Chipmaker Trends - A Look at Competition and Litigation in Semiconductors

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Presentation

Anand Srinivasan {BIO 16652971 <GO>}

Good morning and welcome to the Bloomberg Intelligence webinar, focused on regulatory and intellectual property trends in the semiconductor industry.

My name is Anand Srinivasan and I cover the industry for the firm. On the call with me are our expert analyst on anti-trust matters, Jennifer Rie; and our intellectual property analyst, Matthew Larson. All of our bios and research work can be found on the Bloomberg Terminal by typing in BI SEMI GO.

Let's get started. Few housekeeping notes. Today's presentation will be recorded and available for playback. At the bottom of the slide window you will notice that you can adjust the volume and maximize your screen. We recommend that you maximize your screen for best quality. Feel free to ask questions during the Q&A panel to the right of the slide. We will address questions at the conclusion of the presentation. A copy of the slides will be distributed via email following the presentation, and additional questions can be sent to bievents@bloomberg.net.

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regulatory and IP trends, by typing in BI SEMI G. And we also have IDC data and semiconductor data from SEMI, the industry trade body, on the dashboard.

I thought we talk a few companies that are in the thick of anti-trust and/or litigation matters or undergoing some significant intellectual property issues, companies such as Qualcomm, NVIDIA, Marvell, Micron; and also talk a little bit about the IP theme, some of the regulatory trends that are going on in the industry, also talk about offensive versus defensive patents.

I thought we'd start with Samsung. And one of the things that we have done extensive work on is the effect of Samsung on Qualcomm. So the company here is Qualcomm. And by choosing to make its own in-house chips versus buying Qualcomm's integrated baseband, obviously Qualcomm has lost out on the Samsung handset potential. But there are some additional factors; one is, Samsung's balances tip now towards the lower end handsets because of its share loss towards the higher end handsets, its ASPs also gets skewed downward and there is heightened competition in the industry from MediaTek as well.

So we've discussed this at length in our dashboard as part of our Qualcomm deck. So I would urge investors or people who are interested in Qualcomm to go into BI SEMI.

There's also the consideration as part of its strategic review to try and split the company into two. We have explicitly suggested that this would create weaker segments in the long run, perhaps not in the best interest of the company in the long run. However, in the near-term, these segments might attract attention from multiple suitors.

So that's the backdrop of Qualcomm, and they recently settled with the NDRC in China, which would permit their Licensing segment to potentially cross-license and gain revenue streams from handset royalty make -- or handset makers in China that use Qualcomm or non-Qualcomm chips. So that's the background on Qualcomm.

With that, Jen, I'll start with you. Paint a picture for us, what are the investigations that Qualcomm now has underway across the different regulatory agencies. What is their current status with the timing, with the potential fines and actions as an outcome of this? You mentioned that EU specifically could levy the largest sign.

Jennifer Rie {BIO 18267478 <GO>}

That's right. Thank you, Anand. Well, yes, Qualcomm has been under investigation actually for quite a few years, across the world by competition authorities in Europe, Korea, Japan and the US. They recently concluded an investigation in China related to the way they license their standard essential patents, and so that's pretty much finished. Now, these investigations are intrusive, they're a distraction, but at the end of the day, I really only see one potentially having any kind of real impact on the company and that would be in Europe -- by the European Commission. So let's talk about what's going on there first. Now, what the European Commission has done is

recently sort of formalized an investigation of two different kinds of anti-trust conduct. The first one is an older investigation that's been kind of lagging, it's been around for a few years. It started with some customer complaints related to chipsets that comply with 3G standards for mobile phones.

And what's been alleged is that Qualcomm is predatory pricing these chipsets. And what that means is that they price the chipsets below their own marginal cost in order to capture all the sales, because their competitors can't price that low without driving themselves out of business, and the concept is they sort of garner a monopoly and then down-the-road raise the price and recoup whatever they've lost by pricing below cost. I don't see this really turning into much of anything, because first, these kinds of claims are very difficult to prove and anti-trust enforcers really don't want to discourage low pricing.

So there's a little bit of conflict there with the goal of anti-trust, and also because the law on predatory pricing is a bit unsettled in Europe and the European Commission doesn't tend to fine in areas where the law is unsettled.

But the second kind of conduct they are looking at is maybe a little bit more serious situation. And here they are looking at allegations of exclusive dealing for the sale of chipsets that comply with both 3G and 4G standards used for mobile devices. And what is exclusive dealing? In the US, we call it de facto exclusive dealing. And what it is, is offering such extreme financial incentives, rebates, and other discounts on the condition that a customer purchase all or most of their chipset requirements from Qualcomm that the customer really has no other choice. It's worth it for them and they stop buying from competitors, and again, it hinders rivals' ability to compete. And the reason I think this is more serious is because; first, the law on exclusive dealing in Europe is more clear and more set, and there's more of a precedent, and it's presumed that this kind of conduct -- if their investigation shows that this is going on -- is harmful conduct.

And in fact, we have a good example of Intel having been fined in 2009 for very, very similar allegations in a similar kind of conduct related to CPUs. At that time they were fined EUR1.06 billion and there were some conduct requirements as well. I could see, if things bear out that Qualcomm has violated the law, that a similar kind of fine could be assessed against Qualcomm. Now, talking about timing here though, nothing is going to resolve any time soon. These things lag on for years - the European Commission has no statutory deadline. I don't see anything happening here in less than a year and it will probably be more than that.

And the other thing I think I'd like to clarify is that we often see in the news that the European Commission can fine 10% of over annual turnover of the company. That really rarely ever happens and is unlikely to happen here. What happens is, they pick a percentage between 5% and 30% of the sales of the products for which the wrong doing is directed. And they look at the severity of the antitrust defense. And in this case exclusive dealing is considered sort of on the less severe side of antitrust conduct. So you'd probably be looking at something below 10%. In Intel's case, they took 5%. They multiply that percentage of sales by the number of years the

wrongdoing was ongoing, and basically that's the fine. And the fine can be increased if the company is a repeat offender; and if the company's involvement is limited, it can be decreased. So here, I do see some potential for a fine. But again, I don't see that occurring until way down the road.

With respect to Korea and Japan, I really don't see a lot of impact. Korea is also looking at abuse of SEPs. It seems that what we're hearing from Korea is that they are somewhat satisfied with what was imposed in China in terms of the change in how Qualcomm... the royalties that Qualcomm would charge... and it doesn't really look like much is going to come out of that. Also in the US, we see the US looking at whether or not there's some abuse of the licensing of standard essential patents. And here they are looking -- the FTC -- is looking at this conduct under Section 5 of the Federal Trade Commission Act. They usually use Section 5 when they think the conduct is, sort of, on the less egregious end of anti-trust conduct. And Section 5 can but rarely ever ends up with a fine. It usually ends up with a cease and desist order, simply saying, hey, be reasonable about the way you license these. And really that's a slap on the wrist more than anything else. So basically, that falls into the "no-big-deal" category.

Anand Srinivasan {BIO 16652971 <GO>}

So to summarize; Korea no big deal, Japan no big deal, US ITC no big deal.

Jennifer Rie {BIO 18267478 <GO>}

FTC.

Anand Srinivasan {BIO 16652971 <GO>}

US FTC no big deal. Do you watch out big fine, potentially, but over a timeline that is still very, very unclear?

Jennifer Rie {BIO 18267478 <GO>}

Right, that's exactly right on that.

Anand Srinivasan {BIO 16652971 <GO>}

Okay. And so, I want to shift gears and talk a little bit about the NDRC. So Qualcomm settle with the NDRC, and so this clears the way for its chips to be utilized by Chinese handset makers to potentially pay then royalty revenues, which they're still in the discussions to make license agreements for. But let's say -- and also there is potential change of business practices, but it also has a broader impact on the industry.

Matt, can you talk a little bit about what the NDRC's settlement does from an intellectual property perspective? Does it provide a framework for other companies to stay out of its cross hairs?

Matt Larson {BIO 19014506 <GO>}

Yeah, certainly. The NDRC settlement is interesting in a couple of different ways. It certainly provides a roadmap to -- for companies like Qualcomm who are looking to license their standard essential patents in China.

And by standard essential patents, those are patents that cover various technical standards. So wireless communications, Wi-Fi, any kind of interoperability issue that you may have, companies decide on standards that are used across the industry. So one device can work with or talk to another. And the intellectual property that is required to implement those technical standards is referred to as standard essential. And so, the concern -- the general concern here is, how much companies are able to strangle the market by owning the technology that everyone uses in every device. And what the NDRC settlement does is, it set out some of terms by which companies, specifically Qualcomm here, can license out its standard essential patents.

There are three main provisions that I think are telling. The first of potentially most impactful is that people who license their Chinese intellectual property or in turn required to pay the people who take a license for whatever patents they have in return. So the cross-licensing, almost an obligatory cross-licensing agreement by which the party who is paying for the license can offset that price with some of their own intellectual property depending on the size of those two patent portfolios, it could be a large offset, it could be a small offset, but it's little bit of a protectionist measure to bring down rates for companies with intellectual property in China.

The second point that I think is important has to do with the royalty base. The way that patents are licensed is based on some percentage or some rate of a device, of a component, of a royalty base. And what the NDRC settlement said is that royalty base to which you can apply your licensing percentage is 65% of an end device.

Previously companies would license, let's say, their Wi-Fi technology for 2% or 3% of an entire handset or their 3G, 4G LTE patents would be licensed for anywhere between 1% and 3% of the end device. What China said is, you can no longer use the entire end device as your royalty base, but only 65% of that. So they're reducing potentially royalty payments under that model, but it's not quite as extreme as some of the positions we've seen in other jurisdictions.

For example, in the United States, there are couple of areas where people are moving from the end device being the royalty base to the smallest component that practices the technology being a royalty base. So you're moving from an entire phone to just the Wi-Fi chip, things like that. So this is actually somewhat of a neutral guide post in the NDRC settlement.

And the third point that I think is worth raising about standard essential patent licensing out of this Qualcomm-NDRC settlement is the fact that companies are no longer allowed to bundle their standard essential patents with their non-essential or, we'll call them their "Cadillac" patents in these licensing deals. So if I've got

technology that covers Wi-Fi standards. I have to license those separately than the bells and whistles that I have in my patent portfolio. What companies are previously doing is lumping them all together and generating a premium on licensing the entire portfolio.

The NDRC settlement puts an end to that practice, requiring them to be unbundled. And depending on how you look at this, it could drive down prices that you're able to charge for your non-essential patents just because you're looking to attract licensers. It's going to change the licensing dynamic and the negotiation dynamic when people are looking to get a return on their Chinese intellectual property.

Anand Srinivasan {BIO 16652971 <GO>}

It seems like disaggregation of the intellectual properties seems to be the MO of the NDRC. Is that a philosophical difference between how intellectual property bodies across different jurisdictions operate or is it just China that's different?

I mean, this would dramatically by saying, I mean, the IEEE has the thing ongoing about, "Okay, pay for the Wi-Fi chip, not the percentage of the phone, pay for what the Wi-Fi chip ought to be worth." Right. So, and the NDRC appears to be on a similar tact as well.

So the question is, are there dramatic differences between the China versus the US or versus the EU on intellectual property, or is this a China-specific, NDRC-specific thing?

Matt Larson {BIO 19014506 <GO>}

There are. I think, that's a good segue into a larger discussion. On this policy, specifically, you're seeing the disaggregation on a couple of different fronts. You'll see that delineation in the US because there are contractual requirements that companies undertake with respect to their standard essential patents to license those on reasonable and non-discriminatory terms. And so, they'll license those out on those terms and they'll negotiate at separate term for their, we'll call, catalog the patents.

In China the NDRC is interacted in not letting companies with large standard essential patent portfolios, bully other companies into taking licenses to the non-essential features. So it's a little bit more of a protectionist approach. Whereas in the US, it's kind of -- just kind of built into the system in a way the licenses are negotiated.

Looking at just generally, how those trends play out, you have to remember that in China the introduction of intellectual property and strict enforcements and recognition of intellectual property is a developing area of law in China, there the bulk of their patent protection has been introduced as the globalization of their economy has come up, it's a developing area where you contrast that with the US, intellectual property is baked into the constitution, the holding of private property

rights and ability to monetize those has always been a central factor to the US governments and US markets, whereas China is just now getting up to speed. I read somewhere that someone called China's patent system a vibrant yet flawed system. And I think that's a good -- it's a good description there, they're getting up to speed, but there are still some issues. And just from a cultural perspective, the United States has always been more focused on the protection and monetization of personal property, where I think the approach from China has been not as focused on those individual barriers and protections. And so, you see that play out in negotiations in a way that intellectual property is enforced and licensed.

Anand Srinivasan {BIO 16652971 <GO>}

So, from a regulatory perspective, Jen, what is the purview of these different agencies and is there a dramatic difference between how regulatory agencies in the United States or the EU view it versus than China? We're starting to get a lot more regulatory agencies involved to the NDRC, MOFCOM. Are there certain factors also that can be used to judge whether certain industries can be or in companies that are at risk of regulatory interest?

And last question just to add to that pile is, is it to fine their matters, is it the changing of practices, or is it IP and structural risk?

Jennifer Rie {BIO 18267478 <GO>}

Well, I think, like Matt just explained with the development of IP enforcement, we're in the exact same place with the development of antitrust enforcement in China. Their anti-monopoly law went into effect in 2008; it's really new. The entire anti-trust regulatory regime is new and developing, and has been called basically a wild card. I mean, with each new decision, there's something new that occurs, there's some new approach. And anti-trust regulators study it carefully to see how this history develops. And I think understanding that, when you compare it to the EU and US where our competition laws are long-standing, well-developed, backed by loads of economic analysis, and basically, generally meant for the protection of a healthy competitive market. In other words, not geared toward protecting companies or competitors, but geared toward keeping a healthy competitive market where everybody has a chance to challenge an incumbent and compete robustly. You have maybe a little bit of a different approach so far from Chinese enforcers. There is some concern that their enforcement has been largely to protect domestic firms, again it's been more protectionist from foreign competition. And we've even seen concerns expressed by Federal Trade Commission chair people, as well as representatives from the DoJ stating that they are concerned that the way anti-trust is being implemented in China is a matter of industrial policy rather than protecting competition.

And so, we have to continue to see how this develops. But if this is how we're viewing it now and the approach that might be taken, and what we have to expect is that the industrial areas where the Chinese anti-trust enforcers are going to be looking at, is where they have the most robust domestic industry. And that's a bit of

what we've seen, we've seen them active in tech, in software, electronics, auto parts and I think that is what might occur going forward.

And in terms of the fine, the changing of practices or the IP as structural risk, I think it depends on the jurisdiction. We see jurisdictions that are willing to dole out those big fines, including Europe and in some cases US. And I think you see some of these jurisdictions like China that might be more interested in the changing of practices, controlling that IP, controlling the royalty rates and things like that, that you really won't see; you won't price regulation occurring from antitrust regulators in the US and the EU, it's just really not their practice; whereas it looks like the Chinese regulators are more willing to price regulate and to talk about what the royalty needs to be for certain type of patents.

Anand Srinivasan {BIO 16652971 <GO>}

It seems like the MO of the Chinese regulatory agencies is to protect China Inc versus and keep it as China Inc versus non-China Inc versus the purview of the EU, the US regulatory agencies may be to protect consumers against "the big bad corporations". Is that a reasonable description?

Jennifer Rie {BIO 18267478 <GO>}

For this, looks today, yes it is. I mean, we're still seeing things develop in China and there's a lot of discussion and cooperation amongst agencies and how -- there's lot of assistance in the development of this regime, but at least for now, yes.

Anand Srinivasan {BIO 16652971 <GO>}

Okay. Matt, I want to switch gears here and talk a little bit about offensive versus defensive patents. You've done a little bit of work on the subject. And this has become a common practice in the tech sector now, isn't it? The gathering of IP for defensive purposes simply the sword if nothing else annoyance suits, if you may, versus a serious product development effort?

Matt Larson {BIO 19014506 <GO>}

Yeah, that's right. There are number of different ways that companies can utilize their intellectual property, specifically their patent protection. And you're seeing a lot of creativity and innovation in this space as well. I think, the offensive versus defensive distinction is a good one, commonly referred to in the industry, using your patent as a sword or a shield. When we traditionally think about patents, I think we think defensively. Your shield. As you get a patent on the products that you came up with, with the intent purpose of excluding your competition from using that technology.

You came up with the secret sauce, you want to use that in your products, you don't want anybody else to use it or misappropriate it, you want to reap the benefit of being able to sell as much of that widget as you can. That's kind of the traditional defensive portfolio, and that's why companies will invest in R&D, they'll have their

inventors submit disclosures to the lawyers, who then protect the stuff that's getting incorporated in the products. That's a strong defensive portfolio.

On the other side, companies are starting to look at these massive investments, not just in R&D, they also pay annuities to keep up their patent portfolio, there are maintenance fees. So the question that investors start to have is, what's the ROI that we're getting out of this asset that's just sitting there. It's a property right like anything else, can we license it out. And that's where you start to get into using your patents offensively or using the sword, and either looking for others in the industry who might benefit from the technology, maybe you license out stale intellectual property that you yourself aren't using, but somebody else might be able to monetize for you.

There are some companies that just don't focus on certain market sub-segments. Do they have competitors there who are using those technologies that they might be able to monetize? There is always the option of selling off part of the portfolio and either getting some kind of license back from the company who acquires the patent, sort of selling them for a one-time fee. So there are lot of different creative arrangements that companies have gotten into in order to generate some kind of return on patent portfolios as a property asset.

Anand Srinivasan {BIO 16652971 <GO>}

I like your sword and shield analogy. We've talked a theme -- about themes a little bit, we've talked about Qualcomm in a little bit of detail. Let's jump into Marvell. This is a company that predominantly is in the hard disk drive controller space and also has a fledgling mobile chip business, specifically focused on integrated baseband application processor chips.

It has less than 2% market share against Qualcomm and MediaTek in that space, both on the 3, 3.5G side and the 4G side, but intellectual property is caught in the cross hairs of litigation, and against Carnegie Mellon, and supposedly Carnegie Mellon won huge $1.5 billion case against Marvell, but were back to active a little bit. Tell us a little bit more about that and where things stand now and what the timeline and the dollar impact is going to be?

Matt Larson {BIO 19014506 <GO>}

Certainly, kind of the high level overview of the overall case is in the early 2000s Marvell was looking for some design improvements and implemented a media noise processor that more or less improves the ability to detect media on a hard drive or detect information. And that's kind of all you need to know about the technology, really, it's something that was developed in part by professors at Carnegie Mellon. Long story short, Carnegie Mellon went after Marvell in a patent infringement suit, wound up steamrolling Marvell in the trial. Post-trial, there were some additional damages that were tacked on. And when the dust settled, Marvell was looking at a $1.5 billion verdict and judgment against them. Marvell obviously didn't pay, they had the opportunity to appeal and question some of the findings that the District

Court had made that, the jury had implemented and try to pick the judgment apart a little bit.

One of the -- a couple of the grounds that they were looking at, the jury awarded damages based on $0.50 per chip royalty. They basically looked at the last 10 years of Marvell chips, found that there was an average chip revenue of $4.40 per chip, they found the profit was about $2.16 and gave them $0.50 per chip, so there's about a quarter of the profit. That's good, but the $0.50 royalty moving forward gets to be dangerous as the price of chips drops, that eats further into your profit margin. There is no percentage there, it's just the hard $0.50. So that's the difficult part of the judgment, and one that was upheld on appeal.

The appeals courts says, "yes, that is the correct royalty, you're still on the hook for the $0.50," where Marvell was able to save a large portion of this verdict is, they said that a large portion of the chips on which they are supposed to pay a royalty never enter the US. They're manufactured abroad, they're sold abroad, they're incorporated into chips, or incorporated into products abroad, they never entered the US, and so they're not subject to US patent protection.

On that issue, the appeals court said there's not enough evidence that was presented at the first trial, so we're going to scratch 900 million approximately half the verdict and send it back to the court for further proceedings.

So what Marvell is looking at now is a $278 million verdict with the potential to add on additional damages at the District Court proceeding, but they're also looking at a $0.50 royalty moving forward. And so, I think what you've got now is a situation where the parties were way too far apart to settle after trial. Marvell is not going to pay out 1.5 billion. Now they're in the ballpark of a couple of hundred million. Carnegie Mellon isn't in the business of putting Marvell out on the streets. They want a continuing royalty, they want to generate some revenue on their intellectual property. And so, I think they are at a place now where you could potentially see a deal with the company as a lot closer.

Anand Srinivasan {BIO 16652971 <GO>}

The interesting part of the -- part that was sent back was that the IP entity has no bearing on stuff that is made overseas that is not part of your jurisdiction and sold overseas. So if it were a US company, it would be the (inaudible) of saying, I make my products overseas, they're sold overseas, but there is US intellectual property patent where there somebody were to take that, make that overseas and sell that overseas, you won't be able to enforce it. Is that a fair characterization?

Matt Larson {BIO 19014506 <GO>}

That's a fair character as a notion of extra territoriality that US patents protects under US law. And so there is a question of how far the contacts to foreign jurisdiction have to be before you really escape the long arm of the law, so to speak.

And so, that's -- it's an interesting question in this case, it's a close call, Carnegie Mellon presented the argument that because all the design occurred here, because it's basically everything happened in the US and then they shipped the designs overseas, those chips should be subject to royalties. Marvell disagrees that under patent well there is no action that actually occurred in the US that entitles you to royalties on these products.

And so, we'll see if the battle ones are playing out. It's an interesting question, but I guess parties frequently don't litigation, because it's interesting to lawyers.

Anand Srinivasan {BIO 16652971 <GO>}

It's interesting to everyone, the Chinese handset makers on the Qualcomm said, whether they could escape US intellectual property, because they're making it in China and selling it in China, maybe they would be not subject to that. Interesting a bit.

NVIDIA, another company that is -- we have at Bloomberg Intelligence have coverage of this company, we've done a detailed amount of work, claiming to undergo a serious transformation from a PC graphics company to a PC gaming company and that the transformation -- this transformation makes them more of a gamer and less of a PC company. And as a result, PC weakness should not have impact on this bill, announced earnings tonight, we'll get a little bit more details on whether that trend is continuing.

But aside from that, the company has again been in litigation against Samsung, Qualcomm, ARM, Imagination are all involved. Again, lay out the case for us, timeline of events, monies involved.

Matt Larson {BIO 19014506 <GO>}

Yes. So, at a high level, if you look at the charges on the screen, let me just click, that's it. You'll notice that NVIDIA is not focused on the mobile space right now, it's not a segment where they're putting a lot of energy, go ahead and click-through.

And so, going back to the concept of using your patent portfolio as a sword and looking to see where you can generate additional revenue on your patent portfolio. One of the options the companies have is taking a look at the technology that you have protected and seeing if that's in a space where you're not operating and seeing if you can generate a royalty from the people who are operating in that space. And that's more or less exactly what NVIDIA has done here is they've taken a look at Samsung that uses graphics technologies from some of NVIDIA's major competitors. You've got Samsung sourcing graphics from Qualcomm, from ARM and from Imagination. And so NVIDIA by going after Samsung of Galaxy devices and similar devices is able to generate revenue from three of its graphics competitors in an area where they're not operating.

So they approached Samsung, licensing negotiations broke down, and, as usually happens after companies have reached a standstill, litigation ensued. They are going after each other fairly aggressively looking to resolve the dispute on a pretty short timeline based on the litigation that they filed. They've all filed in very fast jurisdictions where there is a really quick time to trial.

If you look at the case timeline, that's up on the screen now, you'll notice that one trial has already happened, another one is on the way. There's a jury trial coming up in 2016 where a judgment will be issued. My feeling on this case is that Samsung and NVIDIA want to reach a deal, they're just trying to check the scales in favor of one person or the other. Right now, Samsung has won a couple of key victories, the trial has already been held, seem to favor Samsung although there is a long way to go before any kind of final judgment or verdict is rendered in that case.

So looking at the timeline, considering that NVIDIA and Samsung have key representatives meetings in the next couple of weeks to discuss settlements, it may be possible that they could resolve their dispute before the end of the year, before these trials start kicking in and final decisions. Looking at NVIDIA's overall strategy as well, they've got a $1.5 billion license with Intel that's going to dry up by 2017. And so, all indications are that NVIDIA wants to get a deal that Samsung done and then have time to negotiate with Intel, kind of based in part on some of the royalty rates of provisions that are in that license. It's not exactly analogous technology, but when companies negotiate IP, they will get prior license and industry practice.

So I think it's important for NVIDIA to try to get a good deal by the end of 2016. I think a good goal for the deal is 1 billion probably paid out over typical license of four to seven years. But if Samsung continues to win and get good posturing in litigation, you could see that come down based on just the leverage value of those cases.

Anand Srinivasan {BIO 16652971 <GO>}

Got it. I want to talk a little bit about Micron here for a minute. And reported interest from Tsinghua University's asset management arm, and this is the end-market breakdown of Micron, which is a DRAM and NAND leader, it's a consolidating industry. Jen, can you lead us through us what are the issues here from an anti-trust perspective or from other regulatory body perspective?

Jennifer Rie {BIO 18267478 <GO>}

Sure, of course. Unlikely to be significant antitrust issues here, because they are just is an insignificant competitive overlap between them, or at least not enough of a competitive overlap between these companies, to create issues for anti-trust regulators. And I think sometimes when we see a statement that there's an anti-trust problem, it's really just getting confused with where they may have an issue in the US, which is in front of the Committee on Foreign Investments in the United States, and that is often called CFIUS.

CFIUS is an executive branch organization which is charged with identifying potential national security risks posed by foreign acquisitions of US businesses. This committee is chaired by Secretary of the Treasury and includes representatives from a number of different US departments and agencies including Defense, State, Commerce Department and the Department of Homeland Security. So while they are charged with determining whether foreign acquisitions or investments can pose security threat, their process isn't particularly clear cut. So CFIUS review of the Micron transaction seems very likely. And the reason is because where the transaction involves an acquirer which is a state-owned entity, the transaction is automatically subject to increase scrutiny, and it usually means a longer-term scrutiny. And that means under CFIUS, that it would go through full scrutiny, which is 30 days plus 45 days and that is a 75-day review. What can happen is the deal can be blocked due to national security reasons or there could be a lot of mitigation measures that are put into place if the deal is allowed to go through. Oftentimes, these deals aren't usually blocked, but oftentimes what does happen is that the mitigation measures, which can include some significant US oversight of the ultimate merged entity, these mitigation measures are pretty extreme difficult and not acceptable by the buyer and what happens is the deal gets abandoned because of that. So there's some possibility here, but it certainly will get CFIUS to review.

Anand Srinivasan {BIO 16652971 <GO>}

Got it. Matt, any IP issues here? I mean, this was a little surprising that Micron has a reasonable IP portfolio for a commodity industry perhaps that's why. But talk a little bit about IP positioning and why perhaps it deserves a CFIUS review.

Matt Larson {BIO 19014506 <GO>}

Yeah. So I think one of the attractive things about Micron is its patent portfolio. They've got a pretty sizable chunk of assets in the US, just shy of 19,000 US patents. And their portfolio is actually one of the most cited portfolios in the semiconductor space. So we are seeing as other companies are referencing the Micron patents when filing their own patents.

They've also got 4,000 international patents and they have some interesting arrangements with companies that are currently monetizing patents that Micron has sold. A couple years ago, they sold 4,000 US patents to a company called Round Rock Research, which has then engaged in a fairly large licensing campaign, they file 37 lawsuits on those patents that they acquired. And so there are -- and Micron has also executed licensing agreements with some large patent portfolios, Round is being one of them. So they've really got a pretty strong network of intellectual property assets that could be leveraged by a potential buyer.

Anand Srinivasan {BIO 16652971 <GO>}

Got it. Thank you. And we're getting to the end of our sort of the CAN discussion, if you may. But I did have one question. Jen, why is there a pylon effect from a regulatory viewing of a particular company, one regulator in one region looks at Qualcomm. And then before you know it, by the time they have reached their

settlement, four other regulatory agencies have started looking at it. No fair, right? Or is it?

Jennifer Rie {BIO 18267478 <GO>}

Well, you might think of it as no fair. I mean, I think there's a couple factors weigh in. First, we have the increasingly global economy and we're talking about chips here, which is really a global product; and we're talking about emerging markets - they're becoming more active anti-trust enforcers, and that's increased the need for international cooperation. And so, what we're seeing, which I think is actually at the end of the day a good thing, is a lot of international cooperation amongst the world's antitrust enforcers. In a particular, the Korean FTC has attacked a lot of importance to international cooperation; they've entered Memorandums of Understanding with 15 competition authorities. You see the US, the EU and the Chinese regulators talking a lot more; they're sharing knowledge.

But what happens with this is that they're all interested in protecting consumers in their own country. And they talk about what's happening in different investigations, they learn and they're going to look into whether there could be some effect from the conduct within their jurisdiction. But at the end of the day, the knowledge-sharing and all the cooperation that's currently occurring might be a good thing in the long run for businesses, because the more these anti-trust enforcement agencies come together and become aligned in the way they treat antitrust and business conduct, the more certainty and comfort that businesses who actually are operating globally can have with their own conduct and whether it may or may not violate the law. So, it can be; while the pile-on effect isn't good, it can also be a good thing.

Anand Srinivasan {BIO 16652971 <GO>}

But which is slightly different from the differing agendas from an IP perspective.

Matt Larson {BIO 19014506 <GO>}

That's right. I think there is some similarity there. And one of the reasons that you're seeing similar issues, these companies have similar intellectual property assets in different jurisdictions. They file a patent in the US, if it's a key patent, they seek protection globally. Meanwhile, patent laws vary slightly from jurisdiction to jurisdiction, there are generally some similar approaches.

As Jen pointed out, some countries are more apt to get involved in rate-setting and the actual terms of agreements where -- whereas others are a little bit more hands off or parties will differ to court system to actually get the details nailed down. But you're seeing a little bit of variability just because of those differences and patent law and approaches to how to resolve the disputes.

Anand Srinivasan {BIO 16652971 <GO>}

Got it. Thank you, Matt. Folks, with that, we're at the end of our standardized presentations. Again, a reminder. If you want to ask questions, use the Q&A panel to the right of the slide. Just pause for a moment as we look at Q&A.

Matt, while we're doing that, can you talk through AMD for a quick minute or two, their patent portfolio, positioning, thoughts on AMD.

Matt Larson {BIO 19014506 <GO>}

Yeah, certainly. So, AMD has a pretty interesting portfolio. Right now, it's sitting at about 5,000 patents, I think, just a little bit fewer than 5,000 patents with another 1,200 to 1,500 in the pipe. There are a lot of AMD's patent activity happened right around the 2000s, it's kind of 1997 to 2002 era, and has been somewhat stagnant since then, a big portion of it is in electric digital data, maybe another 20% is in semiconductors.

It seems to be a pretty unique portfolio that they've been able to monetize fairly successfully. In 2010 Samsung paid $283 million payment essentially to settle a dispute. They entered into a no royalty-bearing cross-license with Intel. But as part of an overall litigation strategy, Intel wound up paying AMD a sizable chunk for dropping the lawsuit, although it's not explicitly a royalty, I would imagine that there is a large portion of that is attributable to the intellectual property. So, AMD has kind of developed a, by no means, small but sizable strong patent portfolio that has been able to monetize fairly successfully.

Anand Srinivasan {BIO 16652971 <GO>}

Got it. Jen, given a lot of the M&A interest by Chinese state-owned entities of late in their desire to build a semiconductor food chain in the homeland. Can you explain when CFIUS gets involved versus other agencies and what other regional clearances might be required?

Jennifer Rie {BIO 18267478 <GO>}

Well, CFIUS is going to get involved any time, a non-US entity is acquiring US assets. Now, they don't always review, but they are going to step in and they are going to take a look. If they think that it warrants review, they will review and impose mitigation measures. So they're always going to be involved where it's essentially a non-US entity acquiring or investing in US assets. As far as the other regions, it's going to depend on whether tests are triggered. And when I say that, each of the different jurisdictions have their own sort of framework for when a transaction has to be filed with antitrust authorities and the authorities given chance to review, and they have to usually reach certain thresholds; they have to be of a certain size or a certain amount of assets within those countries or certain amount of sales in those countries. And so, it just depends where the products in question are being sold.

Anand Srinivasan {BIO 16652971 <GO>}

Got it. And Matt, since we're talking about semis, can you review Intel and Apple sort of portfolios really quickly and give us a skinny on those two?

Matt Larson {BIO 19014506 <GO>}

Yeah, certainly. So, Apple is taking an interesting approach, I mean, they've got a large investment in intellectual property. They've got a lot of patents, they fashion themselves as a big innovator and certainly have done a lot of innovation. Today, nobody is disputing that. Apple, in terms of monetizing their portfolio, takes an interesting approach, because they're frequently a target of intellectual property lawsuits. I don't like using the pejorative, but patent trolls go after Apple, because they just want a quick payday.

And so, Apple is less concerned about monetizing its patents in the offensive sword way and more using them as a shield. Apple has taken a lot of efforts to reduce royalty payments. When we're talking about standard essential patents, Apple takes the position that royalties should be lower, it should be based on a smaller percentage of the device or the smallest component possible, because higher royalties dig into its pocket. So while Apple has been a huge innovator, it's also made a lot of steps that are adverse to say Qualcomm or Ericsson and Nokia, or some of the companies who are really looking to monetize their innovations.

Anand Srinivasan {BIO 16652971 <GO>}

Got it. And there's the recent passing of the law on "IP trolls". Does that help the industry in that regard or does it make it worse for licensors or owners of IP?

Matt Larson {BIO 19014506 <GO>}

So I think it's yet to be seen, They're still kicking around what the provisions with that bill are going to be. We've got a good team at Bloomberg Intelligence who is actually following kind of the most recent activity surrounding those bills. It's going to be tough anytime you adjust the patent litigation system, there are winners and losers. And it really kind of depends on what that final bill is going to look like. I think that it's a little ambitious to think you'll be able to pass a litigation bill, a law for lawyers that controls litigation. It seems suspect that it's really going to deter a whole lot of business practices. But we'll see when the actual legislation comes out.

Jennifer Rie {BIO 18267478 <GO>}

Yeah. So I also wanted to raise this we're talking a lot about IP and tech here, and I wanted to raise something else. The Federal Trade Commission covers a lot of different industries and areas in antitrust and they sort of move... there are different times when their focus moves... they focused a lot recently at healthcare industry. But at an event in April with anti-trust enforcers from all over the world and FTC enforcers speaking on panels, one of the things they said is that they are moving into looking at standard essential patents and they're making that a priority.

And I think that, that tells us that any company that owns and licenses standard essential patents, it's going to kind of come under the looking glass by the US FTC going forward in the next couple of years. They made it really clear that. This is something they're focusing on now.

Matt Larson {BIO 19014506 <GO>}

Yeah, something they're focusing on, you're seeing a lot more court cases about this, a lot of companies are rather than negotiating kind of behind closed doors there, they're going to court and saying, "Alright, we want to know what our reasonable royalty is", they're willing to fight about it, you're seeing -- there is a big dispute now between Apple and Ericsson that focuses on this issue. Ericsson and TCL, there are a lot of -- it's kind of an emerging area of low. So I think parties are looking on the court side to flesh that out and really see where the chips are falling.

Anand Srinivasan {BIO 16652971 <GO>}

Got it. Last call for questions before we wrap it up. Okay. So I want to take the time to thank Jennifer Rie, our Senior Litigation Analyst at Bloomberg Intelligence; and Matthew Larson, who is our Tech Sector Litigation Analyst covering Intellectual Property at Bloomberg Intelligence. And as a reminder, today's presentation will be recorded, available for playback, and a copy of the slides will be distributed via email.

Again, Bloomberg Intelligence, your one-stop shop for all semiconductor and other industry research. Thank you very much for joining us today.