

Tore: We're going to get started. Welcome to the Cirrus Logic session here at the Stifel Technology, Internet and Media Conference 2015. My name is Tore Svanberg and I cover the analog/mixed signal semiconductor industry. It is my pleasure to introduce Cirrus this morning. With us from the company we have Jason Rhode, who's the company's President and Chief Executive Officer, and he's up with me here on stage, and also Chelsea Heffernan, who's the company's IR manager, and she is right there in the audience. And the format for this particular session is a fireside chat or Q&A, so I'm going to get started. I'd like for all of you to participate if you can. And with that, I'll get started.

So Jason, maybe we should just only talk about your largest customer.

Jason: Oh, that's my favorite, yeah.

Tore: Maybe we can start off with sort of the near-term and the results that you reported a few weeks ago, and also talk a little bit about the March quarter outlook.

Jason: Sure, yeah. Obviously, we had some really great upside in the December quarter. That certainly continued on through this current quarter as well. We kind of telegraphed on the earnings call that we were seeing significantly improved contribution from the Wolfson acquisition this go-around, so that's really put us on a good trajectory coming into 2015, largely driven by what both Cirrus and Wolfson had already done separately. We had a big ramp from both companies in much more advanced geometries, so it's a great year coming up for us, we think.

Tore: And to maybe follow up on that from more of a technology perspective, you've talked a lot about 2014 being more a transition year, 2015 being more of a growth year again, especially as your smarter products are coming out to market. If you could elaborate a little bit on that, that would be great.

Jason: Sure. Well, if you look back at 2012, obviously that was just an incredible growth year, something like 70-plus percent, and at that point we really kind of—this direction we've moved in of voice features really required us to be able to throw a lot more signal processing at problems than we had done historically, so we took the step of migrating a lot of our products to 55-nanometer. It's kind of a parallel story for Wolfson. They went to 65-nanometer first, but largely the same story there. So the last couple years have not been a strong period of new product introductions. We've still done pretty well and expect to turn in a pretty reasonable growth number this year, certainly better than the industry average. But like 2012, it's a period where, with the new products ramping in 55-nanometer, the only reason you move the products of the sort we build to an advanced node like that is to add more functionality. Moving a DRAM down the process curve maybe makes it cheaper, but if you take a part that it's got a significant amount of analog content, no matter what you do moving it down the

process curve, it's going to get a lot more expensive, so the only reason to do that is to be able to add a lot more capabilities, more signal processing, more memory. So both Cirrus and Wolfson had done that separately, and 2015 is the year that we've been saying for a while is a year for Cirrus of a lot of new product introductions in significantly more advanced nodes than what we'd been shipping in the past. So there's a number of fronts, both new product introductions as well as ASP expansion, that we expect to come into play this year.

Tore: And moving on to the acquisition of Wolfson, so obviously you bought a significant competitor and I'm sure you already knew a lot about the competitor, as you compete against them, but once you buy them, obviously you can now open up the doors and see what's inside. So what are some of the things that surprised you one way or the other, either positive or negative, as you bought the company?

Jason: Well, I'm not known as being real pro-acquisition. I think a lot of times they really don't work out all that well. But you hit the nail on the head, that by virtue of the fact that we've competed against Wolfson for so many years, we really did have good visibility into where they were strong, where they had some weaknesses. I think what surprised me in hindsight was just the ways in which they were limited by their scale – which, I suppose, shouldn't have been that surprising, because it was a big limit for us back in the day as well. But it's a little different in the sense that, when we were a \$180 million company, we were taping out parts in quarter micron and things are a lot less expensive. The CAD tools are a lot less expensive. So they had done a lot of the right things over the past handful of years to really put themselves in a position to do well, but they were really struggling with scale, and they had a lot of investments going on that were difficult to fully support. And so it's been neat that, just by bringing them into the fold and bringing them into Cirrus, they've benefited immediately from the scale, whether it's with suppliers, having a little more leverage, whether it's CAD tools that—we've got a very rich and full suite of tools that they just flat couldn't afford, didn't have access to. The MEMS investment, the microphones that they were trying to do, was a huge investment for a company their size, whereas for us it's a pretty reasonable R&D expense that we think will pay off in the long run.

Tore: Was there anything about the engineering side, and even as you look at the two entities now, as far as the key design centers and things like that, that was interesting or surprising to you? I'm thinking obviously Cirrus has always been strong in analog and DSP capabilities. If you look at theirs, anything there that stood out?

Jason: They had done a lot of work to—surprisingly, for a company of their size, of really trying to formalize the notion of developing the IP you need for a platform for a whole generation and being able to really harden that IP such that you can

build a whole family of products without having to design from scratch IP blocks you need for each particular design going forward. That's something you see at bigger companies, and it was surprising to me that they were as far along as they were on that. But it's a really remarkably good team of engineers. I think owing to the fact that they were struggling to be profitable, they'd fallen a little bit into the trap of trying to do too many things for the resources they had, so that's something that we've been able to help them with a little bit, take some of that immediate pressure off. Hey, let's focus on the same things we did at Cirrus. Let's focus on a smaller number of our very best opportunities and knock the cover off the ball on those, rather than spread ourselves real thin. So we've kind of expanded that discipline to their team, which the engineers were obviously pretty receptive to right out of the gate.

I don't know that it's so surprising as it has been just neat to watch. I've said for years that in the industry we're in, the only way an acquisition works is if the engineers can see the value, because otherwise it's just like, okay, I guess we can do that acquisition but those guys have got to do it our way. In this case, both teams immediately can see what the other team brought to the party. They had a significantly more advanced software effort. We had significantly more hardware capability, a lot more cycles of learning and turning the crank on some of the more recent products. But we both shared the same vision going into the deal. We both are targeting the same customers, the same types of technology, and so the roadmap thing that could have turned into a real political football just didn't. The two teams got together and went, okay, this is further along on your product line and that's further along on this product line, and there we go. So we got through what could have been the difficult phase of the acquisition much more quickly than I expected.

Tore: Okay. And just moving on to the end markets and the customers, so obviously you've been a leader in audio for iOS now for many, many years, they obviously were more on the Android side, so now you have both. But I also assume that in the iOS—maybe I shouldn't assume it. But in the iOS world, there was probably a little bit less competition than on the Android side, and how would you characterize the competitive landscape changing since you bought your competitor and now you're one entity?

Jason: Yeah. The competitive landscape for us over the past handful of years has just—it's hard to characterize. Certainly, with Wolfson, they were the only company that had a product that was a real like-for-like type thing. A good engineer can always find another way to implement a function, so whereas in our case it's a nice tight little smart codec with memory in the processor and all the analog stuff integrated, you could go buy a separate codec, a separate DSP, put together a chipset. Obviously, we think it's a lot less work and a lot more elegant to use our integrated device. Customers are always going to have a choice, but we really

don't have one competitor that has across the board got the same kind of product line we do. There's more competitors in amplifiers probably than anywhere else, but as far as the smart codecs, we think we're pretty far ahead of what other people are at. And there's a handful of competitors out there that have tried to be successful in the market by taking, say, a DSP die and stacking a codec on top of it and selling that as an integrated product, but that's a pretty challenging thing to do in an ultra-high-volume space like mobile phones.

Tore: And moving on to some more specific blocks or technologies, so I know you were very excited about the MEMS microphone when you acquired Wolfson, and some people think of the MEMS microphone market as a commodity, so I guess maybe the definition is not the correct one. So help us understand a little bit why you're enthusiastic about the MEMS microphone while other companies think of it more as a commodity.

Jason: Sure. Well, it's a longer-term portion of our strategy, and I do think today microphones are largely viewed as commodities to a degree. It's a pretty technically advanced commodity and it's at the heart of a lot of the type of products that we get designed into. But for me, it's an exciting business for us over the next handful of years as we are able to co-design the smart codec along with the microphone to be able to work better together than you could get by designing them separately, so it's a strategy that I think we can deploy that very few other people can. We don't expect that to be a big component of the growth in the near term, but it's something that strategically is really interesting over the long term.

Tore: Okay. And as we look at the smart codec and coming back to 2015 being sort of the year with the new products, and you've talked about content obviously going up quite significantly with the smart codec that integrates more functionalities, you talked about MEMS microphone. What are some of the other functionalities that smart codec could eventually pick up so that the content growth momentum can continue?

Jason: Well, the thing that people will identify with that is part of the user experience, a lot of that is implemented as software features, which is a really nice kind of expansion to what we do because the good slide in our investor pitch that's on the website that walks you through kind of the transition over time of going from a basic stereo codec for less than \$1 today to an advanced smart codec that could be 250 to 350. And the features of the device are—the last generation to this generation goes from 600 to 900 MIPS, a ton of memory, lots of analog ins and outs, and all sorts of features to make the audio portion of a phone easier to implement for our customers. But then the things that we can layer on top of that that end up being part of the user experience are always on voice – voice commands, noise suppression, noise cancellation, all manner of different things

that are directly connected to how the user experiences their device. And those are things that, once a customer is shipping it from us, our customer is a lot less likely to want to take out because they've got to worry about changing the end user's experience with the product, so we think that enables us to be a lot stickier.

Two, it allows us to address a lot bigger portion of the market. There's not very many customers that have the volume as well as the certainty where you could go spend two to three years developing a \$20 million kind of smart codec initiative. There's not that many of those customers out there. We love them when we can find them, but outside of that, the strategy now in the smart codec area, we can come out with one device that is sort of our best guess at what the market overall wants, and then we can customize it per customer with software and firmware algorithms, either our own, which we give away for free. We've got a rich suite of stuff that's available from third parties. Most customers have their own stuff they want to run, and then we provide a rich suite of tools so that they can integrate all this stuff together and make it work as a cohesive product, so it really expands the market that we're able to serve with what feels like a more differentiated voice and audio experience. And then the neat thing, too, on top of that content expansion in mobile phones is the trend where we're really seeing a lot of these features. They may start out in a flagship phone, but they have to migrate down to the mid-tier and, over time, into the lower-end phone as that becomes kind of... In particular in Android, for example, some of these features just are starting to become identified with Android, and it's going to look odd to not have it in a phone with that OS.

Tore: So as we look at the smart codec or advanced smart codec, obviously it includes more functionalities, as you said, taking it from a software to a hardware approach. Help us understand, is there any risk that some of those functionalities, components, could be integrated somewhere else, or is there a reason why those particular ones—it just makes so much sense to integrate them all into the smart codec from a performance and functionality perspective?

Jason: Sure. Well, you always have to be concerned about digital processing being incorporated into whatever – the SOC, the apps processor – but in our case, the algorithms that we've chosen to differentiate on are really tightly coupled into the analog. There's feedback loops that cross back and forth between the analog and digital domain, and it really makes it a less efficient chip partition. Once you've got that integrated into one chip, you're really going to pursue a lot less elegant solution if you carve some of that out. That's not true of every algorithm, but those are things that we tend—like noise suppression, for example, that's strictly a microphone A-to-D converter, a bunch of digital processing, and the data goes off to the other end of the call. So there's less differentiation there, but that's something we give away for free.

Tore: So from that perspective, there's less risk of Cirrus being integrated into an SOC today than ever before?

Jason: I would say that's true, and I'd also say there's probably more opportunity for us to integrate than there ever has as well. The capabilities that we've got, 55—obviously we're not going to stop at 55-nanometer, but it's a really nice sweet spot for what we do. The opportunities that that gives us in terms of either signal processing power or memory as these systems—they're already complicated, but they're going from two microphones to three microphones to four microphones, and all of that adds a lot of different dimensions to the signal processing task at hand. And I'll tell you, the always-on voice thing is probably the most interesting convergence of all of the hard things that we do well that we've ever seen, because not only is it a very difficult signal processing task, it requires ultra-low-power analog. And it doesn't matter what number you give the customer. We think we've got the lowest power implementation in the world today, but no matter what the number is, it's not low enough. They want it to be half that, they want it to be a quarter of that, because they want it to be truly always-on, not always-on when it's plugged in – always on, always listening. The benefits of doing that, NSA notwithstanding, are all these hands-free laws in the car, just to be able to lay your phone on the passenger seat and say, okay, Google, call my mom. It's really a user feature that actually adds real value. It's just directly centered on what we do well.

Tore: So based on what you can see in the technology roadmap, what has become sort of a joke in ads today—we all know that voice recognition, you see ads and you laugh. They're joking all the time. That technology, from your perspective, it's going to be significantly enhanced here pretty soon?

Jason: Yeah, I definitely think it will, and part of that is embedding the right parts of it in an ultra-low-power device that's in the phone, rather than it's got to go to the cloud. I don't know about you, but I always find it frustrating when I say, hey, call Tore, and I get the little dots and then nothing happens. You shouldn't have to go to the cloud to call somebody that's already in my address book. I had a Nokia phone 15 years ago that could do that, so that pendulum swung a little too far. But at the same time, you can do things today because of the cloud that you'd never in a million years have been able to do in an isolated device. So it's about finding the blend and the balance in there, and our job in that is to support ultra-low-power microphones, very low-power A-to-D conversion that goes along with it, and then smart algorithms that progressively wake up more and more of the system. As it sits in a quiet environment, the microphone hears a noise. Hey, wake up something. Did that sound like a voice? Yeah, it was a voice. Let's wake up a little bit more and figure out, was that the catch phrase, and then at the same time buffer up all the data from the microphone so that it can be seamless and you don't have to have this really awkward thing of, you say the catch phrase, you

wait until it gives you a beep, then you tell it what you want it to do. You should just be able to talk to it and have it figure it out for you, and part of that is definitely embedding a lot more smarts and memory real close to the front end of the signal processing chain.

Tore: Very good. So I'm going to open it up to questions from the audience.

Q: What's the incremental opportunity when you talk about voice relative to the historical audio codec? Kind of give us a sense of what the size of that opportunity is. It seems like historically it's been a little smaller.

Jason: Sure. Well, there's two dimensions to that. There really weren't a lot of mobile phone customers trying to differentiate on audio quality per se, so distortion performance and noise. The general was, unless there's a dot connector where you can connect it to your car, it's probably the phone itself that's the limiting factor on audio. But once you start talking about voice and voice processing, now it's everybody that makes a phone that would like it to be able to do voice commands, noise suppression, noise cancellation. Those are all things that, whether you're making a high-end handset or a low-end handset, everybody wants to incorporate that step. Whether they can afford to do it today or not is a different story. So we've expanded the SAM by incorporating all these various voice features, and then, as well, going from solely the high-end flagship kind of devices and then seeing them penetrate further down the market. And then within the device themselves, where a codec three or four years ago – again, there's a really good slide on this in our investor pitch and in the most recent shareholder letter – where we went from selling a stereo codec that was maybe a buck or less than a buck to being able to sell one of these smart codecs with a lot of MIPS and memory, all sorts of analog ins and outs and algorithms that go with it, for 250 to 350, and also incorporate external boosted amplifiers with speaker protection so they can get it a lot louder so that you could actually hear your speaker phone when you're in the car, for example. So those are all significantly increased content opportunities.

Q: I guess _____ more of your reference to like incremental opportunity from some of the Wolfson stuff you brought in, and not so much the discrete components that you're adding to the voice side, just to kind of figure out what the delta of the incremental opportunity is for Cirrus today.

Jason: So in the current year, both companies were largely pursuing the same smart codec strategy, so that's enabled us to be more efficient and move forward more rapidly rather than just duplicating each other's product lines. So it's not necessarily that us acquiring Wolfson in the short term added to the ASP of a particular device, it just enabled us to broaden the product line out more rapidly so that we'd have the right product for all the various different tiers in the market. And it's really ending up to be quite an elegant solution in that we have the real

flagship device that is tons of MIPS and memory and everything else, but then using that exact same DSP core and the same instruction set, able to come out with slightly less-expensive devices that could target the mid-tier, and then a cut below that that targets the low-end with maybe less processing and less memory. So you can't do all of these same features simultaneously, but you could support always-on voice in a more rudimentary fashion in a low-end device, add a couple layers to that in the mid-tier, and then throw the kitchen sink at it in the high-end.

So looking at it as Cirrus, about this time last year we were looking at our energy investment, which we largely decided—we had some good opportunities there, but in audio we could do one device right now that we could see opportunities that would be bigger than all of our energy investment might be multiple years down the road, and we couldn't staff all of those, so we moved a bunch of folks from energy into audio. Still couldn't staff everything we wanted to do. And now we've got the Wolfson acquisition behind us and we're still looking at opportunities that we would like to move on more quickly than we'll be able to do. My whole career's been in audio and I've not ever had this many customers be that interested in what we're doing across the board.

Q: Can you give me a little color on the Wolfson acquisition? I know shortly after you announced the acquisition, they had a couple quarters that weren't so good – I think it was tied to Samsung – and now you're pretty pleased with it. I listened last quarter. But is that Samsung's new phone coming back? Is that design wins? Is that something you guys have done since you've owned them that's worked?

Jason: I've been pleased with it right out of the gate, everything that we expected to have happen. We did the acquisition obviously for long-term strategic reasons and not for one quarter or two here or there. But obviously they had a pretty tough go with Samsung last year. They got a very low percentage share. So Qualcomm had a pretty solid lock on LTE modems last year and they were able to use that to minimize the share that was available for everyone else. So when we were doing the acquisition, we saw multiple ways where that percentage could go up meaningfully, and then probably if you were following the news in the last handful of weeks, there's been developments on that front. And certainly the best-case scenario for us across the board is if a customer has their own AP. That means they're not going to be in any way limited in terms of what devices they can use or not use. You're not going to get bundled out. Our software and software interaction with the system can be deeply intertwined in a way that is beneficial to the customer.

At the end of the day, if you're trying to ship a flagship product in a market that is really highly feature-dependent, if you've got your own destiny in your hands via your own main processor, that seems like a better approach to me, and it certainly opens up a lot more of the opportunity for us.

Tore: If you do have a question, raise your hand. I had another one – and I think you talked a little bit about it, Jason. But if you go back a few years ago, the bigger-picture strategy was to try and diversify the revenue stream a little bit, not too much concentration on smartphones. But obviously with the Wolfson acquisition, you're sort of doubling down in smartphones and maybe forgetting the whole diversification strategy. So what was the inflection point for that change in strategy? Was it some of the things that you just talked about, where the ROI on doing that was just so much greater than investing in energy that would take five to ten years to materialize?

Jason: Yeah. Energy was definitely a move that was new technology, a new market, and I read a couple of marketing books that said that's not the right way to go about it. For a long time, like I say, audio, there weren't that many people doing neat new things in that space, and then sort of it's been a strategy that's evolved for us as we started shipping noise cancellation a couple years ago. That opened up the doors into more of the voice market, right at about a time when mobile phones were getting a lot more -- while manufacturers of mobile phones were getting a lot more interested in differentiating on the voice experience. So that really opened up our SAM, and we just realized exactly what you said. The ROI for what we could do in that space was really a lot higher than what we could do anywhere else, and it was right in the sweet spot of what we know how to do.

So I think from a customer concentration point of view, I think we can make— obviously the Wolfson thing helps significantly with that over time. But also, those devices, we're able to go shop those to all the folks in China that are clearly trying to come at that same market. And then in the really long term, the technologies that we're developing for phones are very much the things that people are going to want in automotive, in the home and wearables, as those move out of being early adopter voice applications to being really mainstream. None of them are really all that big yet, but there's a lot of interest there. And you've got companies that are pretty big names that have finally set their sights on the home and trying to defragment the home and provide a little bit of infrastructure so that all of our stuff could work better together. As that comes online and some of those companies iron it out, it goes from being a boutique niche-y kind of a market to being really mainstream. There's a lot of devices out there that are going to have audio in them, that are going to have voice in them as an interface. It might be as simple as simple as a digital microphone connected to a radio chip – not such a big opportunity – but it might also be an application where one of our smart codecs could be the whole processor in the system. So we see it as a great layer on top of the growth strategy that we've already got – grow on our own with the smart codecs, start getting our amps(?) designed into the Wolfson sockets, that's another layer, and then take these technologies we're perfecting and broaden them out into wearables and automotive and the home and other areas like that.

Tore: So did you have visibility at that time, meaning the Wolfson acquisition, that their largest customer was going to use their own apps processor? And obviously Apple does theirs and Samsung does theirs. Are you seeing that trend continuing with other smartphone vendors too?

Jason: Obviously, we know a lot more now about what's likely to happen in the current quarter and over the current year, but it seems like it would be fairly difficult for things to be much worse than last year from the partition. It wasn't a happy situation for the customer, I suspect, so there are a lot of forces in play to make sure that they get their destiny back in the right direction. And the Wolfson team, a lot of what we acquired them for or one of the primary reasons we acquired them is, they had great customer relationships in places that we didn't, and so that is something that we're definitely benefiting from.

Tore: Very good. So on that note, we've run out of time. I'd like to thank Jason for coming to the conference and also thank all of you for coming to the Cirrus Logic session. Thank you very much.

Jason: Thanks, Tore.

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