, because there are obviously different models that Apple can use, and that then affects the benefits that might one see amongst other factors, not just the OPEX, but there are maybe other reasons why Apple chooses a particular business model to deploy. That would then just result in a manifestation of those revenues. But as a matter of mathematics, sure, if you double the revenue you would have a greater allocation of costs under that method with the proviso we talked about.

Q. Yes, although let us come back to the proviso just for this one because I like it.

A. Okay.

Q. I think your proviso is that you take the highest number?

A. I do.

Q. So you would have taken that number?

A. Correct, unless something else in the hypothetical would have moved, the direct cost or something else. But if

we hold those constant, then, yes, I would have taken that number.

Q. So in that scenario, another $1.8 billion of OPEX would have appeared in this P&L in FY2019?

A. Yes, in your hypothetical, for the reasons that I stated, yes, it would have that mathematical effect I think for good reason.

Q. I am sorry, I did not mean to cut you off.

A. No, that is it.

Q. That is true even though all of the same engineers would have been doing all of the same work with all of the same machines to come up with whatever the OPEX number was in FY2019?

A. Right, but they impact the business differently because of the choice in business model made. So therefore the benefit to that business, because of that business model choice, manifests itself in a different way in terms of the revenue.

Q. Got it.

One more scenario for you to consider, actually there might be a cheeky further one, but another one. Imagine an alternative world in which Apple Inc's revenues were to double -- were double what they were in the real world, but there is no other change to the business: no change to the OPEX, no change to the

App Store, its revenues, cost of sales, nothing.

Just to imagine how that might happen, suppose that everyone in the real world who has a Windows-based machine and has seen the light and has bought a Mac instead. So suppose that has happened and now Apple Inc has doubled the revenue that it has in the real world.

So again, if you had come along and done your P&L for the App Store with this methodology, then Apple's share of OPEX would have been half; actually exactly half this time what it is in this?

A. Did your question say Apple or App Store?

Q. I meant to say the App Store's share of OPEX --

A. I think that is what you meant as well.

Q. -- would have been exactly half.

A. Again, I would work through the math, but it would be less, but again subject to the proviso of the other methodologies that I did in fact consider, and in that case it might come into play in light of the hypothetical that you put to me.

Q. So the point I have been trying to illustrate with these scenarios is that within the revenue allocation methodology, the results vary significantly depending on factors that have nothing to do with the nature of the OPEX or its relationship to the App Store?

A. I would not agree with that statement, no, for the

reasons that I stated.

Q. So is the reason why you disagree that its relationship to the App Store changes, in the sense that the App Store's proportion of the benefits change, is that it?

A. It is that and it is the model that is being used by Apple so, in other words, it is expending a certain amount of money on R&D and SG&A. It chooses in its various businesses that it operates particular business models. Those models then manifest themselves in financial results and since the investment is being made through expenses to try and achieve operating results, that is what I mean in terms of the relationship, and so to extent that there are benefits being received all else equal in other parts of the business, it is fair under this methodology to allocate to that portion of the business to then receive I think a reliable and fair view when taken in conjunction with the cost of sales what the operating margin is of a particular business within the Apple ecosystem.

Q. So it all comes down to the benefits received point then?

A. It is a way of measuring the manifestation of the benefits that were received given the implementation of the business model that they have chosen to deploy.

Q. Okay. So I want to ask you one other question about the revenue allocation approach. So you understand that the vast majority of transactions on the App Store are free?

A. If measured in terms of app downloads or some other measure.

Q. The number of transactions.

A. Yes, I think that is correct. I would want to double check but it is not insignificant.

Q. Perhaps to be fairer to you I should show you. If we go to {C3/4/189}. I should tell you this is from one of Apple's expert economists' report. It is Professor Hitt.

A. Yes.

Q. In exhibit 33 we have a chart showing different categories of transactions, free download, paid download and in-app purchase. Let us the not talk about the 2020 onwards and just focus on the bit that is not shaded.

A. Fair enough, sure.

Q. So in 2019, for example, it is more than 80% of the transactions are free?

A. Yes. Based -- I have not studied the -- how Dr Hit prepared this but just based on the face of the document, yes, it shows a number for -- that is not shaded in the pink or purple for 2019 above 80%.

Q. So using a revenue allocation approach those transactions just make no difference at all to the OPEX that you allocate to the App Store?

A. Well, they do not make a, I will call it a direct implication, because they do not require a payment. Now, to what extent do those turn into or somehow support paid app purchases because people have access to unpaid ones, I do not know. I do not know if anyone has done a study in that regard. But I think as a general matter those apps would be and the costs associated with running that marketplace to provide those apps has different implications or impacts to Apple, both in benefits to the iPhone as well as to whatever the costs are to support the digital marketplace that allows for free apps to exist.

Q. Just to illustrate what I mean. It was meant to be a simpler question than I think all of that. If we double the number of those transactions that would make no difference at all to the OPEX that you allocate to the App Store?

A. If I were to assume that the number of free apps has no relation to the number of paid apps or in-app purchases that are made, and I do not know that I can make that that assumption, but one were to make that assumption then just as a simple response to your question, that

would be true, again recognising that I also subjected these analyses to these other comparisons that I talked about.

Q. I think time is starting to get slightly tighter with these long answers, so if you could try and give shorter answers to the extent you can.

THE CHAIRMAN: To be fair, Mr Piccinin, I think he is answering the question.

MR PICCININ: I agree.

THE CHAIRMAN: I would be reluctant to cut him short. I am sure, Mr Dudney, you are conscious of the time and you will keep it short but I do not think, Mr Piccinin, you want you to cut him off for making points which seem to me to be perfectly valid responses to the questions.

MR PICCININ: That is fair. I am grateful, sir.

If Apple suddenly switched to charging for those transactions then again, using your revenue allocation you would allocate, you would start allocating OPEX?

A. If there was more revenue, if their business model changed such that it manifest in benefits in the App Store, there would be, under that methodology of the revenue, apportionment, if there would be a greater apportionment subject to the proviso of the checks that I did.

Q. If we can go back to your report again, {C2/7/11}, so

page 4 for you. So if for argument's sake bearing in mind that the OPEX numbers here all relate to the less than 20% of transactions that are paid, if we were to gross that up by a factor of 5 or 6, that would make a massive difference to the operating profit figure, would it not?

A. I do not think that would be appropriate. But if you are just asking me as to the matter of math, sure. If you multiply the last year, I will not say the numbers since it is in pink, but if you multiply it by 5, it is going to have a significant impact to the operating profit.

That said, I would also -- it is part of why I looked at the direct cost allocation methodology, since that would be neutral with respect to whether something was a paid or free app in terms of the cost that Apple incurs for that digital marketplace.

Q. We will get on to the direct cost allocations in a moment, but just in terms of the way the revenue allocations work.

I think you have given the answer. That is fine.

So I think at this point we can move on to the headcount methodology, which is the other one that you actually deploy in your report to make your own calculations.

THE CHAIRMAN: Is that a convenient time to take a break?
MR PICCININ: Yes, it is, yes.
THE CHAIRMAN: Good, we will take ten minutes.
Mr Dudney, you know the rules about not speaking to anybody during the break?
A. I do, your Honour, yes.
(3.10 pm)
(A short break)
(3.20 pm)
MR PICCININ: Mr Dudney, I said we were about to get on to the headcount methodology, so let us do that now. To do that, I think it would be helpful to have your report open. So for Opus it is {C2/7/37} and table 18. I think it is probably page 33 for you, Mr Dudney, if you have got that in hard copy.
A. Yes, I do have it in front of me.
Q. Great. So let us just look at how it works. As I understand, what you do is that you start with the App Store OPEX figures that you take from three particular management presentations relating to the years 2018 to 2020; is that right?
A. Yes, that is the figure B within the mathematics that I use.
Q. Then what you do is you take the average of those three years' App Store OPEX, yes?

A. Yes.
Q. You divide that by the average App Store headcount from those same three years?
A. Yes, that is the figure C.
Q. You take those headcounts from the same App Store management presentations?
A. Yes.
Q. It seems to be that there are a number of people working specifically on the App Store?
A. It is what I found in the Apple documents, yes, that were produced.
Q. So that division at row C gives you your average App Store OPEX per head for the period 2018 to 2020. I do not want to read it out because actually the same number is marked as confidential further up the page.
A. Fair point, yes, I see that.
Q. Then what you do is you take that App Store average OPEX per head figure and you multiply that by the App Store headcount for the two other years that you have headcount data for; is that right, 2021 and 2022?
A. Yes, correct.
Q. So taking 2021 as an example, I am right that you are not starting with the total Apple Inc OPEX from that year, that is not an input to your calculation of the 2021 OPEX figure that we see here?

A. No, that is correct. I am starting with what was shown by Apple in the same management report that had that same headcount, just because that was the data I had.
Q. Yes, you are starting with the headcount, the App Store headcount figure?
A. Correct.
Q. But you are not actually performing an allocation on the $44 billion of OPEX that Apple Inc spent in that year?
A. That is correct, because the App Store management presentation had identification itself of OPEX already in it.
MR PICCININ: Sorry, I detected there might be a question from the ...
THE CHAIRMAN: No, sorry.
MR PICCININ: Yes, so what you are doing is you are taking the average OPEX from the years 18 to 20 and you are extrapolating from those OPEX figures into 21 and 22 using the change in the App Store headcount?
A. Yes, based on the limited data I had in this regard.
Q. So that is -- it is not really an allocation at all, is it, because it ignores the total OPEX that you did know Apple Inc incurred in 2021 and 2022?
A. Well, that, what I know is what was shown on this particular page based on the separate input source, if you will. So I was comparing that to the answer that

I would receive based on my revenue allocation, so it was a different methodology to see which would yield the highest cost.

Q. Sure. But you did know what the Apple Inc OPEX was in 2021 because it is reported in the Form 10-K?

A. Apple Inc, yes.

Q. My point is that you are not using that, you are not allocating that $44 billion out to the various parts of Apple. That is not what you are doing, is it?

A. No, I am not doing it that way, because Apple in this document had already made a recognition or an identification of OPEX in that particular presentation, and I was trying to extrapolate from that presentation to future years as another way of looking at OPEX to try and find the highest cost in order to be most conservative in my calculation.

Q. So if we rolled this methodology out to all of the business units in Apple, so if you had the headcount data, and the 2018 to 2020 allocated OPEX figures for every other business unit in Apple, they would not even add up to the total, would they?

A. I am not sure I understand your question. If you do not mind either rephrasing it or repeating it, just so I can follow it?

Q. That is fair enough. What you have done is you have

taken allocated OPEX figures for the years 2018 to 2020, yes?

A. Allocated that were identified by Apple in this particular presentation.

Q. In the App Store presentations.

A. Correct.

Q. Then you are extrapolating from those numbers to new OPEX figures for the App Store in 2021 and 2022 using the change in headcount for the App Store in those years?

A. It is not so much the change, it is the absolute headcount in each of those years, because what I am doing is taking an average, calculating an average OPEX per head based on the information that Apple provided, which was both OPEX and people or headcount in the three prior years, and so I am simply extrapolating that using an average so that it is not influenced by any one year.

Q. The point I am trying to put to you, Mr Dudney, is that if you had the same presentations, the same kind of data for all of the other business units in Apple, and you applied the same methodology, extrapolating from 18 to 20 into 21 and 22, in exactly the same way as you have done here, and then if we added up all of the FY2021 OPEX figures, it would not add up to the 44 billion total?

A. As a matter of maths it would not, but that said, if I had all of that data, that would then give me another ability to analyse it in a different way where I could account for that, but I was limited to the information that Apple provided. So they have -- they are not showing me the relationship of this to the total, and so that is why I do not approach it that way. I simply approach it within the confines of the analysis that they did provide.

Q. For this methodology to work, for it to be accurate, would you agree with me that we need to make the following two assumptions. Each of them is necessary so I will put them to you one at a time.

The first one is that we have to assume that the presentations that you are using for FY18 to 20 had a meaningful and fully burdened estimation of App Store OPEX in those years?

A. Well, what I would say is that it allowed me, under whatever methodology Apple chose, to include OPEX, it gave me a lens into that contemporaneous presentation, and I was comparing that to see if that methodology yielded a larger expense and therefore would result in a lower operating margin given the conservatism approach that I applied.

So I did not have full vision into the workings of

how they allocated those OPEX, but I wanted to at least recognise them to test them against my other methodology.

Q. Mr Dudney, that is not actually an answer to my question. My question was whether -- in order for this methodology to be meaningful on its own, then we need to assume that these presentations have a meaningful and fully burdened estimation of App Store OPEX in those years, yes or no?

A. I would not state it that way because of the comparative nature of what I did with it.

Q. I mean, if the input is garbage then the output is garbage?

A. Of course, as a matter of logic. But my point is when I allocated based on revenues, I got a certain number. I then wanted to compare that to an allocation based on this, which was something they produced in the normal course, to see how that compared, and it gave me a lower operating expense allocation. Therefore, I conservatively took the higher number.

Q. Mr Dudney, the problem I am having with this is that every time I ask you about one of your methodologies, you say: Mr Piccinin, do not worry about this one, I have others. Then I go to the next one and you say: but Mr Piccinin, what about my last one? Is that a fair

characterisation?

A. No, but I would also say I think you recognise that in my analysis I did look at each of these methods, and was very conscientious and careful to do so with the available information I had. So there is a relationship between the different methods, which is why I point that out, because it was important to me to look at different allocation methodologies to see what I felt at the end of the day was the appropriate one in light of the data available to me.

Q. But if all three of them -- we are on to number two now -- but if all three of them are rubbish, then using them to cross-check each other is also rubbish?

A. That presupposes in your question that they are rubbish and I would disagree with that characterisation.

Q. Mr Dudney, what I am trying to do here, perhaps I should have been clearer, is to go through each one in turn and show you why I say it is rubbish. I have already done that with revenue, we are on to headcount.

A. I think the difference we are having is simply that I look at them both individually and in context with one another because of the way I did my work.

Q. You keep saying that, Mr Dudney, but the point I was putting to you is that if individually all three of them are rubbish, then looking at them in concert, together,

is also rubbish?

A. You and I will not agree on that point, simply because I do not agree that the revenue allocation method that I used is rubbish. That is your characterisation, not mine.

Q. No, I accept that, but we have already seen how the revenue allocation can produce very different numbers depending on what is going on in other parts of Apple's business?

A. Correct, but that does not invalidate the methodology, and, again, I think we just have a difference of opinion on that.

Q. Okay, that is fine.

Sticking with the headcount methodology now, and so without looking at the others, just on the headcount methodology, would you agree with me that for this one not to be rubbish, it needs to be the case that the estimates of OPEX that you are taking from these presentations are meaningful and fully burdened?

A. Well, what I would say is that I accepted them for purposes of this comparison because they were presented contemporaneously. I assumed that Apple did not prepare meaningless and rubbish numbers when it was putting together its data.

Q. Mr Dudney, I am not asking you right now whether they

are or are not meaningful. The question I am asking you is whether they need to be meaningful and fully burdened?

A. I think they need to reflect a fair and reasonable allocation of operating expense in order to be appropriate. I will say it that way.

Q. That was the first of the two assumptions. The second of the two critical assumptions that I wanted to put to you was that we also have to assume that after those three years, FY18 to FY20, App Store OPEX grew roughly in proportion to App Store headcount?

A. I will say it this way, that the change in or the absolute number, however you want to look at it, in terms of the headcount in the years where I did not have OPEX, that that relationship of the historical average was representative for purposes of estimating 21 and 22, and I had limited data with respect to the App Store but that is implicit in the mathematics.

Q. Yes, so we need the average OPEX per head to be stable?

A. It needs to be equivalent to the previous three years' average on a per head basis.

Q. So let us look at those two assumptions in turn then. Let us just look at an example of the presentations you are using for the App Store OPEX. If you go to {D1/725/161}. I do not want to read out any of the

numbers because it is all in pink, but this is the source for one of the numbers in your chart. It is the FY18 number at the bottom, yes?

A. Yes, it shows the number that is shown in my report, which curiously is not in pink in my report but it is in pink here so I will not say it out of caution, but yes, it is one of the numbers shown here, correct.

Q. But this -- I think you accept in your report at 5.75 to 5.76, this is not a fully burdened allocation of OPEX, is it?

A. Is there somewhere in my report you want to point me to the "I accept" part? I am happy to read through it, but I just ...

Q. Sure. Why do you not read 5.75 to 5.76?

A. 5.75 ...

Q. It is on page -- let us get up {C2/7/34}.

A. Okay, let me just read 5.75 and 5.76 briefly. (Pause)

Okay, I have read them. I think it is still accurate, yes.

Q. So it is not -- that is not a fully burdened allocation of OPEX?

A. I am exploring that possibility here that that is not the case, and it is backed up by my comparison, which again is why I use, in part, the revenue-based allocation.

Q. Can we go back to {D1/725/161}, please. Can we just -- I do not want to read them out, but if you just look at the categories on the left-hand side, nothing here looks like software engineering or hardware engineering or anything like that, does it?

A. It does not in terms of the names itself, but I have no insight into how they aggregated these numbers.

Q. So the first of the two assumptions that I put to you before is not sound. You do not believe that this is a fully burdened OPEX allocation?

A. Again, I would not agree with the "it is not sound" comment. What I would say is that I recognise in the paragraphs that I just read that it could be the case that there were allocations above the level of where this report comes from, and I was testing that, essentially, found that in fact it is -- when one does it based on what is contained in this report, meaning allocates OPEX this way, that you get a number lower than the OPEX that I calculated, which again did nothing to influence me to change that revenue-based method that I utilised.

So I conceptually point that out to the panel in the report, that that is my view as to why likely that is the case, but I also tested it mathematically.

Q. So if we were relying on this methodology in a world

where your revenue methodology did not work, it spat out numbers that were too low, then we would be stuck with extrapolating from these non-fully burdened OPEX allocations?

A. I think if you take away the revenue-based allocation it appears, based on my analysis, that this particular source does not include certain allocations above the -- I think I describe it as being the amp level, because of other data I saw.

Q. If we could go back to your report, table 18. So {C2/7/37}.

A. Okay.

Q. So the second assumption, remember, is that OPEX per head is constant, yes?

A. It is that it is equal to the average of the prior three years.

Q. If we look at the way headcount grows from 18 to 19, it go grows by 278, yes?

A. I am sorry, between which two years?

Q. 2018 and 2019. I think that is right.

A. Yes.

Q. OPEX grows by 170 million, yes?

A. Yes.

Q. So that is about 610k per head?

A. It sounds right. I am happy to do the math but it

sounds about right.

Q. That is quite different from the average OPEX per head that you have got there, is it not?

A. Yes, but those are two different -- you are doing a growth calculation as opposed to a total OPEX.

Q. What I am asking -- it is not a growth rate, right? What I am looking at is absolute number of additional people from 18 to 19 and absolute number of additional OPEX from 18 to 19, so it is linear?

A. Correct. But there is a fixed component to it, if you will, in that the 876 that are the subtraction, if you will, (inaudible) the amount of the increase, there is a certain cost associated with those. So the additional heads in total, given the mix of people, and the OPEX that they chose to allocate in the normal course of business, has a financial result in that. I am simply reflecting Apple's own data in that regard.

Q. I think you can see, though, if you look at each of those three years, that the OPEX per head is not the same in the first year as the others, is it?

A. No, and it is part of what I why I took an average. I had three years of data; I wanted to try and use all the years of data I had.

Q. But having three years of data, only three data points, should surely make it pretty uncomfortable in assuming

there is a linear relationship between App Store headcount and OPEX?

A. No, it is not that it made me uncomfortable or not, it is simply that it was the data I had available to me, and I was interested to take a look at, as headcount increased, if one looked at it this way, how would that compare to the method that I was utilising, and recognising the comments that I make in 5.75 and 5.76.

Q. Let us look at this another way, then, forget about OPEX per head, these calculations. But the headcount of people who are working specifically on the App Store just has nothing to do with the proportion of the R&D or SG&A expenses that Apple Inc incurs that relate to the App Store?

A. Well, that would be true if you assume that none of the categories that are shown in that document contain some allocation of R&D, and what I can tell you is that in looking at various financial information that I have seen, there are absolutely instances of implicit allocations going into categories which, by themselves, you would not be able to tell there was an allocation that went on within that particular line item.

So I cannot say for certain, but I drew the observations that I did, utilising the information I had, to try and assess whether that would be a more

reasonable method versus my revenue method.

Q. Once again, I think I have failed to be clear in the question.

My question to you is that conceptually -- let us go back to the engineers working on a sensor, for example. The number of people working on App Review, for example, or the design of the App Store, the number of headcount involved in the App Store, just has nothing to do with the extent to which an engineer working on a sensor benefits or does not benefit the App Store?

A. I would agree with the concept that the number of people in the App Store is not directly related necessarily to the number of people doing research in a particular area, other than to the extent it impacted the App Store and therefore, as a result of that, the App Store's financial performance necessitated a change in the number of people.

The difference, though, is in addition to the people, I also had Apple allocating OPEX, so I felt it was my duty to analyse that for the benefit of the panel and not just disregard that, given that allocation of OPEX is an important issue, and I wanted to test and see how that compared to my revenue allocation.

Q. But this extrapolation that you have done does not tell us anything meaningful about the OPEX that is associated

with the App Store?

A. Well, I would disagree. It tells me what Apple historically, at least in this document, decided was appropriate to allocate in terms of OPEX, and it is an amount, when I compare it to the method I used, that is lower. So therefore I felt more comfortable with the revenue method for -- not only that it was conservative, but also I recognised the attributes of this document as articulated in 5.75 and 5.76 of my first report.

Q. What it does is it takes an average of three numbers that are not fully burdened and then it extrapolates from that average on a basis that has nothing to do with OPEX?

A. I would disagree with the last portion of your question. I would simply say that this is taking Apple's own data of OPEX and demonstrating to me that a higher allocation is appropriate, and that is what I have done. A higher allocation of operating expenses to the relevant years, which is what I have done.

Q. The other allocation methodology that you have talked about in your answers today is the direct cost method. I do not think you actually present your own calculations on that basis in the report, do you?

A. I did not have to, because Apple does it for me.

Q. In these presentations that we have been looking at, or in other ones?
A. It is in what would be referred to as the long range forecast document, and then I cite to the line chart, if you will, that is in the latter portion of my report.
Q. Yes. Again, though, there is no systematic link, is there, between the direct costs of the App Store and the question of how relevant R&D done by engineers, hardware and software engineers, is for the App Store?
A. I would disagree in the sense that Apple obviously thought that it was a reasonable method to utilise as to what the spend was, because that is a reflection of the business model. That business model is, in part, a function of what benefits do and do not come out of R&D, and it is a function of, in part, the management of Apple Inc as a whole, which also makes up, you know, a large portion of the operating expenses that are being allocated.
Q. So I think what you are saying is that because Apple has put those numbers in presentations, they must be meaningful. Is that it?
A. It is more than that. It is that they put it in presentations, they presented it to senior management, they compared it, and it is not just that line chart, as you know, sir; it is a number of other charts behind

that show quite a bit of detail in terms of how they thought about the costs. So it is that that -- for purposes of presenting to senior management, they thought that was a reasonable method.

It also --

Q. Just to be clear, just so I know how many documents you are talking about. You are just talking about those two 2019 documents?

A. There are two documents, they are quite significant in terms of data and size, but there are two of them, yes.

Q. Just two?

A. Yes, there are two. My only point was simply that it is that, and understanding the fact that direct costs can be another proxy for the relative effort that it takes to run a particular business, and therefore that is a measurement basis to allocate common costs that could have application across the business as a whole.

So those two methods, meaning revenue in the case of what I used, or a direct cost method that Apple used, those are both very familiar to me prior to coming to this case.

Q. Right. So I will deal with those two reasons that you have just given there in turn. On the first one, which is that someone has put them in these presentations, would you agree with me that the question of what

Apple's executives actually thought about that analysis and how much weight they placed on it at the time is a factual question?

A. I am not speaking to what weight, you know, Mr Cook or Mr Mestri or others, put on it. I just recognise that it did go to senior management, which in and of itself is significant to me.

Q. Then turning to what you can speak to, which is what it actually means, would you agree with me that using a direct cost allocation creates a bias against parts of the business that operate on a high gross margin?

A. As a matter of mathematics it would reflect the characteristics of the business model that Apple chose to deploy, and so it is not a matter of biasing or not, it would simply reflect what cost did they have to incur and how did they think about then the margin associated with it.

Q. If we just look at your report then again, back to our favourite page, 4, so it is {C2/7/11}.

A. Okay, one moment. Let me flip there.

Q. Table 1.

A. Okay, I can see it on the screen.

Q. The cost of sales figures here are really very, very small, are they not?

A. What I would say is that "small" is only relative to, in

one sense, revenue. I will say that the gross margin, which is revenue minus cost of sales, is, all else equal, on an absolute basis, is high. That is a function of revenue being earned with very little direct cost needing to be incurred as a result of that.

Q. Exactly. Whereas we have already talked about, right at the outset, that other parts, the biggest part of Apple's business is a manufacturing business, it is a product business, is it not?

A. It is the most significant in terms of dollars. There are other measurement methods, of course, in terms of profit per dollar and other things, but just on pure revenue, the iPhones are the big -- the largest of its businesses, as I understand it.

Q. If we are doing a direct cost allocation then just the mere fact that we are combining, we are allocating between a products business on the one hand and a store, a digital store on the other hand, is just going to shift all of those R&D revenues to the products business, is it not?

A. Well, as a matter of mathematics, of course, businesses with more costs are going to get allocated more, and that is a function of the business model that Apple has determined to deploy for its various businesses in terms of whether you manufacture iPhones, whether you licence

iPhones, and if someone else manufactures -- whatever the business model happens to be.

It is also why, again, I compared the output, when one looks at it that way, to looking at it not on a cost basis but looking at it on a revenue basis.

Q. I think we have covered that particular issue a few times now.

A. We have.

Q. I think we can move on from the P&L now and get on to the balance sheet.

Now, none of the Apple documents that you have ever seen show -- have ever attempted to put together a balance sheet for the App Store, have they?

A. They do not engage in that exercise in the normal course as I have seen it.

Q. No, and so none of the Apple documents that you have seen show any estimates at all for the return on assets or the ROCE of the App Store?

A. They do not. I have not seen a calculation of ROA or ROCE in the documents produced by Apple.

Q. Are you familiar with the CMA's Mobile Ecosystems Market study?

A. I do not know that I am, no.

Q. Let us focus on what you did now. So what you did, as I understand it, is you started with the Form 10-K, the

annual report, yes?

A. Yes.

Q. Then what you did is you went through and ticked off the items that related to the App Store in some way?

A. I did a line by line review of the balance sheet items to identify those balance sheet items that I think would be reasonably applicable to the App Store for purposes of my analysis.

Q. In a yes or no way?

A. Correct. With one proviso which is, to the extent I included them, then I made a determination as to how I would include them. In some cases it was based on a revenue allocation, in some cases on a different methodology.

Q. Okay. I would like to have a look at Apple's balance sheet, so if we go back to {D2/288/35}. This is just going to be on the screen.

A. Okay, thank you.

Q. This is the 2023 figures that I am looking at.

A. I see it.

Q. So the total assets, in the middle of the page, is just -- is $352 billion, $353 billion, yes?

A. Yes.

Q. Mostly that is just made up of cash, marketable securities and accounts receivable, yes? Those figures

come to about 200 billion?

A. They are significant. So, yes, I did not add them up, but I will take your word for it. That is a significant portion of the assets that they hold on their balance sheet.

Q. Other than that, the assets are just basically 43 billion of PPE, the property, plant and equipment. That is one item, yes?

A. Correct.

Q. Then there is about 80 billion of other assets, other current assets and other noncurrent assets, yes?

A. Correct. There is some others but, yes, those are included.

Q. So this balance sheet is essentially telling us that Apple consists of a business whose assets are primarily cash and machinery and so on?

A. It speaks for itself. If you want to characterise it by size, I would -- they produce quite a bit in various ways, as we have talked about, but I took the balance sheets as they were presented to me.

Q. Yes. So if you subtract total liabilities, then you get down to the penultimate line at the bottom. Shareholders equity is about 60 billion?

A. Correct.

Q. If we wanted to calculate the capital employed by Apple

as a whole, it would be just under 210 billion, so 352 for the assets minus 145 for the current liabilities?

A. Yes, depending on how you wanted to treat the term debt, even though it is a current portion of long-term debt. But generally speaking, you could look at it that way.

Q. That would not move the dial, I do not think?

A. It would have -- it is a smaller amount, to your point.

Q. The market capitalisation of Apple at this time, September 2023, was about $2.7 trillion. You can just take that from me as a figure. So that is about 45 times larger than the book value of equity, yes?

A. I have not done the math but it is quite a bit larger.

Q. Yes. It is an order of magnitude larger. It is trillions rather than billions?

A. Yes, and unsurprisingly so, given what the two figures represent.

Q. Exactly. So that is because Apple's investors believe that Apple is made up of something more valuable than just the items we see here, like cash and machinery?

A. I would state it differently.

Q. Okay. I mean, perhaps you will accept this way of saying it then: the issue is that accounting standards do not allow for balance sheets to include internally generated intangible assets?

A. Well, that is true as a matter of fact, but that is

a consequence of something else. So in other words, the reason that the market capitalization is higher is because of investors' expectations as to future growth of the cash flows, oftentimes the EBITDA of the business and the riskiness that the investor marketplace places on those future cash flows to come up to the calculation that would result in market cap.

So that is the reason why and part of the reason why you get those cash flows is the result of many things, including internally developed IP.

Q. Internally developed ...?

A. Intellectual property.

Q. Yes.

A. Which is a form of intangible asset.

Q. Exactly. Then another form of intangible asset is brand value?

A. Brand value is certainly an intangible asset, and I think in Apple's case it is certainly a well known brand.

Q. So what the stock market is telling us is those assets, the IP and the brand value, are worth trillions of dollars?

A. It is telling us that the present value of the future expected cash flows, when one considers that in the market capitalisation transaction or analysis, that

those are significantly greater than the balance sheet based figures, and it is because of things like -- it could be brand, it could be market position, it could be collection of the workforce. There are a number of things that go into an ability a company has to generate future cash flows, but that is ultimately what results in the value of a stock and the market capitalisation or enterprise value, if you want do look at it more broadly, of a company.

Q. If a private equity company were to have bought all of Apple's equity in September 2023, the $2.7 trillion, then they would have on their balance sheet one or more asset lines representing those trillion dollars of intangible asset value?

A. Correct, because they would have spent the money for it. Whereas what Apple has done is they have -- they have taken advantage of their ability to create products, to generate sales, to operate profitably, and do that as opposed to if I or any other investor, I wish I had the ability to, I do not, but if a private equity firm had the ability to buy it, they would have to spend that money. So that would then represent capital that they have invested. Whereas the development, if you will, of this difference between balance sheet assets and market capitalisation in that difference, those are assets that

have been -- that is value that has been created as a result of the underlying workings of the business, not investments that are not otherwise shown on the balance sheet, if that makes sense.

Q. That value is not shown on the balance sheet?

A. Correct, because it is not money that was spent by Apple. It is a reflection of their advantageous business operations that result in significant cash flow and competitive advantage in terms of their ability to generate positive cash flows in the future.

Q. Can we have a look at {C2/9/14}. This is your supplemental report.

A. One moment. (Pause).

Q. I think it is page 13 internally.

A. Yes, it is, thank you.

Q. So you are asked in paragraph 5.1.1 to capitalise Apple's R&D into an IP asset on the balance sheet instead of expensing it as OPEX on the P&L, yes?

A. Yes.

Q. Then you go on and do that?

A. Amortise it over time, yes.

Q. I just wanted to check four points that I have understand about that properly. The first is that your starting point for this IP asset is just what Apple has actually spent on R&D, yes?

A. Correct, going back, if you will, to earlier periods, to make sure that my periods are fulsome and fully accounted for. But, yes, it is based on the actual spend.

Q. So this calculation treats IP as being worth what it costs to create it, no more?

A. I would say that -- I am not trying to value the IP, I am capturing the dollar investment that Apple made. There is then, if one wants to think about it, there is a rate of return that would come out of that, and that is if those R&D dollars produced the ability to have differentiated or greater cash flows, that would then manifest itself in the value of IP. That is a result, that is the extra value that Apple would get based on the actual dollars it invested.

So I was focusing -- as I understand the exercise that I was asking to do, the consequence of it is I am focusing on dollars invested.

Q. I understand, and that is divorced from what the IP is actually worth; as you have just said, that is a different question?

A. It is a different question. I did not value the IP of Apple.

Q. The second point, as you said a moment ago, is that you amortised the R&D spend on a straight line basis over

a four-year period?

A. That was I believe the instruction that I was given.

Q. Yes. So what that instruction then meant is that for R&D expenditure in 2013, for example, it is only worth 75% of that in 2014?

A. Correct.

Q. 50% in 2015, and so on?

A. That would be just the function of the mathematics in terms of when it would hit the profit and loss, yes.

Q. By 2017 it is worth nothing at all?

A. It is not that it is worth nothing, because we cannot confuse worth with investment.

Q. Exactly.

A. Because an investment dollar can be made and it is worth nothing, or an investment dollar can be made and there is a significant return, like any investment.

So this is simply recognising the fact that R&D, if it were to have been capitalised, because that would affect then my return calculations, what would be the consequence of capitalising R&D, meaning putting it on the balance sheet, therefore going into my profitability ROA and ROCE calculations, as opposed to what is typically happening to R&D, which is it is typically expensed. The accounting rules require, generally speaking, that it is expensed, and so this was an

alternative instruction that I was given to treat R&D as a capitalised asset for the value of the dollars that went into R&D.

Q. Okay. Then the third point is that you are only allocating the share of R&D which is consistent with your revenue allocation methodology, yes?

A. Yes.

Q. So if your revenue allocation methodology is not a reliable guide to the proportion of R&D that relates to the App Store then this is no good either?

A. If you change it, it would -- if you change the amount of R&D that I included in this calculation, it would of course change the calculation. I could run it at any level but I was asked to run it as I have.

Q. Then the final point is that this is only about IP, is it not, this does not deal with the value of Apple's brand at all?

A. Other than to the extent that investment dollars in R&D contribute to brand value. Said differently, if products do not work the brand value of Apple probably does not do very well. Conversely, if products work really well, as they often do by Apple, then that would enhance the brand and enhance its pricing ability etc.

Q. I think we probably agree with each other, though, so I am just trying to cut things a bit shorter if we can.

A. Of course.
Q. Equity investors in Apple would not be willing to invest what they actually invest on the stock market in order to receive the WACC on the book value of the tangible assets that appear on Apple Inc's balance sheet?
A. The weighted average cost of capital as it is typically deployed is based on the expectation of future cash flows, and that then, when one does that math, that then results in the -- I will skip a few steps, but basically the stock price when all else is considered. So that is how the WACC is typically used and that reflects what an investor, if you will, who is paying a price that is reflective of the things you have talked about, among other things brand value -- brand value, value of IP, competitive positioning, collective workforce, etc, etc, because they are investors at that level.

That is different of course than Apple and what it invested in order to generate these results, just to be clear.

Q. I understand that. If we can go back to Opus page 11 on this. {C2/9/11}. It is probably page 10?
A. Same report.
Q. Yes. So here you have three tables set out. In table 7 your calculation of the App Store's operating profit, then table 8, capital employed multiplied by WACC, and

then table 9 you have the difference. I know these WACC figures are wrong. You have corrected it separately to use the pre-tax figures but we do not need to worry about that.

A. Yes, right.

Q. The point I was just putting to you is that Apple's investors are not willing to accept the returns that you have got there in table 8, that is nothing like what investors demand for investing in Apple?

A. I think what I would say is that this is not trying to -- I was just asked to do this. I did this. That said, this reflects a rate of return on Apple's investment as opposed to investors' investments, and that is the distinction at least at one level that I think I would agree that those are two different things, for the reason I stated earlier in terms of what and how a weighted average cost of capital figure is used.

Q. If we go back to your first report, {C2/7/12}. It is probably your page 5.

A. Okay, one moment.

Q. If we adjusted the ROCE figures here to use capital employed that was consistent with the market value of Apple's balance sheets, including the market value of the brand and the market value of the IP, then that

would be highly material to these numbers, would it not? There would be --

A. Well, it would, but it would not be then return on capital employed, because that is not capital that Apple employed.

Q. But it would be the return that is required -- it would be based on the return that is actually required by investors for investing in Apple?

A. It would reflect the fact that investors are willing to pay so much, if you will, for Apple because it is so profitable. That then, when you apply a WACC to it, implies a much higher value than what is shown on the balance sheet. So really what the investors are willing to pay vis à vis the WACC is their assessment of the riskiness of those future cash flows. Those future cash flows are themselves a function directly of how profitable or not profitable Apple is.

Q. Yes, I mean, the problem is though that the capital that you are talking about being employed here excludes the assets that are actually key to the success of Apple, namely the brand and the IP?

A. I would not look at it that way, and the reason I say that is because the expenditures that it took to create that, at least during the Relevant Periods that I was asked to look at, are included in my analysis.

Q. But they are not in the -- they are not included in the balance sheet that you start from?
A. Well, to the extent that there is anything -- it is either included vis à vis a reduction to operating profit or in the balance sheet, my point being that the market capitalisation or enterprise value of the company is a function of the cash flows. Those cash flows are a function of the investment that Apple made, and that investment that Apple made, as opposed to an acquiring entity, to take a comparison, is reflected in the GAAP based financials.
Q. Let us have a look in more detail at what you do with this balance sheet. If we could go to {C2/7/50}.
A. Appendix 3?
Q. That is the one. I am looking for table 32.
A. It is the very next page.
Q. Great. {C2/7/51}. So that has a list of the Apple Inc balance sheet items?
A. Yes.
Q. We have "Yes" for the ones which you say are relevant -- "Y" for the ones that are relevant and "N" for the ones you say are not?
A. Yes.
Q. We can skip cash for the moment and come back to it. The first "Yes", other than cash, is for other current

assets?
A. Yes.
Q. You just do a revenue allocation for that, do you not?
A. Correct.
Q. Then the next one is PPE?
A. Yes.
Q. That is another revenue allocation?
A. That is correct.
Q. Actually you do a revenue allocation for every "Yes" on the balance sheet, except for I think it is cash and accounts payable?
A. That is correct.
Q. Yes?
A. That is correct.
Q. Your approach to cash is to say that the App Store should be allocated cash that is equal to two months' worth of expenses plus what they need to pay developers?
A. Yes.
Q. The part that is needed to pay developers disappears from the capital employed calculation, does it not, because it is exactly offset by the accounts payable?
A. Yes.
Q. So aside from the cash for two months' worth of expenses, the entirety of your formula for capital employed is made up of revenue allocations?

A. After the application of the judgment that I applied and articulate in appendix 3 as to why I included certain line items and why I did not, in light of my recognition of the operating characteristics of the App Store. So as an example, it does not -- it does not appear to have accounts receivable in light of the way it does business.

Q. I just meant the ones with the "Y". Everything is either the cash or it is a revenue allocation?

A. I understand, but I am just explaining how I got to the "Ys" because that is important.

Q. Then the numerator in your ROCE calculation is equal to App Store revenues minus the cost of sales minus OPEX?

A. For the App Store that I calculated, that is correct.

Q. That OPEX figure is also a revenue allocation?

A. Yes, as we have talked about, it is.

Q. Now I want to look at the dreaded equations document with you. If we could go to {CB2/22.1.2}. So again, as I think everyone now knows courtesy of Mr Ward, this is a short document that I put together to enable me to ask you some questions about the way the revenue allocation works. All it consists of is algebraic manipulations, and you have had it now for some time, I think?

A. I have had it for a few days. There was a lot of questions as to whether or not it was appropriate and so

forth. I will not comment on that. But I have had it for a couple of days, yes.

Q. Were you able to understand it?

A. Yes. I did not spend that much time with it, but I understood, particularly after your letter explaining what it was. I understand the calculations, particularly the ones that are the -- I will call the conclusory calculations, after you do your manipulations algebraically, what those represent. So I have a sense of what those represent, of course.

Q. You agree with what they -- with the algebraic manipulations?

A. Yes, but I think it is important, and I am happy to get into it with you, that one recognises what the various terms actually mean in terms of the implication if one wants to try and draw some conclusion. As a matter of pure mathematics, it would -- you could feed the numbers in, and because there are percentages at the end of the day you can do them on different relative bases.

Q. Sure. If we can go to page 3 and we will just jump into the detail then. So paragraph 9, right at the top of the page, gives the expression for operating margin or return on revenue. What that is equal to algebraically, what I mean by that is this is another way you could have calculated the return on revenue figures that you

reach, essentially?

A. You can calculate it this way but I would -- there would be a reason why I would not. Even though it results in the same number, I think it can -- it just has a different component to it, so we can talk about it if you would like.

Q. Okay. So the only thing -- just what this is equal to, I should say, to start with, is the Apple Inc revenue multiplied by the gross margin of the App Store minus the Apple Inc OPEX all divided by the Apple Inc revenue. Yes?

A. So what is your question, if that is what it represents?

Q. Yes.

A. That is what is shown -- that is what it shows in the formula, yes.

Q. So the only thing in that formula that affects the answer that relates to the App Store specifically is the gross margin?

A. Well, yes, when you show it this way, that is true, because I have allocated the OPEX so this is on a revenue basis. But I would simply point out that the first operation, R times GM sub S, is, well, again, algebraically equivalent. There is no world in which Apple revenue has a gross margin equivalent to the App Store.

Q. No, I was not suggesting that it did.
A. No, but I want to make that clear, because the reason it works is because you are dividing it by R, which is the Apple revenue. So it works because it is a percentage when one does it like that, but that first operation results in a nonsense number. It only makes sense then when you do on a relative basis, and that was my takeaway from reviewing your document at least at one level.
Q. That is fine. This formula would hold good for any part of the Apple business, would it not?
A. Well, no, because this has a gross margin of --
Q. -- of the gross margin of the App Store with the gross margin of any other part of the business and it would still work in the same way?
A. If you did a revenue based allocation.
Q. Exactly.
A. Yes, it is a matter of math, sure.
Q. So if we were doing revenue allocations comparing the App Store against the Mac product or against Apple Music, they would only all only be different to the extent that their gross margins were different?
A. Yes, but recognise that that is -- kind of the issue is that the gross -- at least from my perspective, the gross margin for the App Store is, as we talked about

earlier, quite high, and that is what drives -- ultimately the answer that I provide the panel in terms of ROA, ROCE, ROR, it is really being driven by that GM sub S figure.

Q. Exactly, and if the gross margin for the App Store, say, just imagine it was 100%, or for any other part of Apple's business it was 100%, then this would spit out a figure of about 86% for 2023. Perhaps just take that from me?

A. I have not run it that way.

Q. You could run it from the P&L. That is therefore, basically, the starting point for any part of the Apple Inc business. The question of how close you are to 86% just depends on the gross margin?

A. The gross margin is an important part of calculating the return on revenue. There is no question. It is -- I think the figures, just to be specific, is if you look at this number without the allocation of OPEX you get a rough order of magnitude of roughly 85% gross margin, and then if you apply a reduction for the OPEX, it takes it down about 10 percentage points into the 75-ish range, which is what I calculated.

Q. Exactly, that is precisely my point, which is the fact that you are calculating operating margins in the 70s is just telling us that the gross margin for the App Store

is high?
A. It is high.
Q. It is not telling you anything else about the App Store?
A. I respectfully disagree, in the sense that operating statistics, like a gross margin, tell you a lot about a particular business, is that it has a lot of profit, if you will, before you start considering other things. So you can characterise it different ways but it is quite a meaningful number.
Q. You said at the outset that there was nothing unusual about gross margin being high for this type of business?
A. It does not -- when I saw the result it did not surprise me in light of the type of business, and in light of the fact that Apple itself calculated similar operating margins which are a function, in part, of a gross margin being high.
Q. But we also agreed that the fact that a business has a high gross margin does not imply that it is profitable at the operating level?
A. No. But all else equal, I mean, all else equal, it certainly would increase the likelihood, if you will, that it is going to be profitable.
Q. Of course it does, directionally.
A. Is my point.
Q. The problem is if you are doing a revenue allocation,

what this expression is showing you is that a high gross margin for this business, Apple Inc, does bake in the high operating margin?

A. It is not that it bakes it in, it is simply that this business is quite profitable at the gross margin level. There are certain set --

Q. "This business" is?

A. The App Store. Thank you. The App Store is quite profitable. Dr Barnes and I agree with that, so there is no confusion or contention there. Then there is a common pool of costs that relate to the entirety of Apple, and, again, as I have stated many times, the basis of the allocation that I do is based on the benefit that is demonstrated by revenue, consistent with the way Apple does it in certain analyses. It is conceptually consistent with the reasons I have stated as to why I think it is appropriate. So it is unsurprising to me that at the end of day, when there is a reasonable allocation of operating expenses, it results in a high operating margin as a well as a high gross margin.

Q. The point I am making is that because Apple Inc's revenue is significantly larger than Apple Inc's OPEX, it inevitably follows that any part of the business that has a high gross margin will have a high operating

margin on a revenue allocated basis?

A. Well, except for the fact that the difference between the operating margin of the App Store and the operating margin of Apple, or the gross margin of the App Store versus the gross margin of Apple Inc, those are materially different. I would also say that, again, the fact is Apple, compared to its revenue, has a limited amount of operating expenses to allocate, and so that is again unsurprising in the result of a high operating margin.

Q. It is a mathematical identity here, right? So what I am putting to you is because of the Apple Inc revenue and OPEX figures, any part of the business that has a high gross margin will inevitably be shown to have a high operating margin using a revenue allocation, yes or no?

A. That is not the way I think about it. I think about it simply --

Q. But it is true, is it not?

A. The relationship between Apple Inc, OPEX and its revenue is what it is. So yes, because -- in other words, it is a fact as to what that relationship is. I am simply then allocating that relationship --

Q. It is what it is and it has nothing to do with the App Store?

A. I would disagree it has nothing to do with the

App Store.

Q. Let us have a look at the ROCE expression. So if we go to paragraph 13 at the bottom. I think it follows from what you said earlier that you also agree that this is algebraically correct?

A. It would result -- subject to your footnote 1, and I am not sure maybe footnote 2 as well, but footnote 1 certainly, it basically would represent or come out with the same numbers. If you substituted the way you did and put in these numbers, it would yield the relationship that I calculated.

Q. Again, the only term in this whole equation that is specific to the App Store is the gross margin again?

A. Importantly so, yes.

Q. Again, supposing that the gross margin is 100%, just to take the benchmark for the maximum, this would inevitably spit out a ROCE figure which is well over 400%. You can take that from me.

A. I have not done that math.

Q. Again, essentially that is just because the Apple Inc total revenue is large relative to its OPEX and to the value of its machinery and other assets, yes?

A. Yes, I think that is part of what the ROCE calculation is showing.

Q. Except these are Apple Inc figures?

A. No, I understand that, but the App Store is part of Apple Inc.
Q. It is a very small part of Apple Inc, though, is it not?
A. It is a small part in terms of the revenue dollars, but also this is consistent, at least from an output perspective, with how Apple thought about the App Store in its profitability.
Q. Before we move on to the return on assets, I just want to think about how this ROCE formula might apply to a business with some different characteristics. So let us imagine you have got a business that has a portfolio of products and a minimal cost of sales associated with any of them, yes?
A. Okay.
Q. Then for a business like that, the total revenue might only exceed OPEX by an amount that is small, relative to tangible assets. That is one possibility?
A. It might, sure.
Q. If it did, then this formula would give you a very low ROCE for any one of those multiple products that they produce?
A. I think again just as a matter of mathematics.
Q. Even if one of them is generating virtually all of the gross margin in the business?
A. It would -- I would have to work through it to see if

that was true, because if you -- once you start changing the gross margin between each of them, that is going to impact on the individual ROCEs for each one.

Q. But if you look at the formula here, if you set that gross margin, the GMS figure, to something close to 1, then if R is close to O the whole expression is close to zero?

A. Yes.

Q. So using a revenue allocation can bake in very low ROCE figures, can it not?

A. I do not know that I think about it the way that you articulated it. I think it is simply a function of really, at the end of the day, what is the gross margin of the App Store, and then what is the relationship of the OPEX for Apple Inc as a whole to the revenue of Apple Inc, and then -- because they are common costs, and if you look at the component concepts as to what those costs are, it is very reasonable and usual that one would allocate those, and I think in this case a revenue based allocation is conservative, quite frankly.

Q. Okay, on the return of assets figure, can we agree the same sort of answer applies mutatis mutandis?

A. I would answer all the questions in the same way, sir.

Q. Great. So that takes me then to your supplemental

report which is at {C2/9/1}. I should say it takes me back to your supplemental report.

A. Let me get there. This is the January 9 one?

Q. No, sorry.

A. You want the supplement to the original report?

Q. Exactly.

A. Okay, thank you.

Q. If we can just go on to paragraph 1.2.2. {C2/9/4}

A. This is in the introduction?

Q. So you were asked to calculate profitability for the App Store assuming that Apple's Commission was 10, 15 or 20%, yes?

A. Yes.

Q. If we go on to page {C2/9/8}. So this is where you set out the answers to that question, yes?

A. Correct.

Q. Table 1 has the figures for a 10% Commission, yes?

A. Yes.

Q. Table 3 for 15?

A. Correct.

Q. If we could just zoom out on the screen a bit so we can see the whole page, because the next question was that the OPEX lines are the same, yes?

A. Yes.

Q. You do not show new figures for assets or capital

employed either?

A. Let me just see, check one thing.

The only thing I change is the Commission rates.

Q. Yes. So these operating margin, return on asset and ROCE figures are based on costs and assets that have been estimated by using revenue allocations assuming Apple's actual Commission, yes?

A. Correct.

Q. Then you are comparing those costs and assets with revenues that have been produced by a Commission of 10% or 15% or 20%, yes?

A. Essentially I am holding those other factors. I believe, again subject to check, I believe that they are -- I am holding those constant and then changing the Commission rate.

Q. Yes. So let us assume -- let us imagine a counterfactual in which Apple did charge 10% or 15% or 20% Commission right from the outset. So there would never have been a 30% Commission in that scenario?

A. Okay.

Q. Imagine that Dr Kent looked at this and said: look, this is outrageous, 15% Commission, that is excessive. I want Mr Dudney to calculate how profitable the App Store is. Then you came along to do your allocations, you would not have come up with these

numbers, would you?

A. It would depend on how I treated the allocation.

Q. But you definitely would not have come up with these numbers, because are done using a revenue allocation on a Commission that Apple would never have charged?

A. Can you repeat the question for me? I just want to make sure I understand it.

Q. So these figures are based on OPEX and assets and liabilities that you have calculated using a revenue allocation?

A. Correct.

Q. Based on the App Store's actual revenues?

A. Correct, that relationship.

Q. You would not have had those numbers available to you at all in the counterfactual that we are talking about?

A. Depending on how one would want to use the counterfactual. But if one wanted to just, again, adjust simply that top revenue number, which is what I understood my instructions to be, that I then set out the impact of that for whatever purpose Dr Holt might find applicable. So that is the only thing that I then varied, and resulted in a different gross profit as a result.

Q. Not just gross profit?

A. Operating profit as well, correct.

Q. Also ROCE and return on assets?
A. Correct.
Q. So if you had actually applied your own methodology in full to come up with these tables, you would have allocated significantly less OPEX to the App Store, yes?
A. If I did it mathematically, that would be the case. I mean, I address this point in 2.2, subsection (b).
Q. Significantly less capital employed as well, yes?
A. I am sorry, could you repeat the question?
Q. Significantly less capital employed would be allocated as well on the same methodology?
A. It would have an impact. I would have to run that analysis.
Q. An impact down?
A. I would want to run before I estimate it.
Q. We have discussed the fact that they are all revenue allocations. So if there is less revenue there is going to be less capital employed?
A. Correct, less capital employed. But then the question would be how that would relate to the operating profit that would be in the numerator of the analysis.
Q. Yes. I mean, we can actually do this if we wanted to by going back to the formulas that I had up before, because that is exactly what they are showing you, is it not?
A. I could run the analysis in different ways, sure.

Q. So just looking at FY19 in the 15% Commission rate, the gross margin there is about 83%, so that is 6,482 divided by 7,582. I am not asking you to do it but take it from me.

A. I am happy to accept it to see what your next question is.

Q. Okay. So if we went back to the formula that I had before for what the operating margin is, perhaps you can just take it from me to make it go quickly, that would actually give us an operating margin of 70%. Does that surprise you?

A. It would change, and so, no, it would not surprise me that there would be some change.

Q. So actually all of these figures, whether it is the operating margin or the ROCE or the return on assets, would actually turn out pretty similar to what you have found in the real world?

A. If I were to change from the simplifying assumptions that I talk about here in 2.2, or actually it is 2.2.1(b).

Q. So if you had written your report in that counterfactual world and done all the same -- applied exactly the same methodology, you would have come up with almost the same ROCE figures as what you have actually come up with?

A. I would have to run them to see just to confirm it for

myself because there are different elements, if you will, that are there, but if I had made that change it would have an impact, I agree with that.

Q. But to see what is happening when those revenues are lower is that you are also stripping out costs and you are also stripping out capital?

A. If one were to run it in an alternative scenario versus what I ran here, that is the case, yes.

Q. So broadly speaking you would expect it to take you, looking at the formulas we had before, to the same sort of place?

A. Again, I would want to run it before I would agree. It could be the case, I would just need to run that calculation, because that was not part of the set that I ran.

MR PICCININ: I only have one more topic, sir. I am looking at the time. This is the topic I would have to go into closed for, and it is not very long, if I can put it that way.

THE CHAIRMAN: How long is not very long?

MR PICCININ: I have 44 pages in total and I am on page 37. Sorry, 43 pages.

THE CHAIRMAN: Are you suggesting you could finish this evening?

MR PICCININ: I would expect I would finish this evening.

THE CHAIRMAN: How much longer do you think? Are you talkings about 15 minutes or longer?

MR PICCININ: It is probably about that, I would say.

THE CHAIRMAN: But we would need to go into closed for it?

MR PICCININ: Yes, that is the only thing.

THE CHAIRMAN: Okay, we will do that.

If you are happy with that, Mr Dudney?

A. Perfectly fine.

THE CHAIRMAN: So could we please -- so you are willing now to go into closed session?

MR PICCININ: Yes.

THE CHAIRMAN: Could we please turn the live stream off, and anyone who is not in the confidentiality ring please leave the court.

(4.34 pm)

(Private session)

(The hearing adjourned until Thursday, 30 January at 10.30 am)

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