Operator: All right, welcome. Thank you for standing by. I would like to inform all participants that this call is being recorded. Parts of this call may also be reproduced in J.P. Morgan research. If you have any objections, you may disconnect at this time. I would now like to turn the call over to your host, Harlan Sur.

Harlan Sur: Great. Good morning everyone, and welcome to the Analog Devices Uncovered Series. This morning we'll do a deep dive into the team's growing opportunity in next generation gigafactories. We'll explore how the team leverages its strong position in factory automation, instrumentation and test, and edge compute, to drive a solid growth profile in their Industrial business.

My name is Harlan Sur, I'm the semiconductor / semiconductor capital equipment analyst at J.P. Morgan. From Analog Devices, very pleased to have Martin Cotter, Senior Vice President of the Industrial And Multi-Market segments for the team. Martin will give us an overview of himself, his responsibilities, take us through a short presentation. So good morning, Martin. Thanks for joining us today. Thanks for inviting me here to Wilmington, Massachusetts, the corporate headquarters of Analog Devices.

Martin Cotter: Good morning, Harlan. Thank you very much for coming and for taking part in this event. So yeah, I've been with the company quite a time, many decades, about 37 years. At the beginning it was very much a technical role designing semiconductor products. Hopefully some of those products are still being sold.

And then in the intervening time, ran a few different businesses. About 2017, ran Sales & Marketing across the company. And now for the last two years, I've been running the Industrial business. So, I have to comment that it is probably more exciting than ever to be part of the company, in terms of what the opportunity we see. And I'd like to share some of that with the audience today, just in terms of what we're seeing.

Harlan Sur: Perfect. thank you.

Michael Lucarelli: Thank you Martin and Harlan, it's Mike Lucarelli. You guys know me, I'm not going to do my introduction. Quick forward-looking statements, a lot of words you guys can read on your own time. So, we'll go quickly to the next slide.

So, before I pass it over to Martin, give us a deep dive on gigafactory. I just wanted to highlight a couple pieces of ADI. On the pie chart, you can see about 30% of our revenue is from sustainable use cases, those being industrial and building efficiency, which we'll spend some time on today. There's also mobility and grid, and communications. And it's important to say there's a 30% part of our revenue today that's growing quite fast, and that will continue to grow as percent of our revenue in the future.

Looking on the right side of the chart, there's a big push to net zero, and the only way to get there is through two ways – energy efficiency and renewables. Today, we're really highlighting how we're getting a 2X on energy efficiency in the factory, Martin will talk about that. On the renewable piece, we'll do another deep dive or an uncovered series in the fall on that area and how ADI is benefiting from that. So, Martin can you please kick off on energy efficiency?

Martin Cotter: Sure, thank you, Mike.

Harlan Sur: Thank you, Mike.

Martin Cotter: So yeah, this picture is something that really consumes us in terms of the mission that we're on. If you look at the world and what we need to do to get to 1.5 degrees, we're already at 1.1 degrees. So, we're on a path to massively exceed that. We need to reduce our carbon footprint by about 80%. There's only one way to do that, and that means deploying our technology into industry to make everything twice as efficient as today. Industry and buildings take about 50% of the energy of the planet.

So, this is a pretty major mission. It really inspires all our team and it inspires me in a very specific way. That going together with renewables, which would be a different event, I think we'll be able to explain what's behind all of this. But the world of industrial is in a very different place because of this.

Okay, so then just taking a little deeper look at this. When we looked at the spend behind this in terms of capital, what was about two trillion in 2020 is going to about 3X that in terms of the overall build out of factories. So, if you go back 10 years ago, industrial really was mid-single digit growth because what you got was the occasional factory being upgraded. But with this picture of the need in terms of multiple different areas, you see a big rollout of equipment as part of these factories.

This is great for us. Things like making factories more efficient or making new factories more efficient, it means that 2020 to 2030, there's about a 3X build out of equipment. And the other thing we're seeing is the content that we had in that equipment would've been about 2% to 2.5%, now it's about 3.5% to 4%.

So, I just picked a couple of different legs to this set of secular trends. One is on the factories that will source more batteries, gigafactories. So, we're going to go deeper into that today. Secondly, semiconductors. Everyone's heard about the CHIPS Act in Europe and US. Thirdly, there are much more disruptive, high-end manufacturing, which might require laser deposition for things like joints for people, or for engine parts, which is very high content, much more efficient. And lastly, of course, we are seeing real spend now on the need to make factories more efficient. So, that is very different than before. It's not just maintaining factories; it's significantly upgrading the efficiency of factories. I think the very public one would be World Economic Forum with these lighthouse factories, I think we've had Schneider be very public with four different factories, each 25% more efficient.

So, now I think you're seeing end customers spend money on these major, either new factories or upgrades of all factories. And that, for us, we have looked pretty deeply into each of these. Gives us a 2030 picture of about a $20 billion SAM, which is very exciting. It is fundamentally based on digital factories. So, this is the world of digital factories. Looking at what that means, just taking another little click into that. Traditionally, operating technology had somebody walking around with a clipboard, looking to see where their processes were, taking down some temperature pressure, is the process under control? Now, with this world of IT meeting OT, so information technology meeting operating technology, you have a very different factory.

So, first of all, the connection of the factory, the network of the factory, must be much higher speed. So, it goes from kilobits to gigabits. Secondly, the control, previously the control, was plugging and pushing wires, so it was manual. Now, that needs to be totally digitally switched. So, things like IO-link, we've got software IO making that whole network completely efficient. So, that goes together with our time sensitive networking and connectivity, which gives us the gigahertz rates.

And then of course, the whole objective is always on, always real time information, at the intelligent edge. So, it's really to do with supporting a fully automated control of the factory, where robotic systems or very sophisticated pumps, much higher efficiency motors, it could be inline instrumentation, all driving for this newer, more sophisticated digital factory.

So, as you can imagine, we're pretty excited about this picture. Seems like a simple picture, but I think we're seeing a huge impact from our customers telling us about where they're going to go with this.

Whenever you've got IT meeting OT, you have to have a secure system. So, security is required by this system. The intelligent edge is very much the enabler of efficiency. So, our mixed signal analog solutions, now we're gaining a new life. So, it's a much higher deployment, much higher content.

Just to dig a little bit deeper into what it means for us, I just put a couple of examples up here. A lot of the control is based on precision technology. Of course, we have the leading precision franchise in terms of the deployment of analog. A very simple case like motor efficiency, 70% of the energy in factories. So, overall energy of factories of buildings, 50%. Factories themselves, 35%. Of that, 70% is motors. So, we're seeing the need for more efficient motors. Half of those motors are over 10 years old. It's incredible. But that means they're 10% to 15% less efficient than we can make them.

Connectivity, this is really long range, robust, trusted connectivity. So, it has to be time defined, time sensitive. It is one mile in a factory, many cases. Precision measurement, of course, the world of digital factory means you have to trust the measurement. It's always available, always on, always real-time data. That drives efficiency. The need for higher accuracy in terms of the measurement is a really difficult problem to solve. And we have a lot of history and being able to solve that problem.

And one of the things I'm really excited about is the deployment of power. So, silent switcher technology allows us to make the inline measurement more efficient and the long-range connectivity system more robust. So, all of these four different core technologies go together to drive the future of digital factory.

So now just to apply that into one of the cases. So, I think we've picked out gigafactory just to give a little bit more color, as everyone can imagine. I think the rollout of EVs means you've got to have a source for storage of power in lithium-ion batteries today, but it could be a different battery technology tomorrow. So, we're very heavily deployed in terms of this technology. But what's really interesting to look at is how this new generation, they tend to be the most sophisticated, highest examples of a digital factory. So, it starts out with being the highest content for us. Any new factory that's been built will be a digital factory.

In this case, we're seeing the need for 12X the capacity, in terms of the rollout of availability of lithium-ion by 2030. When you look at content, what you've got is lots of automated equipment. First of all, you got the connectivity, the control, and the edge. Then you've got a lot of automated equipment. There are some specific problems to solve with inline measurement, which is much more deployed. I've just picked three examples here. There are nine different process steps, which are in a digital factory.

These three, it's interesting that our customers are bringing us in now, to talk to end use problem, so that we can improve these very significant areas of value for them. So, the ones I picked here are coating, which requires higher precision on the control of the robot. The robotic system needs to be higher precision. We need to be able to, in many cases, it's inline instruments that will be deployed to

make sure that the uniformity of coating is better. It's a mission-critical instrument that will be deployed. This is targeting as much as a 5% yield loss, so you can imagine how much that's worth to the end customer.

Secondly, battery formation. We have already got a very strong technology deployed in automotive for battery management systems. This now is in the formation of the battery. The property of the battery when it's formed stays with it through its whole life, so it's very important. It takes about 20 hours of very controlled, precise charge discharge to form a battery. Our faster precision, we believe, can help with this problem.

And then thirdly, on the winding, having very, very long rolls of aluminum to be perfect as part of the formation of the battery, we deploy inline measurement to be able to look at where the defects are for that whole system, so what it does is it reduces waste. All of these allow us to be more aggressive about capturing and delivering on value. There are many more that I could go into. These are just three examples.

We are very excited about what today is a decent opportunity in terms of the business, but of course, it's going to grow at a very accelerated rate and it already is growing. We believe that by 2030 about $1.5 billion is the expanded opportunity, about 3X what it is today for us. And we're still exploring exactly what we can do on delivering value to some of these specific problems I've outlined. So, all in all, a very exciting proposition. It is delivering to this sustainability picture. It's one of a number of different places that we're seeing value generated. Looking at how real the deployment is, it's already happening. There are many, many of these factories announced. $250 billion of capital being spent by 2025, $250 billion again by 2030. This is a number of about 190 gigafactories that we're already seeing. Of course, some of our industrial customers have high ambition on being part of this rollout, and they're sharing with us what we need to do to be part of this, so we're very excited about what this is doing.

We see a path that derives a $45 billion annual spend of that outlined capital that I described by 2030. And we see our content, as I described, looking very positive, so this is an area that we're heavily invested in. A great example of digital factory and one of a number of examples.

Just going a little deeper into content. As you can imagine, these factories have much higher flexibility, much higher precision in the control of robotics. We already have a position in robotics. If you go back five years ago, it was maybe about $100 of content. The robot really was a fixed robot with just some joint manipulation. It had this huge metal cage around it that wasn't very flexible. Today, we're seeing content be quite a bit higher. Precision torque, it needs to get high precision on the torque to affect better outcomes in terms of the machining.

Secondly, in terms of the arm, it's all much more precise control. And thirdly, the connectivity, of course. It deploys something like an ethernet solution or for vision systems, it could be something from automotive like GMSL. We're seeing many technologies come into today's deployment. And of course, tomorrow we're seeing the high likelihood that that cage is gone, that the robotic system very much is flexible, autonomous, and that means more content for us.

It is very well able to perceive very accurate in terms of positioning. And of course, then it derives better outcomes of some of those problems I mentioned earlier. We're pretty excited about this kind of content increase. I think we went through this in automotive where ADI's content increased

significantly. It's not too different from that that we're seeing in terms of this picture, with very much mission-critical problems that we're solving.

Secondly, we don't think about this often, but to make that very sophisticated factory like a gigafactory, the previous life was that you would sample a piece of the process, take it to the lab and look at some measurement. It was more like a quality control process. But what we're seeing in the future is in many cases, the world of digital twin determines that there needs to be an inline, mission-critical piece of equipment which has got the highest precision. Usually, the equipment measurement is 4X the precision of what it's measuring. It's extremely low noise, so it's a home for very low noise power, power making the precision better. And of course, the system is much more sophisticated. Something that has come to us from the Maxim acquisition like Trinamic, which is stepper motor control, very, very precise control, together with ADI's precision converter technology and ultra-low noise regulators is allowing us to derive a much better result in terms of the in-line instrument that we will have as part of these very sophisticated processes.

Overall, our customers are telling us these same secular trends are showing up in instrumentation as well as in industrial automation, which means that our ability to generate value is very high. This is what's getting our teams really excited.

Then, just to anchor on a few key takeaways, I wanted to give a sample of one of the very exciting areas that is the gigafactory. We can see that it's making a real impact in terms of the world of sustainability. This 2X efficiency is something I'm very energized about and so are my team. Secondly, I think in terms of this overall ecosystem, our customers in automation as well as in the whole EV management system, the portfolio that we have, we are going deep now into the application in terms of our domain knowledge, and that's what's deriving this value. I think our deployment, in many cases, one of these instruments has a couple of hundred different customers supplying that instrument. It's our knowledge of the application, making it easy to use, easy to adopt, that we think will make the difference. And I think in terms of this picture, of course, what we are seeing is it's an accelerator of growth. That step up, what would've been mid-single digits going to high-single digits, this is one of the areas that's even going a bit faster than that and is part of this accelerator.

Harlan Sur: Great. That was a great overview.

Martin Cotter: I think that's pretty much the overall picture. I think it's an example of many more cases that we're going to see. Our customers are telling us about this new world of IT meeting OT. This is one of the great examples. Its new factory builds, but we're seeing similar acceleration in terms of operating old factories to make more sustainable outcomes.

Harlan Sur: Yeah. And I think one of the things that came out quite clear in the presentation and the gigafactory opportunity is that, and we're going to focus a lot on automation in our Q&A, but it does span multiple of your segments within your Industrial business. The inline test and measurement, that's a part of-

Martin Cotter: Exactly.

Harlan Sur: Instrumentation & Test franchise, which is a very big part of industrial automation, another very big part of an Industrial.

Martin Cotter: Exactly. These are the secular trends that we are seeing really driving all of those businesses. My responsibility is industrial automation, including instrumentation as a separate business and, of course, power. This is why this was such a good example – we're seeing those three come together in a very special way to give a better outcome for the industry.

Harlan Sur: Perfect. Well, we'll now dive into the Q&A. I have several questions lined up for you. And that was just a great presentation. Back at your analyst day in April of last year, you talked about, the team talked about factory automation revenue at about a $1.4 billion annualized run rate, about 25% of your Industrial business at that time. Can you just give us an update snapshot of the automation business today? What percentage of Industrial revenues does it account for? And with the new opportunities like gigafactories, how do you expect your overall automation business to grow over, let's say, the next three to five years?

Martin Cotter: Yeah, I think you pretty much gave some of the context of this. It is about, I think, as of the last quarter, about $1.5 billion, so it is about a quarter of the overall Industrial business. As you can imagine, this business would've been historically slower growth. Now we're seeing high single digits in terms of this growth picture. If you look at the gigafactory goes across multiple different businesses. But if you look at the opportunity in terms of automation, we do believe that automation is now in for a more defined multi-year deployment.

Of course, you are always going to get the situation where there is correction of inventory off a couple of very strong years. But we are seeing, and customers are telling us about this longer-term deployment for automation. The content is a very big positive one for us. We would see that that grows at or above the picture we're guiding. And of course, gigafactory in terms of that piece of the business will grow faster and that's more like significant double digits. We're seeing this as an area that we learn a lot from and we can get very focused on the application in terms of deployment.

Harlan Sur: You are the leader of the overall Industrial business for ADI. And does this change the team's long-term target of driving mid to high single digits growth in the Industrial segment that was laid out at the last analyst day?

Martin Cotter: I think there are pieces of the business that grow faster and that's why we wanted to highlight this one. Longer term, I think it makes us very confident about that mid-to-high single digit number. We would see that obviously this is a stellar business for the company and its quality. The problems that we're solving are becoming more challenging and that's a great home for our innovation. We are seeing the domain expertise to be a positive momentum for us. I would say it makes a bit more confidence on the increased growth. And I would say that there are areas that we're getting very confident, very strong pull on like I've just described.

Harlan Sur: Back at the analyst day, again referring to the April 2022 event, back then you sized your SAM opportunity and automation at about $6 billion by 2027. Here you talked about the incremental SAM opportunity of $1.5 billion from gigafactories by 2030. Given the new opportunities driven by the focus on Gigafactories, how do you now size your overall automation SAM opportunity, and what percentage of that will be driven by the build out of these gigafactories?

Martin Cotter: Yeah. I think on the charts that I showed in terms of digital factories, I think we talked about $20 billion-ish, which is ... versus today, it's about twice the SAM opportunity, so it's just honing in on an area that we very much directly see increased content, and of course that will affect industrial

automation business. I think it'd roughly be the same percentage. It'll be about 25% overall. But I think what we're seeing is taking this one element, it's about $1-2 billion of that $20 billion in terms of gigafactories, but it's one of a number of elements. I could have picked, for example, the build out of semiconductor.

Harlan Sur: Yes.

Martin Cotter: I'd have to go into a slightly different version there, but I think the story is quite consistently, so I think we are seeing this expansion of our opportunity to be about 2X. Very consistent with what we're seeing the expansion of semiconductor overall, but of course our certainty in being able to capture more of the opportunity is getting stronger.

Harlan Sur: As I mentioned before, I mean, the onset of gigafactories also drives demand for your electronic test and measurement, or what you guys call your ETM segment, which is a part of your Industrial sub-segment within Instrumentation & Test. Overall, as we talked about before, Instrumentation & Test is roughly another 25% of your overall Industrial franchise. Here, the team, as you talked about, has developed some test solutions for battery formation, which is obviously a key part of these gigafactories. Can you give us a rough idea of the SAM opportunity as it relates to battery formation inline testing? How big of the business is that today? Obviously it feels like it's going to be a much bigger part of the franchise few years out.

Martin Cotter: Yeah. I think if you look at gigafactories, I showed three examples of problems of which that information was one of them. There are nine different major process steps in a gigafactory, so each of them has different particulars, have opportunity. If you look at the opportunity in terms of formation and test, it's about a 10th of the overall opportunity. Think about it as maybe $150 to $200 million when you think about that picture in 2030.

Of course, it has a variety of different requirements and technology. It is a really great problem to solve because the property of the battery information stays with it through the life of the battery, so it has impact on our automotive business in terms of being able to look at that over its whole lifetime.

We're seeing a mix of solutions from our BMS plus highest precision measurement to be part of making that formation 20 hours' time shorter. We're still working on this. We have a strong position both in the formation and in the battery use, and the life cycle of the battery is a very big area for us to consider. It's an exciting problem to solve, and it's one of a number that are part of the process steps in the formation of the battery in the gigafactory production.

Harlan Sur: Many of the large auto OEMs themselves are setting up their own gigafactories, and these same auto OEMs are using your automotive solutions with their electric vehicles and just their overall vehicle portfolios, like your automotive BMS solutions, your in-cabin connectivity solutions, your ADAS solutions, all areas where the automotive franchise has a very strong leadership position. Does the familiarity and relationship with the team on the auto side give you an advantage, give you a seat at the table, when you start to engage with these same customers on gigafactories?

Martin Cotter: Yeah, absolutely it does. When you see the picture of some of the automotive customers have very much got their own special sauce that they want to deploy. We find that they're working with our big Industrial customers in a lot of cases. In a way we're part of both... so we're bringing the two together. It's not just one solution across all of the industries. Lots of those customers have their own

particular solutions. We are seeing both our battery management systems that are deployed in the automotive, in the car itself, being used in formation, as well as some of our very highest precision measurement. So, it's important that we can bring all of those parties together.

We're being invited to do that because we've got this kind of insight from, we've been working with the Industrial customers for our whole lifetime. In many cases, EV is new, so it's the bringing together of both, but generally we're getting right to the customer's customer and being able to do this and that's where the insight and the application is coming from. We're very disruptive technology on the life lifecycle of the battery. That goes right back to the formation and to the use of the battery.

Harlan Sur: As the industry moves towards gigafactories, digitization of factories driving demand for your automation solutions, these will require more sensing, edge processing, connectivity, robotics, as you described. In your product portfolio, you have a mixture of digital processing and control, analog mix signal, power, connectivity products. Help us understand the mix of these products within your automation or maybe even just within your Industrial business. In other words, within your total automation revenues or digital factory revenues, what percent is analog, what percent is digital control and processing, what percentage is power and so on.

Martin Cotter: Well, as you can imagine, fundamentally these are edge-based problems. I know we talk about the network and the switching enables this really great intelligent edge. Fundamentally, most of it is a measurement problem, which is about two-thirds analog, about one-third power. I would say that the need for flexibility is driving the need for some embedded processing.

Also, security is a big feature, so we are needing to make these secure with very localized insights that are being derived. Anytime you get a control system, latency is very important. It's about two thirds analog. I would say one third power generally, but we are seeing the need to make the analog more intelligent, so that means we're embedding. I'll give you one example. The highest speed of capture, which is used for something like a scanning electron microscope, which might be used here, has our latest generation of very high-speed technology.

It's not only precision. The fact that we can do that means that we can now accelerate the localized processing with an embedded digital and our power solution is about, even though that's a very high value to get, you can imagine the highest speed processing is very high value. The power to be able to drive efficiency on that is also very high value, so it's about a third of the value.

We're seeing we've got already very high share on analog processing, and it's a great opportunity now for us to increase share with this low noise, low EMI [electromagnetic interference] power processing and embed digital, but digital that really makes a difference, right? The digital solution could be driving security, or it could be driving some localized insight. That's what effectively makes the difference in the application. Being able to combine all those in the application. The algorithm is often very, very valuable.

Harlan Sur: And that's a good segue into my next question because as you guys laid out last year, you've been moving up the stack with embedded digital software solutions stacks to drive higher content, deliver more complete turnkey solutions. What percentage of your sales tied to more system solutions sales, reference design solutions, and how much software do your products encompass?

Martin Cotter: That's a very active debate within the company in terms of where we're going. And I know we've messaged this world of intelligent edge quite a bit, but it's very real.

Now, one way to think about it is, many cases the solutions need component technologies, so we have to lead on the core technology side. By far and large, I think my business has lots and lots of components. Some of those are 20 years old, half of them are more than 10 years old. But what you get in these applications is, I'll give you an example. Something that enables time sensitive networking at gigabit type speed, that's basically a transmission transceiver, right?

The value of that device, we add the same again in terms of components around it, so this anchor plus attach is a big part of what we're seeing. And what that does is it renews design ins of products that might even be 15, 20 years old, so the world of the solution needs a lot of components. We are going to market by delivering the impact in terms of the end solution and the fact that we've got these anchor investments on these newer areas as well as the solution is really what's driving. I think I could show examples and many, many different cases of these application-based products that we're doing with some flexibility, but driving a lot of… I don't think the component business is going to reduce anytime soon.

In fact, it's getting a little bit of a higher momentum. But we are seeing these application-based systems, even though they might be made up of components, it's effectively recombinant innovation. In many cases, we're seeing them to be a bigger part of what we do and grow significantly faster.

Harlan Sur: Perfect. As you pointed in your presentation, there are more than 190 new gigafactories planned worldwide driving roughly 10 factories per year, $45 billion of annual CapEx spend by 2030. Given your portfolio breadth focus on gigafactory, how should we think about your overall market share and how do you think about the share mix within the different geographic footprints of your customers in gigafactory?

Martin Cotter: As you can see from the picture, there's deployments that are in US, Europe and Asia. And our sales are pretty much agnostic to whether it's US, Europe, or Asia. We concentrate on where the design is completed. So, we're very active in every region. I don't really see that changing so much.

I would say in terms of share, you can imagine as we solve more of the problem, we're getting more of what we have designed in, in every case. We are very committed to going deep into using our technology to really make the impact. I gave some examples. I'll give you some examples. In something like the stepper motor, where it would've been components that we would've deployed in the standalone case. Now the fact that we can get a significant reduction in energy from Trinamic motor system means that our attach rate is much higher. So, we feel that this kind of insight is what's driving progression of share.

In precision, we already have very strong share. I think when you look at power, we're able to bring power with these solutions more. And, of course, we've got the deployment of other embedded processing locally that also is driving this. Overall, I think we feel confident as we go to these end impact solutions, we feel like it's an opportunity.

Harlan Sur: Let's talk about your acquisition synergy strategy, specifically post the Maxim acquisition in 2021, the team laid out a revenue synergies target with the maximum product portfolio driving $1 billion over the next five years. Maxim also has some leadership in areas of automation. You pointed out some of them, high speed, IO, digital, programmable logic controllers, or what we call PLCs, power management, low power MCUs. As you think about automation, the digitization of the factories,

gigafactory opportunity, help us understand where you're exploiting the synergies with the Maxim portfolio? And can you maybe even quantify, within the $1 billion synergy target, how much of that is coming from synergies within your automation/digitization of the factory portfolio?

Martin Cotter: Yeah, so I think it's a very topical discussion that we have in terms of each of our customers. When you look at this world of IT meeting OT, so information technology meeting operating technology, anytime you connect to the network, you have to have security.

Thankfully we've got a processor portfolio from the Maxim acquisition that brings with it some security. If you look at our analog functions, they already would be very strong, but needing security. So, that's an example in terms of the connected factory. Europe is now starting to legislate for security. You need to have this CE label. It's being voted on now. For as little as two years from now, you'll have to have the security standards upgraded.

Secondly, you can look at the combination of power with very, very high efficiency, plus the need for a better process. And we would've gotten some advantages of process from Maxim. That drives much higher efficiency in a lot of these solutions that we have. It might be only a couple of percent of efficiency, going from 91% to 93%. But if you look at it, 9% loss, it's a third of the loss. It's a very significant impact.

Putting together very, very high performance power with some precision and security from Maxim, with some precision conversion from ADI, that's part of how we can derive this big synergy number. And it's very real. We are seeing the ability to gain share because of it, but more the ability to complete the full application system.

Harlan Sur: Perfect. Near- to mid-term, we are in the midst of a down cycle, but your industrial franchise has performed extremely well over trailing four quarters, your business franchise was up 25% year-over-year on a pro forma basis. That's including Maxim. And looks like the team is on track to sustain a flattish revenue profile in your industrial business this year. Within this profile, help us understand how the factory automation, gigafactory, digitization of the factory segments of your business has performed? And how are these sub-segments expected to perform with some of the near-term normalization of overall demand over the next few quarters?

Martin Cotter: So, when I think about that, I really think about the secular trends. And if you look at a situation where people talk about pulling back in terms of spend in the short term, there's a rebalancing of inventory. But what customers tell us is really about the long-term deployments. And some of these, I talked about sustainability, we talk about the secular trends now going from being recommended to being legislated. Something like a motor system I talked about, before that was a recommended motor, which is half the motors are 10 years old, that was a system that might be an IE1 motor or before that. Now from July of this year, you mandate that it has to be an IE4 motor, which is about 15% more efficient than the previous motor. The reason I mention this is, we've gone from looking at secular trends being recommended to now in some cases even being legislated. So, I think, and customers are telling us, that this picture of deployment isn't only one year.

Last year was a great growth year. I think we are looking at some elements of next quarter. We talked about maybe some moderate position. But as you look to the year, it will be a record year. For Industrial business, this will be a record year. And the next number of years we're seeing, our customers are telling us that those deployments will last between three to five years. I can't always tell you in the short term

what's going to happen, but I can tell you that this business will perform stronger I think than history. And probably a bit stronger than that in some cases.

We have a very good track now on this 2030 picture of twice the opportunity in terms of SAM. And that's coming from our customers asking us to do more. The world has gone from one of minor upgrades to one of very significant changes. And that's all driven by the insight of the semiconductor becoming more important to the end use. I think you see a lot of places that semiconductor content doubling by 2030. So very much that's the picture we're seeing in industrial. I think you'll see this business grow much more at the level that we talked about and segments of this business grow faster.

Harlan Sur: Perfect. And we'll end it on a discussion on, obviously, the team drives best-in-class profitability profile. Your industrial business financial profile is accretive to your gross and operating margins. Within this, how does the overall profile of the automation, digitization, factories and all the products that sit underneath that, how do these segments compare relative to the overall industrial gross and operating margin profile?

Martin Cotter: So, as you can imagine, the Industrial business is at the highest end of the profile. It's the highest margin business. The picture of very moderate GDP growth was there five years ago when there wasn't all that much deployment. But you put that together with our ability to do full solutions. We're very confident that the automation business will be very, very positive in terms of growth going forward. And a much stronger position in high single digits compared to what it would've been.

And, of course, the performance of the business, we see with these higher values being generated, it's solving more difficult problems. The intelligent edge is the future. We're the source of the data, where the data is born. So, we are seeing that be the spur to the business growth in the next three to five years.

Of course, short term, we've talked about. But long term we don't see anything in terms of this picture of opportunity because of these secular trends that look like they're becoming even more of an accelerator.

Harlan Sur: Yeah, absolutely. Lots of growth profiles, lots of growth opportunities ahead of the team. Martin, thank you very much for your insights today. Really appreciate it.

Martin Cotter: Thank you very much. Thank you.

Harlan Sur: Thank you.