

Dialog Semiconductor Q3 Results

Jose Cano:

Good morning, and thanks to everyone for joining us today. I hope you're all keeping well. Our call is being hosted by Dr. Jalal Bagherli, Dialog's CEO, and Wissam Jabre, our CFO. First of all, as usual, I must remind everyone that today's briefing and some of the answers to your questions may contain forward-looking statements. These statements reflect management plans' views and will have risks associated with them. You can find full explanation of these risks on page two of the investor presentation. The interim report, press release, and [unintelligible] can also be found on our website. I would now like to introduce Jalal, who will run through the business review. Jalal, over to you, please.

Jalal Bagherli:

Thank you, Jose, and good morning, everyone. In Q3 of 2020, we delivered another strong set of results. Revenue stood at \$386 million, 7 percent above the mid-point of August guidance. And we delivered a record underlying gross margin at 50.7 percent. Additionally, we delivered another quarter of sequential improvement in revenue and underlying operating profits for the group.

In support of our growth strategy over the last few years, we have invested in the development of new business opportunities both organically and inorganically, expanding our product portfolio and solidifying our position in key markets. We have made good progress with diversification of our business into industrial IoT with the closing of the acquisition of Adesto in Q3 2020.

Let me share with you an update on how the integration is progressing, on slide four. Integration of Adesto is progressing well and is on track. As we communicated earlier this year, we remain on track to deliver \$20 million of cost synergy in the first calendar after close. Wissam will have some additional details to share with you later in this presentation.

One of the main reasons of acquisition of Adesto was the opportunities arising from a complementary product portfolio, and we are encouraged by the outstanding opportunities we are seeing. For example, our Bluetooth and Wi-Fi modules and reference design mostly, now, include Adesto data Flash on board. Alongside this, we also see interesting opportunities with the combined efforts of Adesto's ASICs and Creative Chips expertise.

We also announced the licensing with GlobalFoundries, by which GlobalFoundries would first offer Dialog's CBRAM as an embedded, non-volatile memory option on its 22 millimeter FDX platform, with the plan to expand to other platforms later. This is an interesting technology which enable the end customer to deliver a new generation of secure IoT and edgeAI applications. The combined portfolio of Adesto and Creative Chips enable us to create a new business segment with an exciting opportunity in industrial IoT, which will contribute to our growth strategy and the diversification of our business.

During the last 18 months, we have seen the results of the investment we've made in the organic expansion of our product portfolio. Let me point out this point on slide five. In IoT, mobile, and computing, we have launched a number of new products, which are helping us increase our

dollar content in a number of high-volume applications. For example, in IoT, we introduced new audio codecs and new WiFi SoC and new a member of the Bluetooth low energy family. This Bluetooth product, called TINY, is a lower cost, high performing product, which is aiming to connect the next billion IoT devices. These new products give us exposure to growing consumer and connected health markets. As a result, we have [unintelligible] take up of our new products and designs for BAD, IoT, Wi-Fi, and true wireless stereo audio.

We also entered a new partnership with Flex Logic for mixed signal embedded FPGAs, or eFPGA. Adding eFPGA functionality to our CMIC products will give our customers the flexibility to keep pace with rapidly changing market needs in several target areas, such as IoTs, computing, and mobile. In 2021, we will continue with the expansion -- the significant expansion of our CMIC portfolio, which will contribute to maintain the high growth momentum we have experienced this year.

Lastly, we remain on track for delivering our custom and standard product portfolio for the Battery Management applications for mobile and IoT, the tier one smartphone customers in second of half of 2021, representing a significant new revenue stream for the years ahead. In automotive and industrial, we made good progress with a number of new products, such as automotive grade CMICS, DC to DC buck converters, as well as a range of next generation audio link devices for industrial IoT. I'm very pleased with the progress made in our strategic initiatives, and we are already seeing strong signs that our efforts are paying off, and we're building a successful and diversified mixed signal business.

Let me comment -- let me cover some of these data points on slide six. First, our revenue mix is now quite different. The revenue outside of the main PMIC products reached 71 percent of the total revenue in the first nine months of 2020. This is a significant increase from the 40 percent it was in FY 2018 when revenue from the main PMIC product for our largest customer was still the largest item. To achieve this, we have delivered strong growth in the rest of the business: 38 percent in financial year 2019, and 22 percent in the first nine months of 2020.

Second, customer concentration has decreased from 70 percent in financial year 2018, to 56 percent in the nine months of 2020, and we are on track to reduce this further to 35 or 40 percent by 2022. Third, we've been able to transform our business and reduce customer concentration, while increasing underlying gross margins. This reflects our revenue mix and the amazing effort of our manufacturing team, rolling out more efficient processes and cost savings initiatives every year. Last, but not least, throughout this buildup of time, our underlying operating margin has remained resilient at around 20 percent. These data points show the benefit of the work we've done over the last few years, extending our portfolio, while maintaining a strong focus on high growth segments of our targeted market.

Before I had over to Wissam, let me summarize the key takeaways on slide seven. First, we continue to successfully run the company mostly remotely, thanks to the commitment and flexibility of all our employees. This resilience has allowed us to continue providing excellent customer support and generate a healthy pipeline of new opportunities across a multitude of customers for 2022 and beyond. We are successfully executing our growth strategy alongside the transformation of our business with lower customer concentration and a resilient underlying

operating margin. And lastly, this financial resilience, together with the strength of our balance sheet and liquidity, will allow us to successfully execute our growth strategy and deliver long-term values for our shareholders. Wissam, I'd like to hand over to you, please.

Wissam Jabre:

Thanks, Jalal. Good morning, everyone. Let me take you through the key items of our financial performance on slide nine. We will go into more detail shortly, but there are a few points I'd like to make here.

First, Q3 2020 revenue of \$386 million was up 28 percent sequentially and 5 percent below Q3 2019. Excluding revenue from licensed main PMIC products, revenue increased by 24 percent year on year. Second, underlying gross margin reached a record 50.7 percent this quarter, in line with the August guidance and up 120 basis points year on year. And third, we generated a cash flow from operating activities of \$27 million, which also reflects the recoupment of prepayment relating to the license agreement.

On the next slide, I'd like to give you some additional color on our revenue performance during the quarter. In custom mixed-signal, revenue from new mixed signal products for our largest customer was up 12 percent year on year. Due to the high level of growth, we have now reached an inflection point in which sales from the new custom mixed signal products are nearly equal to that of the legacy business. Excluding licensed main PMIC products, revenue in custom mixed signal grew by 24 percent year on year and 32 percent sequentially to \$120 million.

Compare to Q3 2019, revenue in advanced mixed signal of 78 million was up 12 percent due to the strong revenue growth in configurable mixed-signal ICs, more than offsetting lower volumes in backlighting products. Revenue in advanced mixed signal was up 24 percent sequentially. Revenue in connectivity and audio of \$56 million increased by 3 percent from Q3 2019, mainly driven by higher demand for Bluetooth low energy and audio products, offsetting lower sales from there. Revenue in connectivity and audio was up 28 percent sequentially. Revenue in Adesto for Q3 2020 was approximately \$20 million, in line with our expectations.

Turning to slide 11 to cover gross margin. Gross margin expansion remains a key focus as we continue to drive towards the higher end of our long-term target range. In Q3 2020, underlying gross margin was in line with guidance at 50.7 percent and up 120 basis points year on year. This year on year expansion was mainly the result of improved revenue mix and further savings in manufacturing and overhead costs. On a year to date basis, underlying gross margin was 50.6 percent, up 100 basis points compared to the same period last year. As I mentioned in previous quarters, our fabless business model is resilient and gives us the operational and financial flexibility to successfully navigate periods of economic uncertainty where visibility is lower than usual.

Let's now turn to slide 12 to discuss operating expenses. Q3 2020 underlying operating expenses were \$108.5 million, up 5 percent from Q3 2019. The incremental, underlying operating expenses were due to the absorption of both acquisitions of Adesto and Creative Chips. These expenses were partially offset by costs savings across R&D and SG&A. Excluding Adesto and Creative Chips, underlying operating expenses were down 8 percent year on year. As a

percentage of revenue, underlying operating expenses in the quarter were higher than Q3 2019 at 28.1 percent, reflecting the lower revenue. Underlying R&D and SG&A expenses in the quarter increased year on year by 2 percent and 11 percent respectively. The increase was mainly due to acquisition of Adesto and Creative Chips, partially offset by cost savings. Excluding Adesto and Creative Chips, underlying R&D expenses were down 9 percent year on year, and underlying SG&A declined by 8 percent.

As a percentage of revenue, underlying R&D and SG&A expenses were above Q3 2019 at 19 percent and 9.1 percent respectively. On a year to date basis, underlying operating expenses were down 1 percent year on year to \$301.6 million. This reduction was driven by approximately 7 percent of cost reduction in underlying R&D and SG&A expenses, partially offset by the consolidation of Adesto and Creative Chips.

Turning to slide 13 to cover operating profit and earnings per share. Before I discuss the underlying performance of the business, I would like to make a brief comment about the impairment in relation to the acquisition of Adesto. The impairment loss was the result of the estimated impact of the COVID-19 pandemic to Adesto's costs of capital and forecast. We remain focused on the execution of our industrial IoT strategy, and we are confident in Adesto's long-term growth prospects.

In Q3 2020, underlying operating margin was below last year at 23.7 percent as a result of the lower revenue and slightly higher operating expenses, partially offset by gross margin expansion. At the bottom of this slide, you can see the breakdown by business segment. Underlying operating profit for custom mixed signal was up 43 percent sequentially, but remained below Q3 2019 at \$69.2 million. The decrease in operating profit was mainly due to the lower revenue from license main PMICs. Underlying operating profit in advanced mixed signal more than doubled on a sequential basis and increased 84 percent year on year to 11.4 million. Underlying operating margin also improved significantly year-on-year to 14.6 percent.

In Q3 2020, underlying operating profit for connectivity and audio more than tripled sequentially and was up 25 percent year-on-year to 6.8 million. Underlying operating margin was also up year-on-year at 12.1 percent. Adesto had an underlying operating loss of \$2.4 million for the quarter. We made excellent progress in the integration of the business and already achieved more than half of the planned cost synergies. Lastly, corporate improved significantly due to the license revenue. The underlying effective tax rate in Q3 2020 was 19.7 percent, down 80 basis points from Q3 2019. Underlying diluted earnings per share in Q3 2020 was \$1, 20 percent below the previous year and up 45 percent sequentially.

From earnings, let's now turn to slide 14 to take a closer look at inventory and cash. Inventory level increased 26 percent from the previous quarter at \$161 million, representing a four-day decrease in our data's inventory. The increase in inventory was mostly due to the first time consolidation of Adesto. At the end of Q4 2020, we expect inventory value and days of inventory to be slightly above the end of Q3 2020 levels. During the third quarter, we generated cash flow from operating activities of \$27 million, and at the end of Q3 2020, our cash and cash equivalence balance was \$439 million.

The main items driving the quarter-on-quarter movement in our cash balance were the acquisition of Adesto and the share buyback. In Q3 2020, we purchased shares for an amount of \$29.5 million, and on October 8th, we completed the final settlement of the second tranche of the 2019 share buyback program. In this second tranche, we purchased an excess of 2 million shares, for a total amount of €70 million and at an average price per share of €34.37 cents.

In summary, during the third quarter, we delivered another solid set of results with revenue above the high end of the August guidance, record underlying gross margin, strong sequential improvement in revenue and underlying operating margin. Before we open the call to questions, I would like to talk about the Q4 outlook. We anticipate Q4 2020 revenue to be in the range of \$380 million to 430 million. The Q4 2020 underlying gross margin is expected to be broadly in line with that achieved in the first nine months of 2020. With that, I'll hand over to the operator to open the line for questions. Bethany, over to you, please.

Female Speaker:

Our first question comes from Andrew Gardiner from Barclays. Andrew, your line is open. Please go ahead.

Andrew Gardiner:

Thanks very much for taking my questions. Good morning, guys. Two questions if I could. One for you, Jalal, on the revenue side. I'm just wondering how you're finding visibility into the end markets at the moment. We've been consistently surprised as we've come through the summer and now into the autumn about the sort of level of strength, continued level of strength related to work-from-home items or from pandemic-related items. You are now also into a product cycle for your biggest customer. So, can you just give us some insight as to how your seeing [unintelligible] market at the moment? How are auto rates trending? Has there been much volatility there? Or has it been fairly steady on the upwards path that we're seeing inclined by the guidance?

And then one for you, Wissam, there's quite a few moving parts in terms of the cost base at the moment, the OPEX space. You've highlighted the underlying decline in the call dialogue business, but clearly, you've had acquisition boosts to it. I'm just wondering how you guys are thinking of OPEX both specifically into the 4th quarter, but perhaps at a higher level, into next year and how you're thinking about the budget on an ongoing basis now that you've got the acquisitions done. Thank you very much.

Jalal Bagherli:

Good morning, Andrew. So, let me take the first one, and then I'll allow Wissam to answer your second question. So, on the first one, I mean, you know, you've seen that we've had two strong quarters, sequential growth one after the other, which is partially driven by the work-from-home, education online-type conditions caused by COVID, but you know, more and more, we're getting convinced that this is more of a permanent state of affair rather than a temporary, because you know, that strength has continued into Q4, as was indicated, and potentially beyond into next year.

So, I think the work-from-home phenomenon is going to be here to stay or at least working

flexibly from home or multiple locations, and all of that drives sort of additional equipment with headphones, notebooks, Chromebooks, tablets, etcetera. So, that is one which, originally, we thought it would be a one-quarter effect, but it seems to be running and, you know, continues even post-COVID or post-vaccination. People would prefer to have a more flexible work environment, and I think it's proven now that, you know, compared to our cost, we can operate quite well with people working from home. It's not an ideal state of affairs to do that every day, but certainly, we are not necessarily expecting everybody to be in the office every day going forward. So, -- and on looking across the industry, this seems to be the trend. So, I think to some respects, this drives that trend.

The second thing that you eluded to is -- really the mobile phone market or Smartphone market was quite -- getting static and stable, or even declining in some parts of the market. But, with the 5G introduction from many players and rolling out of 5G networks, there is obviously a new impetus in the market for adoption. And the 5G phones just intrinsically have a lot more silicone content requirements. And that is partially driven by, obviously, the -- you know, more additional radio that 5G brings, and it's quite complex, in addition to covering the prior frequencies in 4G and before that. So, it needs to be compatible with all of those and introduce a lot of new frequencies.

And, secondly, you know, again, compared to two to three years ago, there's more phones with bigger screens than I would say were in existence a few years back, so that also drives content for power, for drivers, for new types of displays. And then, also, the -- we all noticed that, you know, all the new phones have considerably more camera-type functionality relative to, say, phones of two, three years ago from all vendors, and that, again, drives extra chips that you require to, again, drive, process, or power various new components that are attached to these phones.

So, you know, although we call it 5G, it's a euphemism; it's not just a radio. There's also -- other aspects of the phone are expanding. And, I mean, as part of our main business, we are also active in automotive, and again, you know, there is a drive for adoption of more electronics in terms of ADAS and similar electronic systems and new electrification of car, and it continues to drive the content in the next few years.

So, I think that the background, you know, is quite -- determined as positive. Our visibility in terms of short term remains, you know, relatively short based on, you know, the backlog of all the book and is, you know, beyond that is harder to predict the exact movements, but the tailwind in terms of the trends for the future remains very positive for the company. So, Wissam, to you.

Wissam Jabre:

Thanks, Jalal. So, Andrew, on the first part of your question which is related to the -- how we are thinking of the OPEX into Q4, we're, you know -- we ended Q3 at a little bit over 108 million, and so I expect Q4 to be more or less in line, maybe a little bit higher, to the tune of 1 or \$2 million because, if you recall, the way we accrue our variable compensation tends to be a little bit more tilted towards the second half of the year versus the first half. As we think through the -- how we manage our OPEX, we did quite a lot, if you notice from the comments, over the last year to basically absorb the acquisitions, and as we continue going forward, we will basically

be focused, as we've always been, on controlling the OPEX envelope into '21 and beyond. And, so, the -- in terms of where I see us going, I see us heading towards our longer term target ranges as percentage of revenues. So, short term, as I said for the quarter, it's more or less in line, maybe a little higher, than Q3.

Andrew Gardiner:
Thank you both.

Wissam Jabre:
You're welcome.

Female Speaker:
The next question comes from Francois Bougviniés [spelled phonetically] from UBS. Francois, please go ahead.

Francois Bouvignies:
Hi, good morning, everyone. My first question was on your comments about 2022 design aims. Can you elaborate a bit more, maybe, on what you are working on and where you see the opportunities? And, more importantly, when will you know about, you know, the design wins because we are approaching -- I mean, [unintelligible] you need to send the contracts well ahead of time, so I was wondering when you will know about the design wins and what is the opportunity.

And the second question is on Adesto and the impairment. I was quite surprised, to be honest with you, I mean, after three months of closing, about this impairment. So, I just wanted to check with you what changed. Obviously, we are in a crisis due to the pandemic, but you seem to be very quick into, you know, adjusting the value, you know; it's not something we have seen yet for peers [spelled phonetically] because we are still, you know, waiting to see the full impact of this, so it's very quick. And also, why increasing this contract, you know? Decreasing interest rate markets would be very helpful. Thank you.

Jalal Bagherli:
Okay, good morning. So, I'll take this first question, and I think I'll leave the second one, which is more technical accounting, to Wissam. So, I think the first one is about the 2022 designs. So, there -- I've put that remark in the press release, if you noted, is to do with our custom CMS [spelled phonetically] products. So, the custom chips, typically, you know, we -- it takes a year to develop, and for the customer, it takes another nine months or so of validation and field trials to get it into the next generation of phones, or tablets, or you know, notebooks, whatever. So, this time, you know, we are really working to complete 2022 designs. So, it's a strange -- I guess, I just want to make sure we understand this terminology when you say designs and designing. Typically, this is an available product. We mention a design win, then the customer places an order, okay?

So, given that these are 2022 designs, we don't expect any actual production order until very, very -- so nearer to the time, maybe a quarter or so before. But, we call this our design wins, meaning that we have won the contract to design these chips. It's custom single source devices,

and it is being developed. So, hopefully that answers your questions, and these are for 2022 production launched by customer. We've already completed a number of designs, which are for 2021 that tend to be the backend of 2021, some of the new designs, or the bigger new design. We are now making good progress on 2022 design work, and these are contracts that we won to design these chips, if you like. So, there is nothing more we can do until they get near production and they place actual orders. Does that answer your question?

Francois Bouvignies:

Yes, very clear, thank you.

Jalal Bagherli:

Okay. I guess on Adesto I'll let Wissam to talk about impairment, but I can also add some additional comments if necessary. So, Wissam, I'll hand it over to you first.

Wissam Jabre:

Yeah, thanks Jalal. Francoise, good questions so the -- I want to remind you that when the value of the deal was set pre-COVID in February and since then it's become clear for us the extent of the COVID-19 pandemic impact to Adesto's business [unintelligible] more impact to its business than ours given its exposure to the industrial end markets. And so, we had the need to adjust our initial forecast as well as we saw a small increase in the cost of capital. These are the two factors that impacted the goodwill impairment. To your point on the cost of capital, I do agree obviously lower in the [unintelligible] of the interest rates. However, as you very well know there are many other parameters that go into the cost of capital. I hope this helps answer your question.

Francois Bouvignies Yeah, sure. Just, if I may, just a quick follow up on that is, the [unintelligible] an impact, but what is structural for you to revise your forecast so quickly? That may be the question you know maybe it could come back you know. We see many industries coming back. [unintelligible] and maybe the outlook could be improving for 2021 so what changed so quickly from a fundamental perspective to review your forecast long-term?

Jalal Bagherli:

Maybe I can have [unintelligible]. So, I think [unintelligible] yeah, if you look at the Adesto business is in two three areas of industrial, specifically, also major exposures to things like building automation and you know as Wissam said, we closed the deal in February in terms of contract and other things. We were waiting on the regulatory approval and clearance to integrate the company. So, you know between that time, you know, the COVID affect started to happen. It didn't impact Dialog as much as we were expecting because we were having, you know, much better progress with work from home and education online. However, in an industrial area where buildings are physically shut down, the level of business dropped significantly. And you know it's -- I can't [unintelligible] can't just ignore if your baseline is dropped in the short term and they, you know -- of course our expectation was very positive for the business ,to grow over the year, but in terms of the timing of growth it sets us back . In terms of the time. And you know, time has an impact on the, you know, the value calculation for the carrying value of a business. And those were the impacts. And of course, the cost of capital because of the pandemic as Wissam mentioned. So, those are reasons.

So, it's not so much quick, or late or losing confidence in this long-term, it's just reality of accounting is, it is, you know, the new value set by the current running business [unintelligible]. We do expect it to bounce back some of it, but visibility of the end market remains unknown given all the lockdown that goes on. So, there isn't anyone who can stand and say, oh, yeah, within exactly four months it will be back to where it was. We don't know, right? So, -- but and it also takes time to build something that [unintelligible] building automation and industrial, they tend to have longer cycles. So, our estimation is kind of a nine months to a year type delayed impact to our business pan. So, Wissam, I don't know if you want to comment on any of the things I've said.

Wissam Jabre:

No, it's -- I won't add that much. It's really based on technical accounting more than anything else, candidly.

Francois Bouvignies Thank you very much

Wissam Jabre:

You're welcome.

Operator:

The next question comes from Achal from Credit Suisse. Achal, please go ahead.

Achal Sultania:

Thank you, hi. Good morning, Jalal. Good morning, Wissam. Two questions if I may. First on the Apple business, the new business that is growing strongly, your guidance is about 30 to 35 percent CAGR growth from 2018 to 2022. We are almost in the second year where those quotas are exceeding well above those targets. Can you help us understand how like, how should we think about that old target and where we are tracking now especially given the fact that you have still few new designs coming up next year and the year after, and so that's one part.

And then secondly, on this -- this follow up on that previous question about 2022 win. Can you help us understand if you mention the press releases related to next generation display technology? But I just wanted to understand if it is purely related to display or could it be a [unintelligible] or a power chip related to display technology. Or it is actually a new technology?

Jalal Bagherli:

Okay, thank you Achal, and good morning to you too. The -- so on the first question in terms of the new business, I think what we said which we repeat, between 2018 and 2022 as you correctly just said we projected a 30 to 35 percent CAGR between those years. As you noticed we had a CMD in 2019 and at that time as well for those who remember that, you know, some of this could be front loaded in terms of percentage gross. So, we delivered two years of relatively pretty high growth. I think last year was over 100 percent. And you know this year we have also a good double digit growth. But we're not changing those percentages. What that means is -- and you know we have new parts coming into play late 2021 into 2022. So, from a modeling perspective and reality of the businesses, you know, we win new products, some years we have big, you know, growth spurts, other years it is the relatively small growth and then it will pick up

again the following year when new products go into production. So, I would model it like that, meaning I would bring the rate of the growth for next year down because we already have 5G launches now, right? And we talked about the battery management chip coming into new phones sometime late next year.

And then the year after is your second question, which is the 2022 win. The 2022 full year of products life battery management, but also a renewal of some of the sub-PMICS, which are then replaced by them. And also, some new areas of business in addition to battery management which is brand new. We expect to also be shipping chips for new stuff and new display. Not all of it are, by the way, necessarily only for phone; we're talking across the product portfolios.

So, and the thing related to display is to begin with is -- these are chips which deliver power and some control function of a display. There's more of a power support for display, but the nature of the power for display is quite different. For example, power management for processors or other things, because of the much higher voltages and negative voltages involved in managing displays. It's a new technology which developed just like battery management which was then new technology we developed. So, this another new area for us and we expected to start with the smaller screen then expand into larger screens as we develop the technology more.

Another area we [unintelligible] on and off, which we're having early, sort of, if you like, measured success, but we expect bigger success later is in areas of audio signal chain [spelled phonetically], which we indicated, again, a few quarters ago. That's also progressing so it may well be also that we will have some audio related to [unintelligible] processing by 2022 in production as well.

Achal Sultania
Thank you, Jalal.

Jalal Bagherli:
You're welcome.

Operator:
The next question comes from Max Ramsey from Cohen. Max, please go ahead.

Max Ramsey:
Yes, thank you very much. Good morning everybody.

Wissam Jabre:
Morning.

Matt Ramsey:
I have a couple questions. The first is around sort of trying to parse out the obvious strength you're seeing in the business from maybe strength in smart phone units and the recovery and the smart phone market from the levels that we saw the beginning of the COVID-19 pandemic and maybe unit of size [unintelligible] with that industry overall as it recovers and maybe contrasts the amount of [unintelligible] you're seeing in the business from what you would consider, I don't

know, work, learn from home unit that might be shipping in either tablets or PC or headsets

or whatever those end markets. If there's any color that you can give us and sort of parsing out the strengths from those two phenomena in the results, that would be helpful. And then secondly, with having a lot of conversations with companies that are exposed to those markets and what seasonality might potentially look like into the March quarter, given the strength we're seeing in the December quarter across the board, if you could maybe give us a couple of hints about the March quarter, just what you're seeing in the order book patterns that would be really helpful. Thanks, guys.

Jalal Bagherli:

Good morning, Max. And it must be [unintelligible] for you. So, thanks for joining us. So, the - I think the strength of the business is, you know, we have a large exposure to the mobile phone. But as we indicated in terms of in the last two years, we've been de-levering our growth from mobile phone because we don't have the main PMICS in our biggest customer. We have a lot of smaller content, sub-PMICS in there, and we're trying to expand using other products.

The other area that we have exported to mobile phone is our fast charging ACDC converters. So, I can make [unintelligible] those is not necessarily, you know, the main driver of our growth because they tend to be smaller business for us. But in terms of exposure and the volume is as good as any other products in terms of gauging market demand.

So, my observation would be that the volume of the phones we're obviously down in Q2, particularly in Korea and the China coming back. In Q3, we see strong traction in China, players across the four or five companies we ship, as well as Korea. They're making a slight shift away from a Q2 self-publisher. But looking ahead, I think Korea will be getting better in Q4. Chinese remain very strong. So, those are the ones we see from our, if you like, fast-charging [unintelligible] business. Our growth that we're reporting is what was said in the presses, which is primarily driven from actually across the portfolio partially from work-from-home educational line, but also, we see a lot of strengthening in our Bluetooth business from fitness factors, digital watches, and headphone business. So, those are quite very strong, as well as the, obviously, things like Chromebooks, notebook tablets, which remain stronger than normal. So, those are the driving forces for us. I don't know whether that answers your question.

Matt Ramsey:

No, I mean, those are great comments, Jalal. I just -- just to paraphrase there, and I'll pass it to Wissam on the second question. But just to paraphrase, the majority of the strength is diverse, somewhat helped by smartphones, but a much more diverse set of growth. Is that -- is that a fair assessment? Thanks.

Jalal Bagherli:

That's fair. That's fair. I think -- I think going into Q4 and beyond, I think 5G will have a bigger impact than, obviously, the current impact you see.

Wissam Jabre:

So, Matt, for the second question. I think you were asking about what we see in terms of the

seasonality patterns going from Q4 to Q1 or into the March quarter. I don't want to get ahead of ourselves. Obviously, we're just guided Q4. But if I have to sort of look a little bit forward, I would say as of now we see more or less normal seasonality patterns from December to March quarters, maybe a little bit less pronounced than was seen last year. But it is, candidly, a bit premature to talk about this in much more detail. Obviously, a lot of things can still change between now and the end of the quarter.

Max Ramsey:

Thanks, guys. I appreciate it.

Wissam Jabre:

You're welcome.

Female Speaker:

The next question comes from Stefan Hourì from Oddo. Stefan, please go ahead.

Stefan Howley:

Yes, hello, good morning. I actually have two questions. The first one is on the margins of AMS and the CNA division. You saw some improvement as expected and as promised last quarter. But what is the potential for improvements of those two divisions on the run rate going forward? And the second question is about the automotive business potential as the market is recovering. I think that last quarter you have communicated around the kind of hundreds of design engagements, I don't remember. So, if you can talk about the potential of the business for you. Thank you.

Jalal Bagherli:

Okay, I think, Wissam, would you like to take the margin question first?

Wissam Jabre:

Yes. Let me -- let me cover that, Jalal, thank you. Good morning, Stefan. So, on the operating margin questions for AMS and connectivity, yes, as you noted, we've seen good improvement in Q3. Obviously, we will continue to work the margins and drive towards the longer term ranges. As we think of it sort of short term, you know, revenue is also one of the factors for us to improve the margins. I expect us to continue to see improvement on the operating margins for these two businesses and actually even on the, going forward, you know, the potential for them is very clear. The potential for them is to reach our long-term operating margin targets, which are 20 to 25 percent. And as the revenue grows and as the gross margins continue to gradually expand, we don't see the same level of need in terms of OPEX growth. And so operating margin will -- sorry, operating leverage will also help us continue to grow the operating margins.

Jalal Bagherli:

Okay. I'm going to talk about the -- is that okay?

Stefan Howley:

Yes, it is. Thank you very much.

Jalal Bagherli:

All right. So, let me talk about the revenue potential that you requested. So, the -- I think, as you said, the last quarter we mentioned that we have about 100 or so new designs on our automotive products. So, these are primarily power management chip sets that we've developed with our partners that end up for Advanced Driver Assistance, ADAS systems, and also in-vehicle entertainment, digital cluster control in the car. So, they tend to be processors from Renesas in Japan or Xilinx in the U.S. or the Telechips in Korea. And they adopted our power management chips rams [spelled phonetically] to support those processes, just in the very same way that tablets or smartphone use cameras for the main processor in the -- in the -- in the device. So, we have a whole team new power management working on new parts as well as to expand the portfolio will take time. But they've been launching, you know, at least a couple of products. We've already launched one this year. We will be doing more extra products as we go forward.

The rest of our portfolio also we are very successful in getting our Phoenix qualified for automotives, so we have a number of circuits for that product, and also Bluetooth Low Energy for things like tire pressure monitors. Key fobs is another area where we are qualifying parts for some customers. But the primary driver in the short term is the power management for ADAS and entertainment. So, there's 100 or so designers we have grown now by I think another 20 design-ins. These are with a lot of customers in Japan and China and to a lesser extent in Europe and North America. It's mostly Japan and China doing them. The cycles tend to be faster than expectation of a few years back. It doesn't take five or seven years to go to production, but it still takes two to three years. So, we will have some of the [unintelligible] design -ins to turn into wins next year, so we'll have some uplift on the revenue, but I think most of that will kick in, or a lot more of that will kick in in 2022, 2023.

Stefan Hourli:

Okay. And you have an idea of the kind of revenue we can expect from that and maybe the ASP?

Jalal Bagherli:

Yeah. Yes. So, the ASP for the -- so the infotainment and ADAS depends on the complexity of the system. We can supply one master PMIC, which will be roughly about \$2. Or we can supply a master PMIC and a couple of sub-PMIC. That would take us to about \$3 in terms of content, depending on complexity of what they are trying to power up. So, that's the AST side, between \$2 to \$3. The revenue side, I would project something for this, just the [unintelligible] side of it, would be in the order of about \$50 million maybe in 2023. But we see the addition of, as I say, Bluetooth, Phoenix, and actually there's one other product I forgot to mention, which is the dashboard surface player and headlamps, which are the displays that you find backlight drivers. And that's quite also large for us. So, by 2023, it would be over 100 million. This is our projection.

Stefan Hourli:

Okay. Thank you very much [unintelligible].

Jalal Bagherli:

Okay, thanks.

Female Speaker:

The next question comes from Sebastian Stabovic from Kepler. Sebastian, please go ahead.

Sebastian Stabovic:

Yes. Hello, everyone, and thanks for taking the question. Could you please make an update of battery management system business? So, have you recalled any new designs during the quarter for battery management? And from TINY Bluetooth Low Energy, which we [unintelligible] in Q3? Or do you see BLE business trending into Q4 in 2021? So, also, when do you expect the first revenue contribution coming from the TINY module and also the new Wi-Fi SoC? Thank you.

Jalal Bagherli:

Okay, hi, good morning. So, I'm just writing the new questions so I don't forget them. Okay. So, on the battery management, we'll start with that one. You wanted some of the -- any new designs. So, you recall, we mentioned we have two types of products. One is the standard products for particularly direct charging, which is inside the phone. And the second one is custom battery management, which is much more complex and is designed together with a particular customer phone or chassis, if you like. So, what I can say is the standard products are -- actually, we started shipping in late Q2 and into Q3. So, we're already shipping the standard parts. We have new circuits for those parts and the succession of those parts, the new measures that are coming up end of this year to market. We already have circuits for those. That is starting, again, second half of 2021. So, standard products will gradually increase between now and middle of next year. And then from back end of next year, we'll see a better increase because our custom products will then also start the production. And in addition to our number-one customer that we've referenced already, we see a second tier-one customer adoption on a lower scale for, you know, a more limited range of products, that they will be adopting one of our chips. And we also think a variable sort of device also adopting advanced recharging device from us, again, probably late 2021 to 2022. Right now, we're working to get a major design circuit, which would probably come in 2022, 2023, and that is for a gaming platform. So, hopefully that answers your question.

The second piece or the thing about be the lead times in Q1 in 2021. The BLE, it really had an excellent quarter in Q3. The strength is continuing in Q4. This is driven this year by expansion of the fitness factors into various different segments. So, in addition to mainstream, there is like a youth version, the sporty version. There's a lot of stratification in that market. Digital watches have been also added by similar manufacturers using the same type of products. So, digital watches or fitness factors are the growth engine for BLE in Q3, Q4. We also have the tablets and tablet pens, that a famous customer in Korea does. That's all based on our BLE, and the next generation is also based on the same product. So, those are the now and the near term drivers, if you like, for Bluetooth.

For the mid-term, we also have a number of designing for medical, health, connected health, or, if you like, yeah, personal medical track devices. So, this quarter we picked up by a Japanese customer for glucose meters, blood pressure meters, that sort of stuff, inhalers. And we have a number of customers around the world working on new designs in addition to things like COVID

testers, which also use the -- use the parts. And also distancing bands, which we have a wired -- a wired technology. It's a software that runs on our Bluetooth that helps you with determining or maintaining a safe distance from other people in the pandemic or in the work environment. So, there's a lot of that type of activity. Typically, smaller companies, startups, are developing those right now. The module business for TINY, already we have a few circuits. And the TINY module business typically is a better margin business, but it's fragmented in small volumes.

And they reason they use the module is because they are small, and they can't necessarily design all their radio and RF requirements. So, they buy a module, which is easier to use. But by definition, their volumes are much smaller than, say, a fitness tracker or a consumer high-volume product. But that has started already. The WiFi BLE combo also is being promoted. I don't think -- I haven't checked recently. I think it is relatively new, so I don't expect any revenue this year for sure. But the WiFi stuff has been designed into a number of trackers for door cameras, door locks, and lately, also pet trackers in the U.S. So, it's gaining momentum. It's very early days for low-power WiFi. This reminds me of early phase of low-energy Bluetooth when we started four or five years ago; there was a lot of kind of esoteric applications, smaller applications, but a lot of applications bubbling on there before it becomes a more noticeable revenue stream. So, we're seeing very encouraging trend of designing. And probably we'll update you with a major update sometime mid-next year.

Sebastian Stabovic:
Thank you.

Jalal Bagherli:
Okay. You're welcome.

Female Speaker:
The next question comes for Adithia Metuku from Bank of America. Adithia, please go ahead.

Adithia Metuku:
Yeah. Good morning, guys. So, two questions. Firstly, just on Adesto and the memories opportunity. It seems to me like you are replacing your previous memory, your wireless, connectivity chips, et cetera, with the memories coming from Adesto. Have I -- am I looking at this the right way? And if so, could you give us some color on how big that opportunity might be? And secondly, I just wondered if, Wissam, you could comment a bit on, you know, how you're thinking about the year '21. I know it's a bit early, but any color you can provide at this stage would be helpful. Thank you.

Jalal Bagherli:
Are you talking 2021 for Adesto or generally for the business?

Adithia Metuku:
Adesto generally, just generally in terms of the opportunity. It seems to me like you're replacing the memories that you're using in your current products with the memories coming from Adesto. So, just generally --

Jalal Bagherli:

No, no. I understood that. Yeah, I mean the second question. Sorry.

Adithia Metuku:

The second question is for the total business. Just, you know, if you could just give us some color, any color, to the extent possible around how you're thinking about 2021 at this stage.

Jalal Bagherli:

Okay. All right. Thanks. So, the first one, in terms of Adesto. I think we -- what we've said is, you know, just as an example of early synergies. It wasn't meant to say the entire business is going to be based on, you know, putting Adesto memory into our own products. But it's an early synergy for us. You know, for each BLE, as was just explained, we have BLE modules. So, it's, you know, it's got an antenna. It's got flash memory and other things inside the module to make life easier for the customer, particularly smaller customer or lower-volume customer, to adopt rapidly innovative design. We'll do the same for WiFi and as a previous question highlighted, we also have a WiFi BLE module. In addition, we also have audio products for headset, and they also have a need for flash memory to store programming] or algorithmic parameters.

So, what we were talking about or what we referenced is that all our internal products from connectivity division now started to use Adesto flash memory instead of, you know, other people's flash memory in our reference designs, in our modules. So, I'm not suggesting that this, itself, is a big revenue opportunity because modules are not big, necessarily, as a huge revenue. But what it shows also is when the customer decides to use the Bluetooth, or WiFi, or audio with our module on their own reference designs or on their design, they look at our reference design and they -- and we have an opportunity to co-sell flash memory alongside Bluetooth, and WiFi, and audio. So, that's the sort of bigger point, I guess, rather than the module specifically.

So, I think that could be a large business, you know, if we can -- if we can, you know, capitalize on that. But, you know, these memories have other areas of expansion into -- we've seen requests or demand in gaming. We've seen demand in printers, for example, from a couple of Japanese and U.S. customers just, you know, beyond the traditional metering that Adesto was in as well. Some medical -- personal medical devices use flash. So, we are in the early innings of our salesforce and our sales getting used to the accounts that require these types of projects. But, you know, the early signs are good. And we will continue to push along with them, with the flash, nonvolatile memory. And, you know, my focus is to also expand the differentiated parts, which are typically targeting more and more of industrial-type business.

The other interesting aspect of memory is what we -- press release -- this wasn't highlighted before this quarter that came along with Adesto is the ability internally for the so-called CBRAM which is a new, resistive-type flash. And it's a cheap way to add embedded memory to an SoC using three or four masks --]. Normally, it's a lot more for a regular flash. So, it's something that we just licensed. And, you know, as to Global Foundries, there are other licensees that we are talking to that potentially can also adopt this technology. And these licenses are also important because not only we get some upfront fees, technology license fees, but also, we tend to structure the deal so as that we have ongoing royalties when they start shipping wafers to other customers. So, it provides a nice, steady, overtime revenue stream. Of course, it takes a year or 18 months

before they bring up a process in a product that can be used by these customers. So, hopefully, that answers your memory question.

Adithia Metuku:

Sure. It does. Thank you.

Jalal Bagherli:

Wissam, do you want to comment on the 2021 because, you know, we haven't really settled for our forecast in detail or anything for 2021, but, you know, there are areas we can maybe talk about?

Wissam Jabre:

Yeah. Maybe I'll touch at a very high level. Adi, as Jalal said, it is a bit premature to really talk about 2021 in a bit more details. But I would say, you know, we continue to see improvement as, you know -- as we've seen the momentum in Q3 and Q4 for our business outside of the license main PMIC. We continue to see good momentum going into 2021 on the top line. With respect to the main PMIC, obviously, you know, as expected and as planned, we will continue to see a decline into the year to become probably, say, maybe around 10 percent or so of our business. On the margin side, gross margins is a key focus. That's one of those things that we continue to work on and improve. And OPEX, I made the comment earlier, I think, on the OPEX, when I answered Andrew's question.

Adithia Metuku:

Understood. Thank you. Thanks, Wissam.

Wissam Jabre:

You're welcome.

Female Speaker:

The next question comes from Robert Sanders from Deutsche Bank. Robert, please go ahead.

Robert Sanders:

Hi. Yeah, good morning. My first question would be on how management shifts. There seems to be a shortage in the industry, given eight-inch capacity tightness and the heavy U.S. restrictions on SMIC, which I think is a big foundry in PMIC. So, do you think you can benefit from this tightness, or do you think industry pricing will go up? That's my first question. Second question is, can you remind us how much of your volume today is on eight-inch or have you moved quite a lot of it to 12? And then the last question is just on '21, I know you can't give us clear guidance. But on the legacy business, do you think there's a sort of 200 million headwind or is it a 300 million headwind or somewhere in between, just from Apple ramping up iPads, et cetera, with their own PMICs? Thanks a lot.

Jalal Bagherli:

Hi. Good morning. So, let me takes this question. So, I think the shortage on mixed signal technology, generally, I wouldn't say is purely PMIC-related. Of course, PMIC is a part of that. But I think, you know, across the mixed signal foundries, there's high demand and therefore

shortage -- some shortage of silicone availability exists for all players, as far as we can see. And we are one of those players. And of course, we will get affected as well. The eight inches is more severe than 12-inch. You're correct. Just because it's very hard to expand eight-inch capacity as, you know, nobody makes tooling for eight-inch anymore. So, it's harder for the foundries to expand.

So, I think you asked about SMIC. We do use SMIC but not for any of our PMIC products. So, most -- the majority of our PMICs and mixed signal products are with TSMC, UMC, and Global. Volume eight-inch versus 12-inch, the older products we have, Robert, are eight-inch. But majority of the new volume products are all in 12-inch parts now. So, some of the legacy products have been in eight. But they tend to be less of the proportion. But, you know, 12-inch is also not freely available. There is a restriction on 12-inch capacity as well. Just so you -- just so you know.

In terms of the 2021, I think, to be honest, this year, our legacy business performed better than our modeling and expectation, right, because there was a lot of pads and other devices that were shipped which had our main PMIC inside. But, you know, as we did the license in 2018, every year, the worth of the legacy products will drop. And so -- although this year, it didn't -- it did drop, but not probably as much as it would have done in the absence of COVID, I think next year we expect -- we expect the drop to be significant for the legacy. But everything else in the business is growing. So, it's a transition. And as I think Wissam mentioned in his remarks, this quarter, we saw crossover between growth and legacy just within the Apple business, meaning in Q4, we expect our growth business to be -- from Apple, to be bigger than the legacy shipment. And going forward, this will be the case. So, next year I think, in total, our estimation is that our whole legacy part of Apple business will be no more than, say, 10 percent of our total business, if that helps.

Robert Sanders:

Yeah. No, that's great. If I could just have one follow-up which just is, you mentioned Apple would be 35 to 40 percent of sales in 2022. That suggests that your android traction is perhaps better than I'm expecting. Do you anticipate quite a considerable android revenue in '22, or is it a bit too early?

Jalal Bagherli:

No. It's fine. But remember, the rest of business isn't just mobile phone, though. I mean I would say 30, 35 percent of the total business, right. So, we've grown a lot of IoT business, Bluetooth, backlight drivers, you know, battery management, a bunch of other stuff, but not everything is within mobile, although battery management would be mostly mobile. And our quick charger AC/DC products are in mobile. So, those are all android. So, on that list, yes, you're correct. Then the gross would be maybe much higher than where we're at now. Yeah. So, we still stick with that 30, 35 percent of the revenue in 2022. It seems -- we seem to be tracking to both of the growth rates that we indicated and the proportion that we end up. And I think, you know, it will be -- it will be a healthy rate of concentration versus where we've been before, couple years ago.

Robert Sanders:

Great. Thanks a lot.

Jalal Bagherli:
You're welcome.

Female Speaker:
The next question comes from Juergen Wagner [spelled phonetically] from May First Bank [spelled phonetically]. Juergen, please go ahead.

Juergen Wagner:
Yes, good morning. Thank you. Regarding industry IOT, now that you've integrated the acquisitions, how significant can this business be for you over time and who will you most be competing with or gaining shares from? You gave us this hundred million for your new auto business in 2023. So, similar question in that direction for industrial IOT, and the second is on Huawei, how much was that in Q3? Thank you.

Jalal Bagherli:
Say that again. Say that again -- the last piece.

Juergen Wagner:
The Huawei --

Jalal Bagherli:
Yeah.

Juergen Wagner:
The main contribution in Q3?

Jalal Bagherli:
Oh, okay. Okay. Thank you. So, first, industrial IoT. First thing, we are creating reporting segments over this call which I will then identify what we've put into the industrial IOT. And primarily this is the Adesto that we've talked about just now, as well as the Creative Chips which are in the industrial IoT, so those two will be forming that third [unintelligible], we provide the additional [unintelligible] numbers for you guys so you can track it properly. In terms of significance of this business, I mean, we have -- we haven't done yet in terms of building it, but from what we see in terms of what we have today, I think the industrial would be in excess of a 150 million by 2021.

Juergen Wagner:
[affirmative] Okay.

Jalal Bagherli:
And, I think, I think that was your question, right?

Juergen Wagner:
Yep, yep.

[talking simultaneously]

Juergen Wagner:

And who are you competing with -- sorry.

Jalal Bagherli:

Oh. Who we're competing with? So, yes. So, there's several things in that -- actually it's probably useful if I just explain it a little bit more on what is in our industrial IOT business. So, we obviously about the non volatile memory as one which goes into metering and other industrial applications. We have also a basic product, which is primarily for things like satellite transceivers, 5G back haul networks as well as some transceivers type products. Our Creative Chips is more of a machine to machine communication sort of products. So, these are the type of products.

We have different competitors in each area, for different things but typically you may want to think about people like Maxim in some cases from the industrial areas. From memory would be some of the Taiwan players for memory and then for the transceivers, I think actually there are not that many compared to [unintelligible] because they are very strong RF, fast 80 [unintelligible] type products, so I don't know, you know, who the competitors are, if those people who make 86 with this type of product. They used to be, you know, [unintelligible] for example, global funded at the end of the [unintelligible] thing, but there may be others. There's no more than two or three for that type of business. It's very specialized, so I think that's good for industrial communication chips, which came from -- a form of Creative Chips. I think the competition there tends to be people like Infineon is a competitor there in factory operation, and yep.

Juergen Wagner:

Okay. Okay, thank you.

Jalal Bagherli:

You're welcome. And when Huawei, share of Huawei, actually on Huawei let me make a comment while -- I'll let Wisam maybe talk about the percentage of our revenue last year and this year [unintelligible]. But one of the things that we are -- we've been shipping quite a lot of fast charging ACDC-type products to Huawei and we continue to do that, and then we have new businesses in audio as well as backlight driver technology for them and some of the Chinese are interested in our battery management-type products. So, I just want to picture for you the range of products that we could potentially be shipping to Huawei. The good news we have is like any other company, we are subject to U.S. restriction, so we applied for a number of licenses for different product lines to U.S. and because we've been given license to ship our ACDC products, audio products, and display products, we have all the licenses to -- there are five that we wait for the U.S. Department of Commerce to look at and issue license hopefully in the future. So, that gives us actually advantage over people who don't have a license.

So, if I hand it over to Wisam to maybe to give us a percentage to -- we haven't been big, but, Wisam, maybe you can take that.

Wissam Jabre:

Yeah, of course, Jalal. So, Jürgen, hi, the percentage of Huawei is really small. They're not one of our top 15 customers, and so last year they were sub -- they were definitely sub two percent of our total. And in Q3, also, they were basically, from what I see, they were sub -- same thing, less than one to two percent. They're a very small customer for us.

Jalal Bagherli:

With a big potential [laughs].

Wissam Jabre:

Of course, with a big potential. [laughs] Sorry.

Male Speaker:

Okay. Thank you.

Wissam Jabre:

You're welcome.

Female Speaker:

The next question comes from Mitch Steve [spelled phonetically] from RBC Capital Markets. Mitch, please go ahead.

Mitch Steve:

Yeah, so I had a couple -- I just want to start on a just on a financial side first. I think people were having a little bit of trouble, including myself, on 21. So, maybe I can just put out an assumption out there -- just assume that smartphone units are similar to 2020, stay the same unit shipment as 2020 -- then, I mean, what type of revenue growth would we expect there? Because I think that's what is kind of moving the needle here in 2021. And then secondly, I just have one on the supply chain. We're seeing a lot of news about some component shortages combined with Europe and now we're going into some sort of lockdown situation depending on where you are, and so is that something you guys are looking into in terms of maybe moving some of your manufacturing away from Europe, into Asia or somewhere else? Just curious on what is happening on the supply chain side of as well.

Jalal Bagherli:

Okay. So, I think because -- we have this presentation challenge, right? So, if you remove the legacy business from our businesses, right, and kind of putting it to the side, then the rest of the business will show growth, right, year and year to giving growth this year over last year and will continue to grow in 2021. But the legacy business, as I explained earlier, will see quite a significant drop because that's then two years or three years after we licensed the main PMIC, right? So, that, as expected, will be having a big drop there to end up in a no more than 10 percent of our business next year. So, it has an effect in terms of the total when you add everything up, but underneath we have a nicely growing growth drivers from Bluetooth, from [unintelligible], from new business at Apple, et cetera that's continuing to grow. So, that's the first one.

The second point in terms of supply chain. As I explained a little earlier, there is shortage of silicon, but also shortage of manufacturing capacity for test packaging and some supplies of things like [unintelligible.] Again, before alarming everybody, when I say shortage, this is at the margin of production, so it's not like, you know, there's nothing you can get. You're talking about maybe -- for example, this year we could have probably shipped another five percent to 10 percent, maybe, max, extra if there was all the capacity available in the world that we needed -- so we're probably five percent short of what we could have been. So, next year, you know, we see that shortage to continue. We don't know when it will actually go; there's quite a lot of uncertainty in terms of supplier capacity coming online or not coming online, and you know, is more difficult to do on eight inch, but possibly on 12 inch, that may be better. Using this location, because of China, U.S. trade issues impacting supplier of Huawei and competition to Huawei, so that again is quite dynamic in the market, so we don't know how much of that, you know, is again, is -- creates this location of people ordering more or not, but currently the back logs are very strong from customers.

The Europe lockdown doesn't impact us from supply point of view. I mentioned because we are completely fabless and completely manufacture in the far east. We don't manufacture anything in Europe, so it does not impact us from a manufacturing point of view. It impacts us from design and running the company point of view, but not from manufacturing.

Mitch Steve:

Good, thanks. I poorly worded my question. I thought that the manufacturing in Europe in general is kind of like [unintelligible] in terms of impact in the supply chain --

[talking simultaneously]

Mitch Steve:

Yeah, and it just -- yeah and there's just a last one by the way as well. Gross margins should then be up in 2021, just given the mix changes, right? I'm just trying to make sure that's accurate because I know that Q4 is going to be down, but that's probably because of the smartphone mix. So, I just want to make sure that's accurate, that 2021 should be up in terms of gross margins.

Jalal Bagherli:

Yeah, I mean, what we have guided is that Q4 margins in line with the first nine months of the year, so it's [unintelligible] and I'm not sure we're necessarily signaling down-down, and next year our expectation is, you know, is what is delivered over the last three years is incremental improvement in gross margins. And you know our long-term model is 50 to 53 percent, which we're moving into, right, and that should continue next year in the same type of rate. Yes, you're right.

Mitch Steve:

Perfect. Thank you.

Jalal Bagherli:

Okay.

Female Speaker:

If we have no further questions, I'll hand it back to Jose.

Jose Cano:

Thank you, Bethany. Just, we've run over time a little bit. There was one question on the webchat, but I'm taking that offline. I just want to say thank you everyone for joining us today as usual and if you have any other questions, please don't hesitate to reach out. Thank you.

Jalal Bagherli:

Thank you, everybody.

Wissam Jabre:

Yeah, thanks everyone.

[end of transcript]