2024 Capital Market Day (Held May 16, 2024)
Presentation and Question & Answer Summary

Presentation

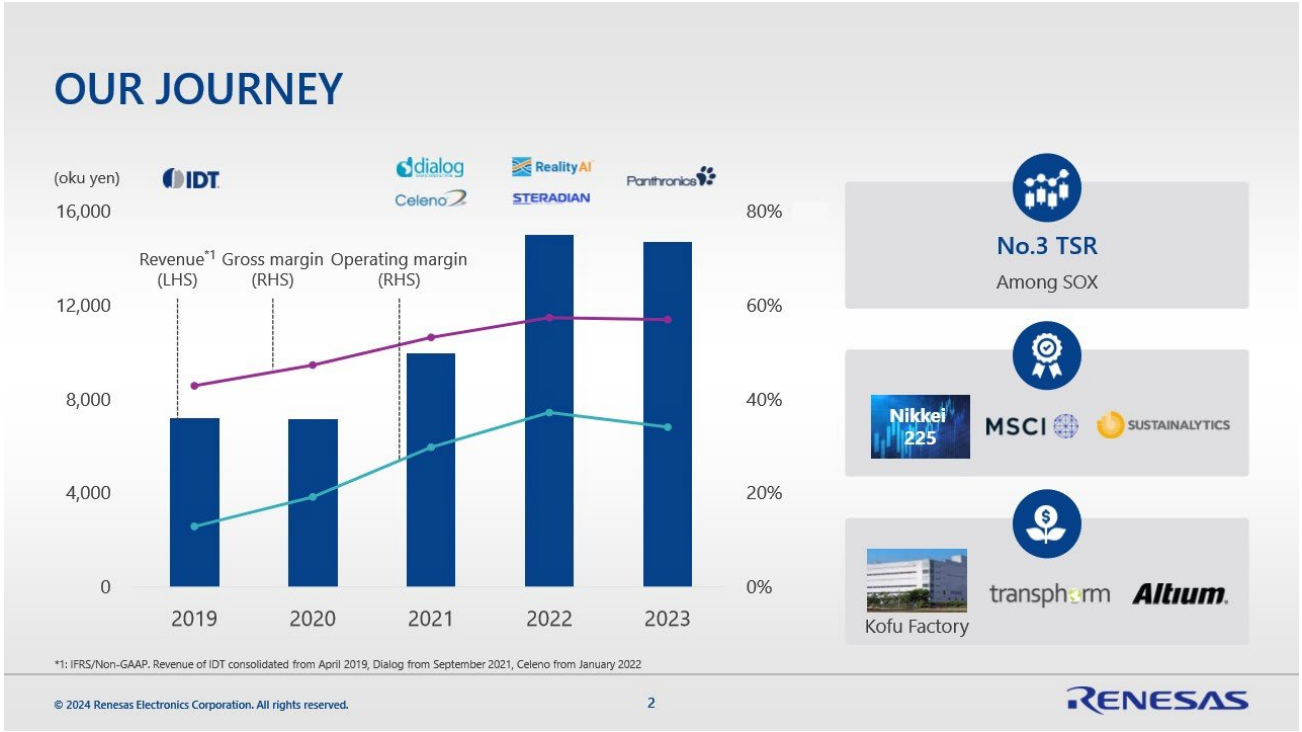
Moderator: Good morning, everyone. Thank you for taking time out of your busy schedule today to join us at Renesas Electronics Corporation 2024 Capital Market Day.

Today's agenda is as shown here. The entire event is scheduled to last four hours and end at 1:00 PM in Japan time. The materials to be used are available on the IR site of the Company's website. We also plan to post a video of the event later this evening.

First, Hidetoshi Shibata, Representative Executive Officer, President and CEO, would like to make a few words of greeting and give you an explanation. Mr. Shibata, please.

Shibata: Thank you very much. Good morning, everyone. I am Shibata. We have prepared a slightly longer timetable today than in previous years, so we hope you will be able to stay with us as long as possible. Our main goal this year is to provide an opportunity for you to speak directly with members of our leadership team in a slightly more expansive way than last year, so we have decided on this timetable. Although time is limited, we would like to have as many of you as possible engage in direct dialogue with members of our leadership team.

Let me begin with an overview, or rather, a brief introduction of where the Company stands as a whole.

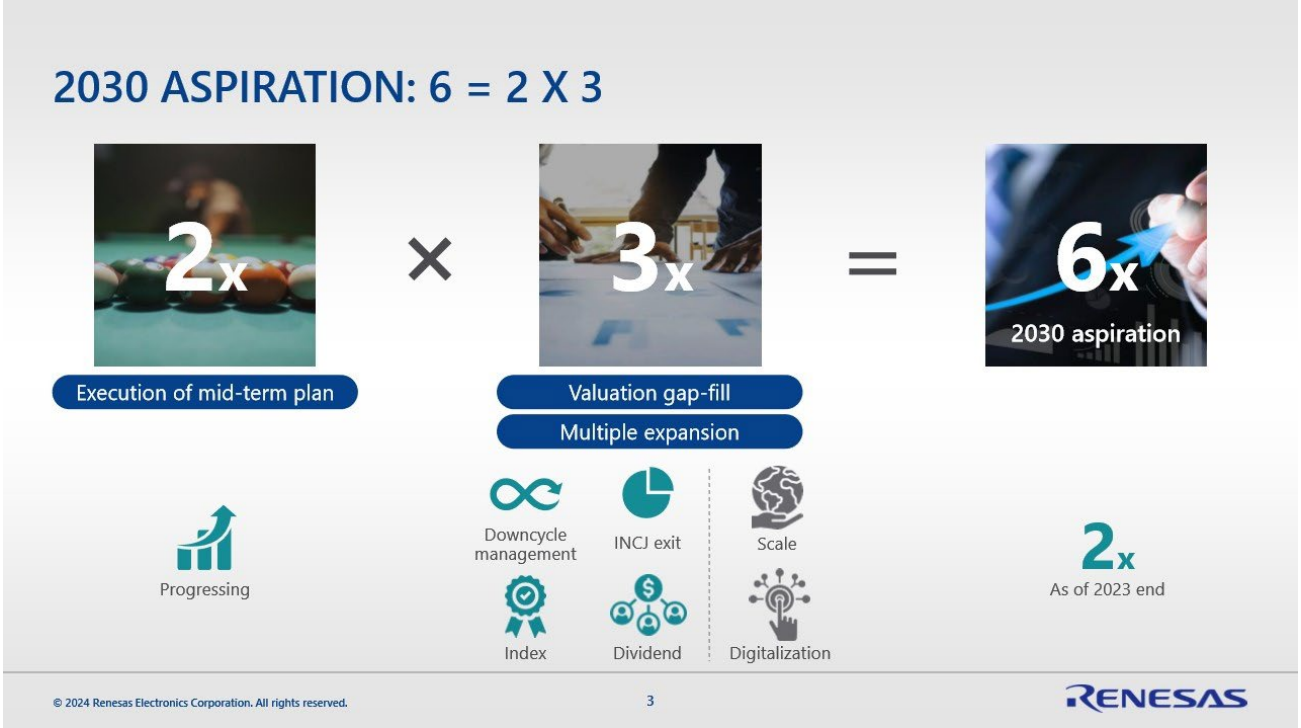


First, I would like to reiterate my summary of how far we have come since I took office in 2019. As I am sure you are well aware, our revenue for the last year and the year before last doubled compared to the past years, and I believe that we have achieved very steady growth so far.

Looking back over the last year, our TSR was number three among SOX stocks for the year. NVIDIA was doing very well, and we were closely trailing AMD that was second only to NVIDIA, which positioned us in third place.

Last year, we were included in the Nikkei 225 index, and then in the MSCI index on sustainability. And the Sustainalytics rating has also shown low risk compared to the year before last, which means it's a low-risk stock, and we have been able to improve our score. I may mix up the chronological order, but after we entered this year, the Kofu Factory started operations smoothly and on schedule this past April. We are now steadily preparing for the start of mass production next year.

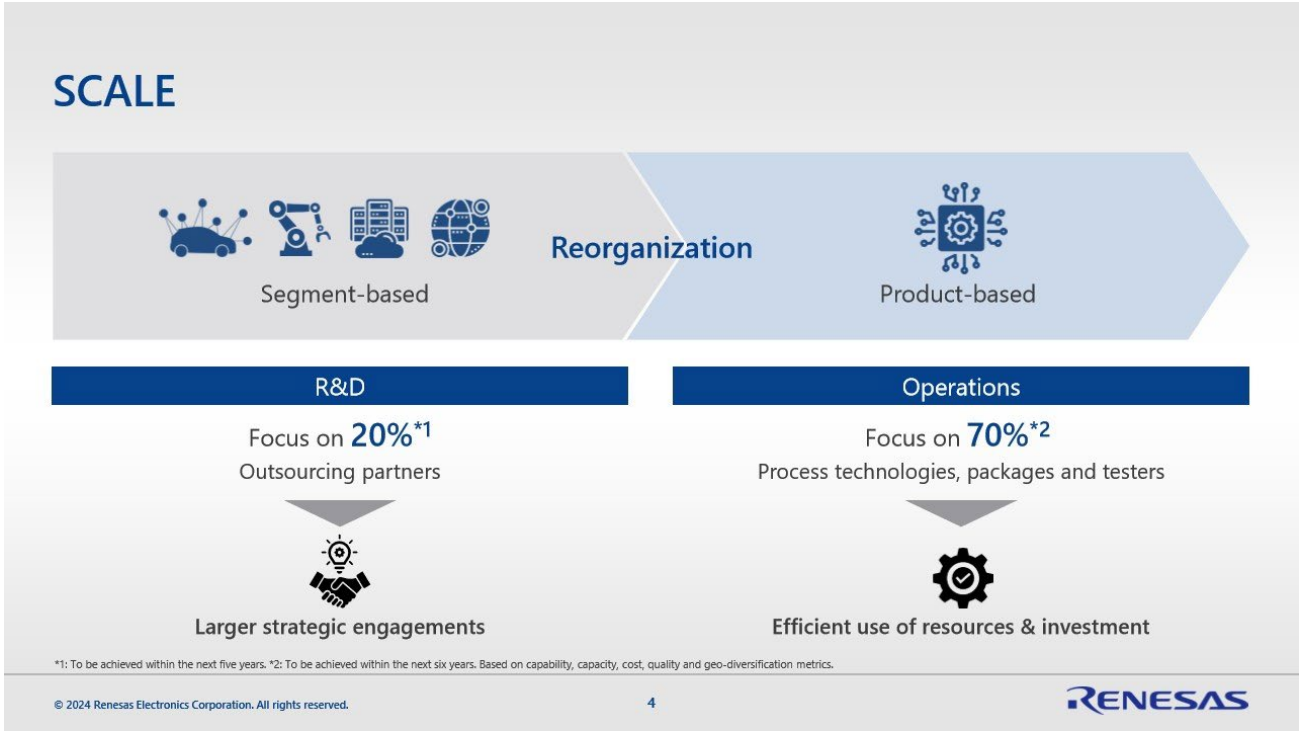
And the recently announced acquisition of Transphorm in gallium nitride is also progressing well so far, and if all goes well, we will close the acquisition soon. We will supplement the details in Chris's part of this meeting later. And the acquisition of Altium, the first major step in the digitalization process, is progressing well, and assuming all goes well, we may be able to close in Q3 of this year, perhaps a little earlier than originally envisioned.



The year before last, in 2022, we set three aspirations to achieve around 2030, such as becoming a top three embedded semiconductor solution supplier, and among these, the most ambitious is to increase our market capitalization sixfold. We aim to double our cash flow and triple multiples as shown in the middle, increasing it sixfold. I will talk about this.

First, I believe that so far, we are progressing well against the mid-term plan. And I believe that during the past year, we have made some progress in one element of this multiple expansion, the valuation gap-fill. For example, as for down-cycle management, peaks and troughs, which we will discuss in more detail in Shinkai's explanation, I think we are managing them reasonably well. Also, I think that we have achieved a fair level of down-cycle inventory management, which has been the focus of much attention by many of you.

Then, INCJ achieved a full exit last year, and although I think there are still a few overhang concerns, I think we took a big step forward last year in addressing the overhang concerns. And this year, the Company resumed paying dividends. I think that the market capitalization has roughly doubled since the initial aspirations were set. After this, the big remaining piece is the multiple expansion, which we will talk about a little later, but the idea is to accelerate growth by maximizing the Company's scale, and then, we are also looking to accelerate digitalization with the aim of further boosting that growth.



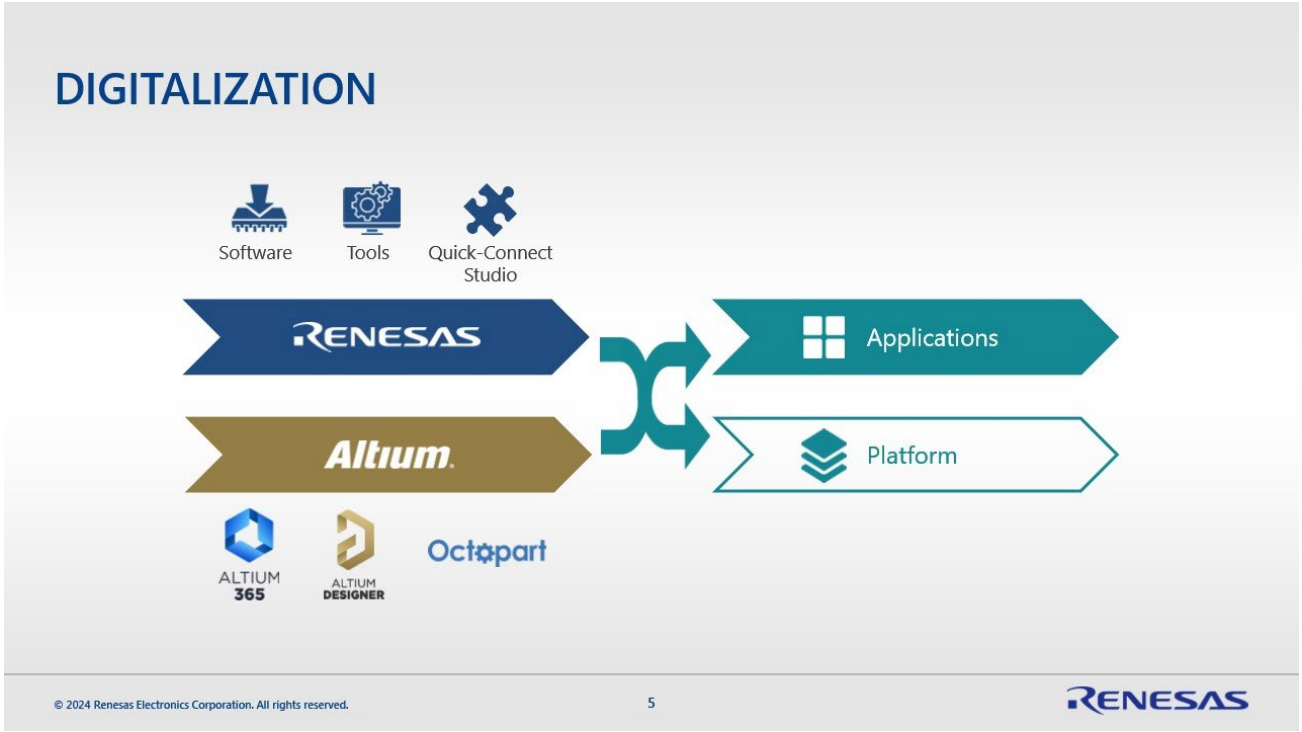
First, let me talk about scale. So far, we have been dividing the organization into segments. To put it in a Japanese context, the idea is a bit similar to the company system, if I may say so. We have been operating in a style where there is another small company within the company. In January of this year, we made a major change and reorganized the Company into a product-based organization, with the intention of thoroughly pursuing a company-wide, single-minded approach.

The main purpose of utilizing this scale is to make the most of the management resources we have, especially human resources and technology, to provide more advanced solutions to our customers as the needs of the market converge more and more across segments. However, it's not easy to quantify that in the near term, so I have provided some simple measurable goals here.

For example, we have been conducting R&D with a wide variety of partners, but by focusing on the top 20 most advanced and large-scale partners, we are creating a structure that facilitates more strategic R&D efforts.

If you look to the right, you can see that we have been using a wide variety of processes, including front-end manufacturing processes, back-end packaging, and testing, but we are now aiming for a 30% reduction in these processes as well, to increase efficiency.

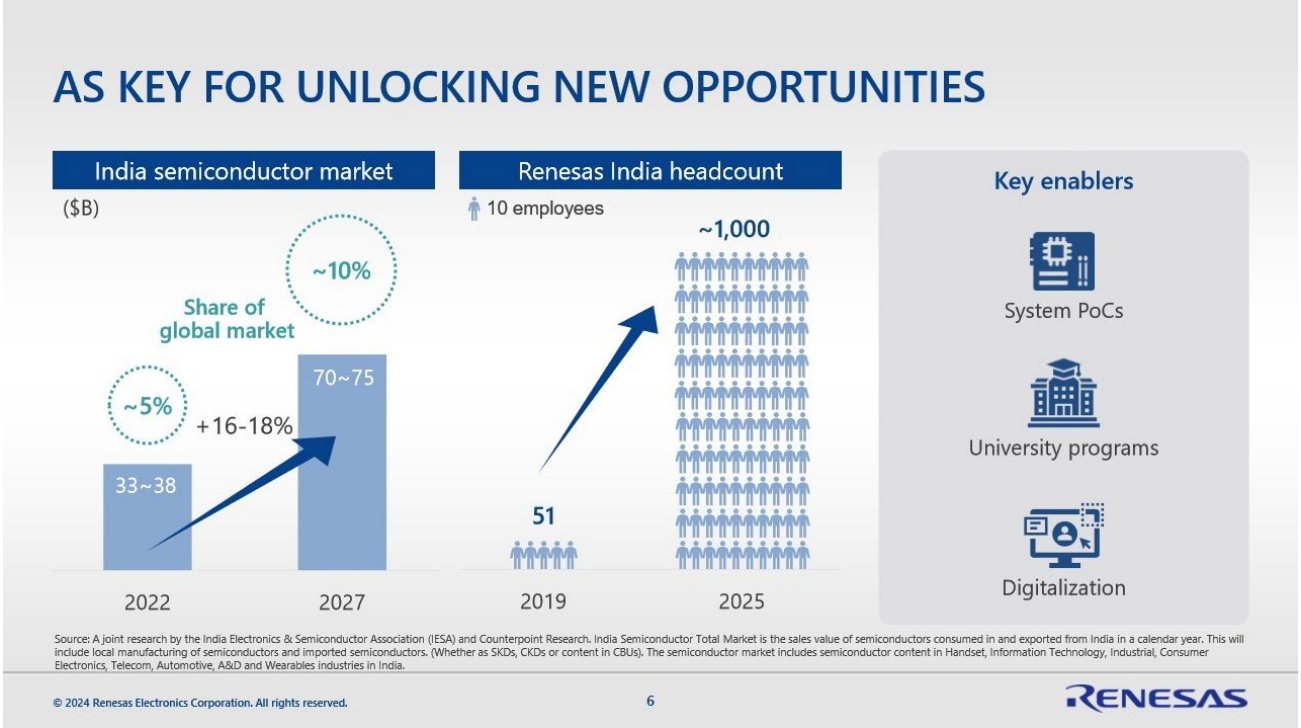
Again, I am talking more like efficiency here, but the main goal is to accelerate and enhance the evolution of technology by maximizing the use of this scale.



And then this is digitalization. Since the Altium acquisition has not yet closed, there is still a very limited amount of information that I can share with you and that we have decided on. However, our current thinking, which we will discuss in more detail in the explanation by Buvna, is that we are going to create a digital platform for Renesas' customers, which we have been working on so far. We have intended to create an integrated, accessible, and easy-to-use list of our software and development tools, including Quick-Connect Studio for auto-coding.

Altium has built a very strong position in PCB design software, and in addition to that, they are in the process of accelerating the development of Octopart for part search and the recently released platform A365. At some point, hopefully in the not-too-distant future, we would like to organize this into a single platform, on which 1,000, 2,000, 3,000, or even more tools, software, and other data are available.

Again, we have not yet closed the transaction, so as soon as we are able to close the transaction, we would like to further organize the discussion, compress the timeline, and accelerate our efforts. Please stay tuned.



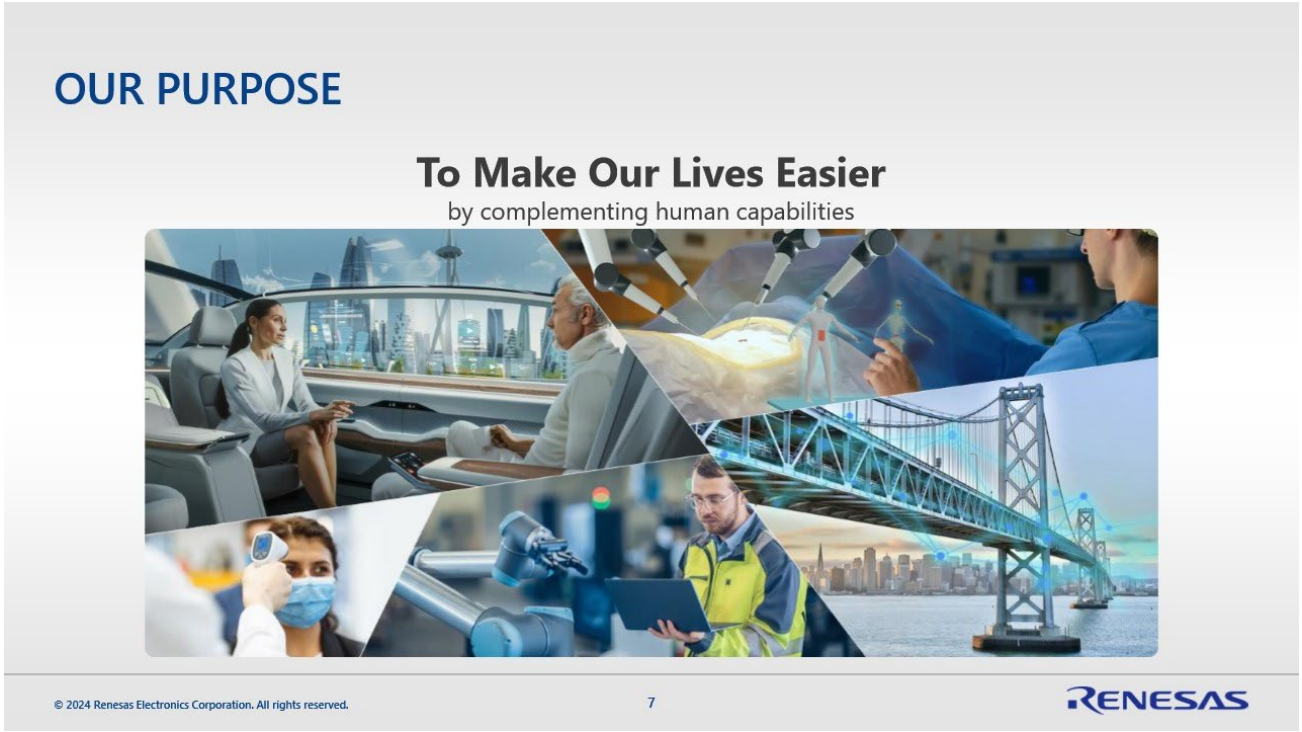
And I feel like I'm taking a leap here, so I'm speaking with some hesitation myself, but I do believe that aiming for the Indian market as an angle to accelerate our growth is a very big theme. We will flesh out the story a bit later in Bobby's session, and there is no doubt that it has tremendous potential.

If you look in the middle, we are making a very significant investment and growth in India that will increase our head count in India by about 20 times as the planning number for next year, compared to the numbers for the past few years.

We are working to accelerate this process, but of course, it is not enough just to have people. We feel strongly that what is required now is a solution that can be used immediately, and that is what our customers want. We are trying to provide more and more proof of concept, system-level solutions that are easy to use.

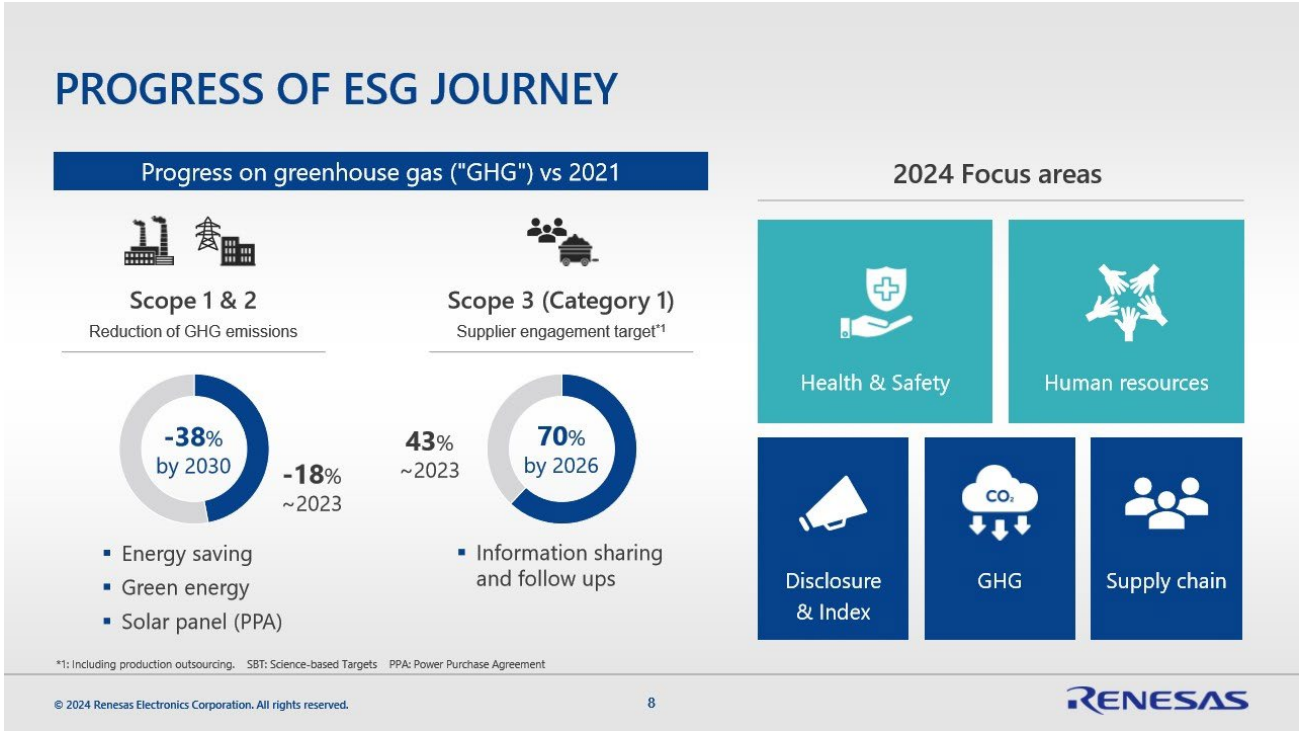
At the same time, there are excellent educational and research institutions in India, especially IIT, so we will deepen our partnerships with these educational and research institutions, collaborate with them, and accelerate our growth in India by deepening cooperation with their faculty and students. This alone is not enough, and we are looking to accelerate our growth in India by quickly introducing a digital angle to the market.

Therefore, what will change with digitalization, of course, is that we are making our solutions sticky by enhancing the customer experience more and more, and especially in a market like India, I think that digitalization will be a very important enabler to accelerate growth. By building on these efforts, we would like to increase our revenue in India to 10% or 15% of the Company's total revenue by around 2030.



And this is our purpose. This is just a recap. To make our lives easier is our purpose, where we aim to provide easy-to-use, secure and reliable solutions that are close to our human daily lives anyway.

In order to realize such purpose, we are also involved in ESG activities with the belief that we ourselves must make life on earth easier, even though the tide has recently turned a bit. I am pleased to report here that our progress to date has been extremely positive.



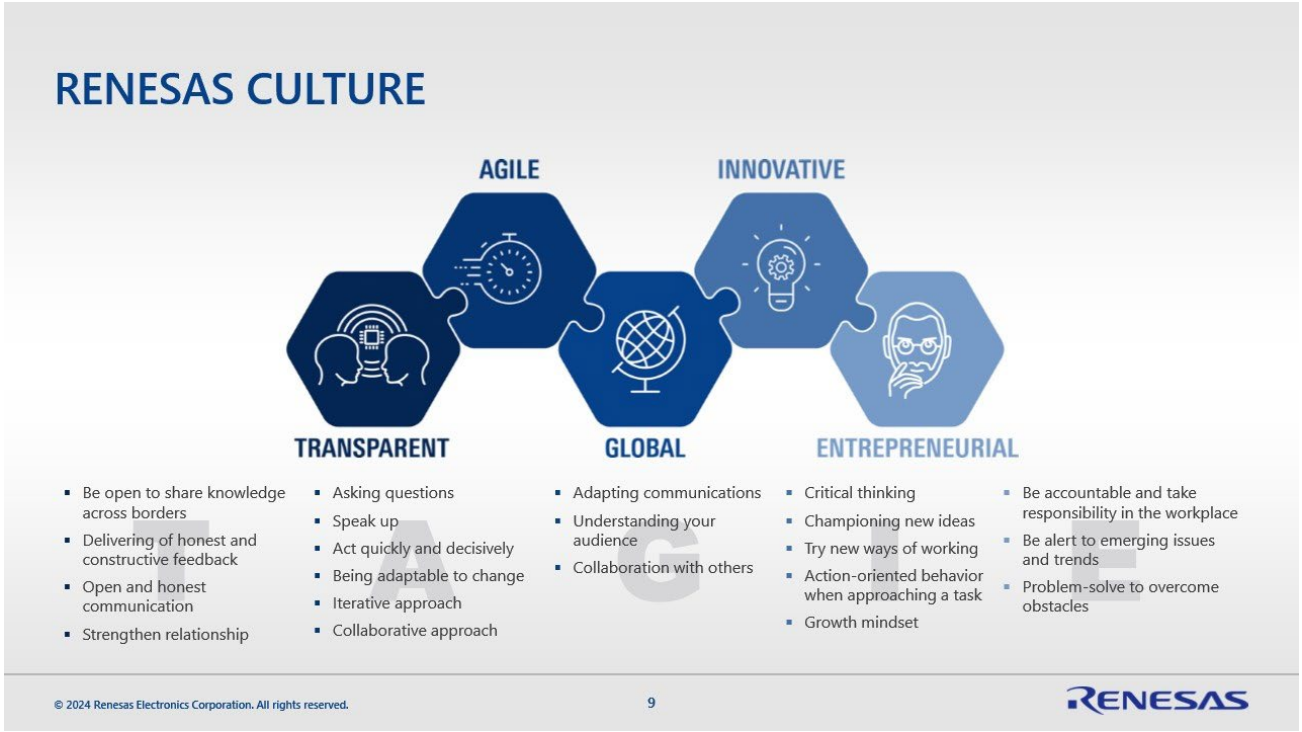
We have set a goal of reducing greenhouse gas emissions in Scope 1 and 2, or greenhouse gases generated by our company and those mainly in the supply of electricity, by less than 40% by 2030. As of last year, we have achieved a reduction of about 20%, or 18%.

From this point forward, as an extension of our previous efforts, we will do things like further energy conservation, purchase green energy, and then install more and more solar panels on our facilities.

As for Scope 3, we have set a goal that 70% of our suppliers in terms of purchase amount will set targets by 2026. At this point, we are at 43%, or just over 60% progress. So, we are making very good progress.

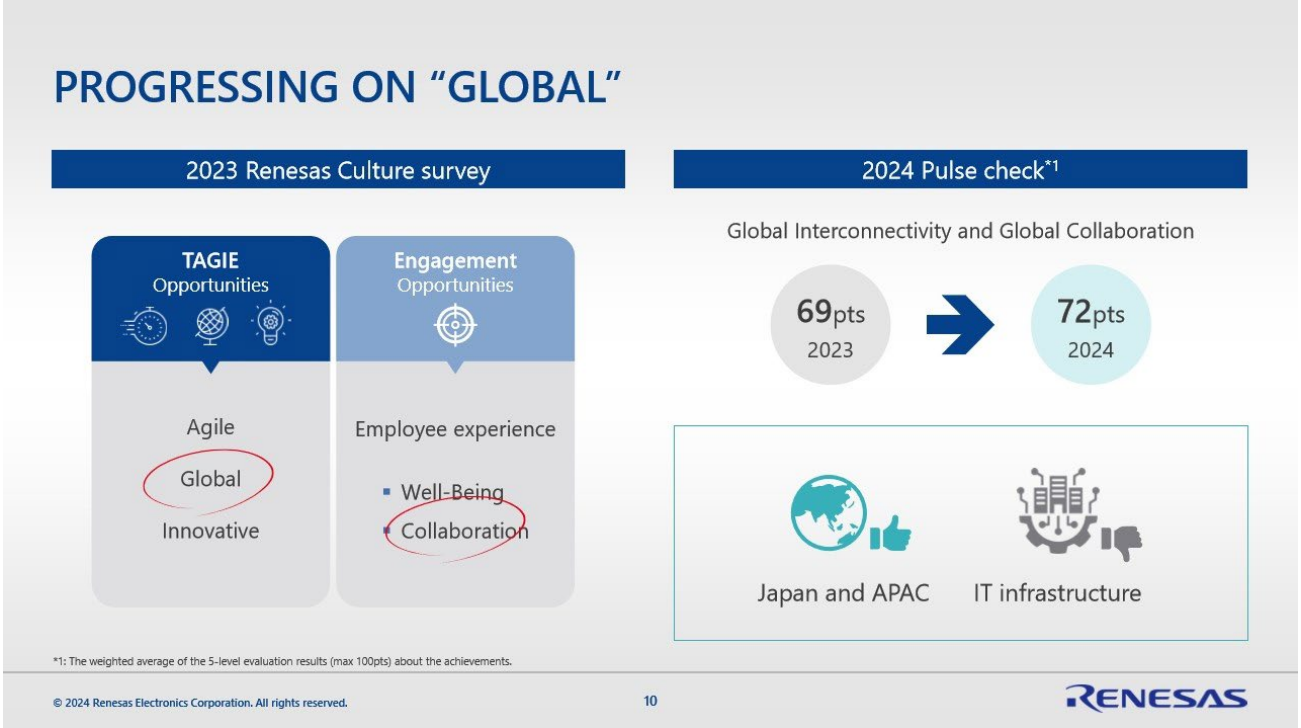
This year's focus is on the blue boxes below. Supply chain and GHG are extensions of our past efforts, but one area where we have already made progress this fiscal year is in the area of disclosure. We have finally started publishing the Integrated Report this year. I would like you to take a look at it if you have time and are interested in it. And as for the index that remains, we will also do our best to enter the Dow Jones index.

As for the health & safety shown above, we will advance mainly through initiatives at our factories, and this is one of our priority areas for this year. As for the human resources, we would like to accelerate our efforts in the area of gender diversity. Diversity is a huge challenge for the hardware technology sector and for a company based in Japan, but we are not running away from this challenge. This is why we are placing the diversity as a priority area this year.



And then this is culture. This is the TAGIE culture as you have seen before and remains exactly the same. Since 2020, I have declared that this TAGIE culture is a journey that will take 10 years to complete, and we have been working on it. As the recognition within the Company has been increasing, I think the initiative has become stereotyped in fact.

However, we will not stop here, and by making progress one step at a time, we would like to create an organization that will truly reflect this TAGIE culture in our daily decision-making and actions in a deep and broad way, in 10 years as we originally set.



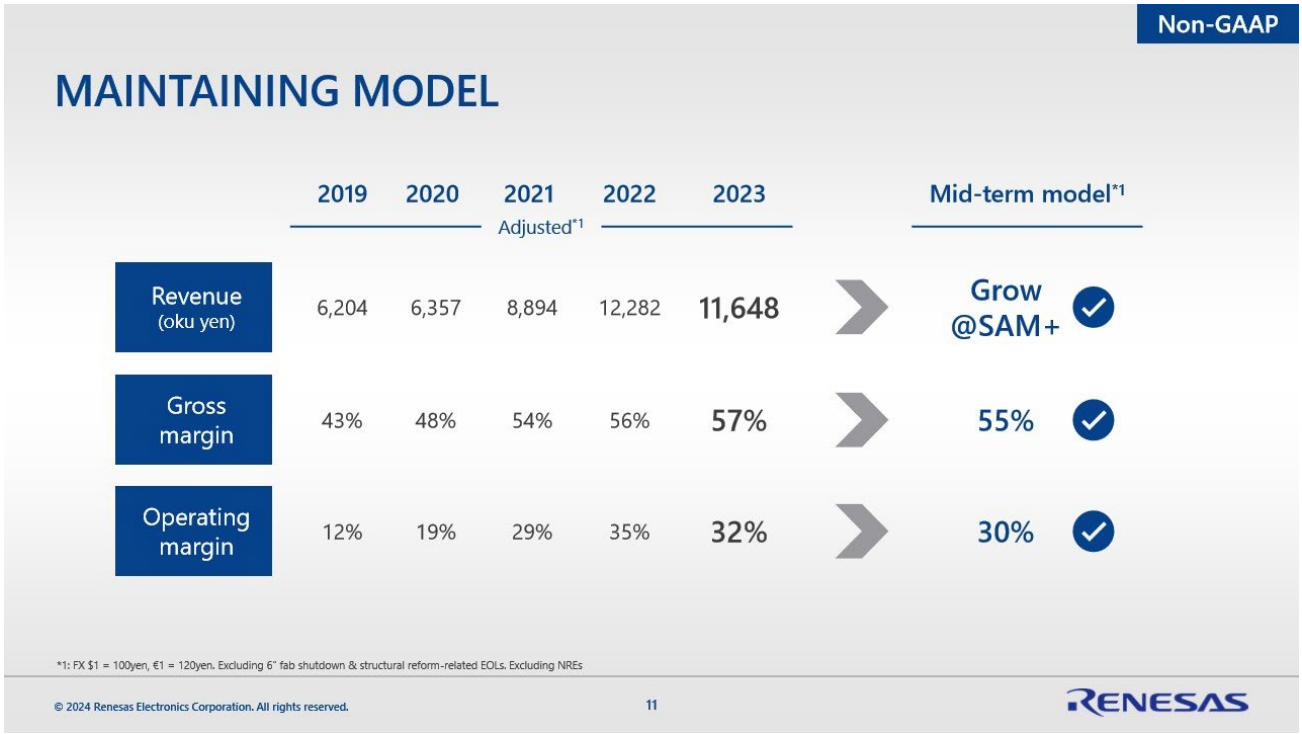
One of the priority targets of last year's and this year's efforts, which we picked up in this culture survey last year, was global collaboration. Since then, we have been promoting this global collaboration through trial and error, with CTO Yoshioka playing a central role, especially in the area of human resources in charge of engineering.

The results of the pulse check this year shows that we have made some progress, albeit only a little. Last year, 69% of all respondents said that this global collaboration was in good shape, but this year's pulse check showed that 72% of respondents said that it was in good shape. Although this may be within the margin of error, there has been an improvement by about three points.

We will conduct this culture survey and full survey again this year through June, as we have done in previous years, and identify areas of focus there, which we will use for the remainder of this year and for next year's priority initiatives. As shown in the lower right-hand corner, in this collaboration, good progress was made in Japan and the Asia-Pacific region, where it was originally low. On the other hand, many people said that the IT system infrastructure was still a tough task, which is shown in the lower right-hand corner.

This has actually been the theme of today's talk, the underlining theme all along, but just as we are trying to reorganize our organization and investing resources more into this digital initiative and investing resources in India, we believe that this IT area will also be an indispensable foundation to really realize our growth in the future. As I have mentioned from time to time, the reality is that from 2019 onward, we have somehow managed to use IT because we want to achieve short-term results as quickly as possible. In order to drive the Company's growth to over JPY20 billion in revenue from now on, that is a bit unreliable, and we are working on a drastic renewal of our IT infrastructure.

In the meantime, this is a very difficult task, and although Shinkai has given several updates on the timing of the past financial results, the scope has been deepened and the time frame has been extended a little more than originally envisioned. Although it is not easy to see from the outside, and it does not immediately lead to results in terms of revenue or profits, I am presenting this story in the hope that you will understand that we are currently investing resources in these areas.

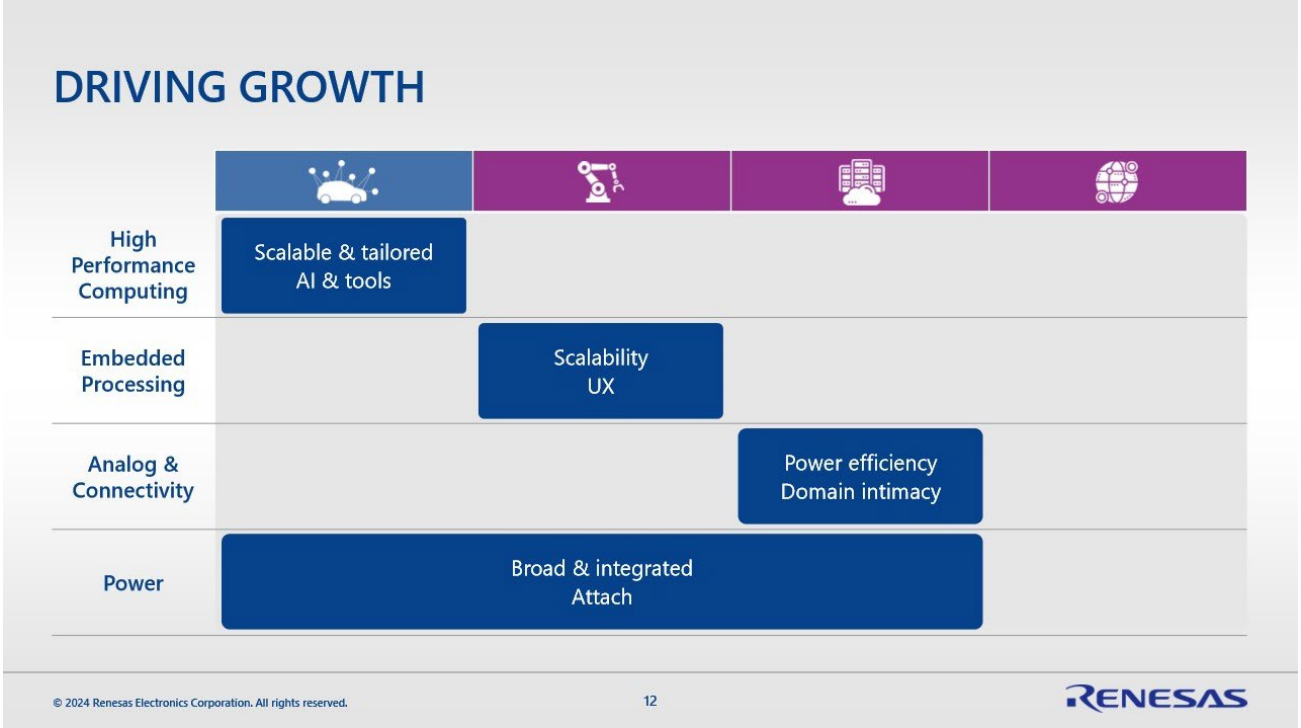


And let me tell you a little bit about the numbers. We've shown the adjusted P&L, tracing on the same basis since 2019, on the left side. As you can see, last year, revenue was down slightly compared to 2022, but both gross margin and operating margin exceeded the model.

The model is shown as always here. We have been asked several times whether we are going to update the model, but our response today is that we almost never do so.

As you may have noticed, the model on the right side of this page was originally designed to show gross margin and operating margin as a range, but today we have made a very minor update by cutting off the lower part of the range and only showing the upper part.

As I will mention a little later, of course we value margins, and we will continue to do so, but we are also strongly determined to increase revenue and grow. Of course we will not sacrifice margins, but rather than increasing margins more and more, we would like to maintain the model so that we can allocate that capacity to revenue growth.



So what areas are we going to grow and how will we grow? Naturally, the details will be discussed in the product group sessions that follow, so if you have any specific questions, we would be happy to answer them. I would like to limit my discussion to those areas that will make a particularly large contribution to company-wide revenue growth and that are planned to make a large contribution. I would like to give you a sneak preview, and then the head of each department will talk to you in detail.

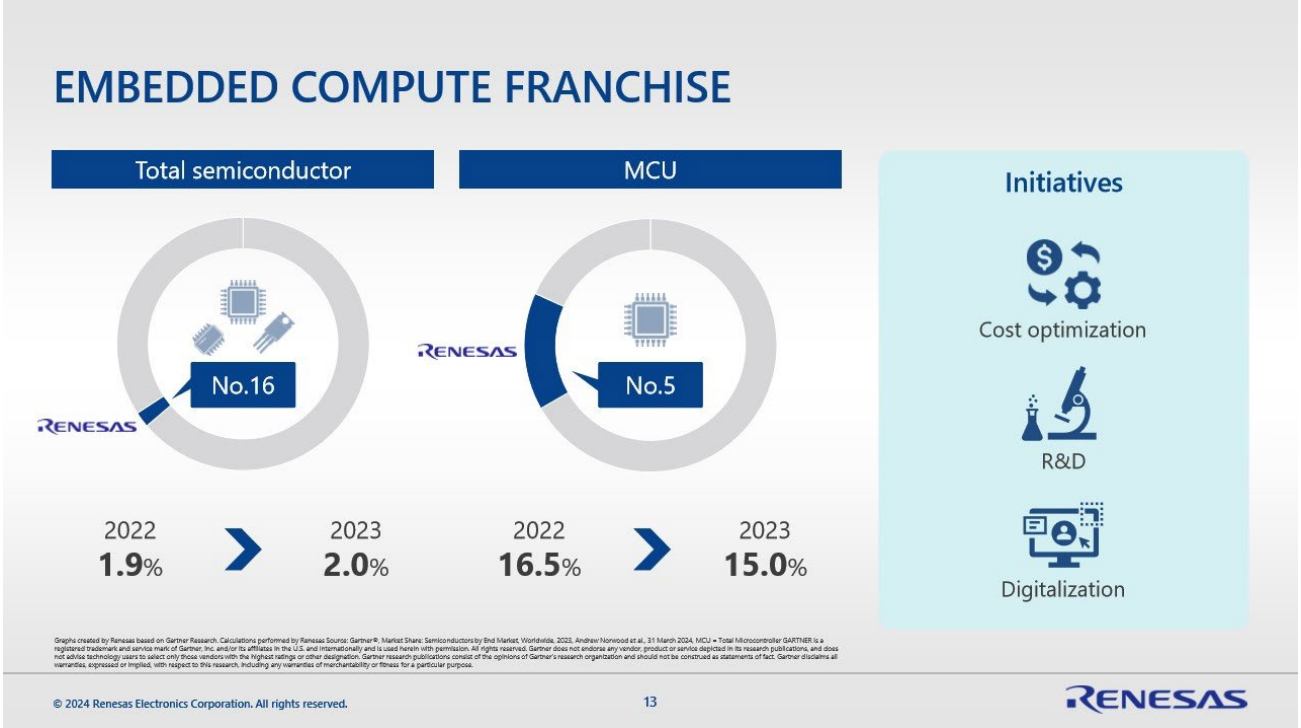
Against the vertical line, we have segments, which are automotive, industrial, infrastructure, and IoT. The horizontal lines show the product groups, and high-performance computing is overwhelmingly being expanded in the automotive field. The theme hasn't changed significantly from before, but it's not about scalability or cookie cutter, but about a tailored approach to providing solutions that are close to the customer's needs. We have also made significant progress over the past year or so in AI and tools, which we recognized as major issues. As Vivek will explain a bit more later, we intend to continue to increase revenue significantly with these themes.

Then, for the embedded processing, we are looking to increase revenue mainly in the industrial area. Naturally, there are many angles to cross, but if I am narrowing it down, I would say that we need scalable solutions, and then we need to fundamentally review UX and expand by providing devices and solutions that are easy for our customers to use.

And as for the analog & connectivity, this is also a product group that will be attached to all segments and many other products, but if I focus on the area that contributes the most to the figures, I would say that we will increase revenue by providing memory interface products, especially for infrastructure. As Davin will explain later, although this may not be directly related to AI, we will increase revenue by providing memory interfaces to meet the exploding computing needs.

As for the power, we have a very broad portfolio. We have all the wide bandgaps and we have silicon solutions. We also have controllers and power management ICs, which will meet the power needs of each segment, and the power needs of each segment will increase as the needs of computing will increase. We are also thinking of more and more integration, which is still in progress, and as we move forward, we will also be offering more and more modules. Modules can include big lunchbox-like modules, like the old IGBT modules, but there

are also more compact modules that provide the power for computing. We would like to add more and more modules to provide power for GPU or such things with explosive power usage.



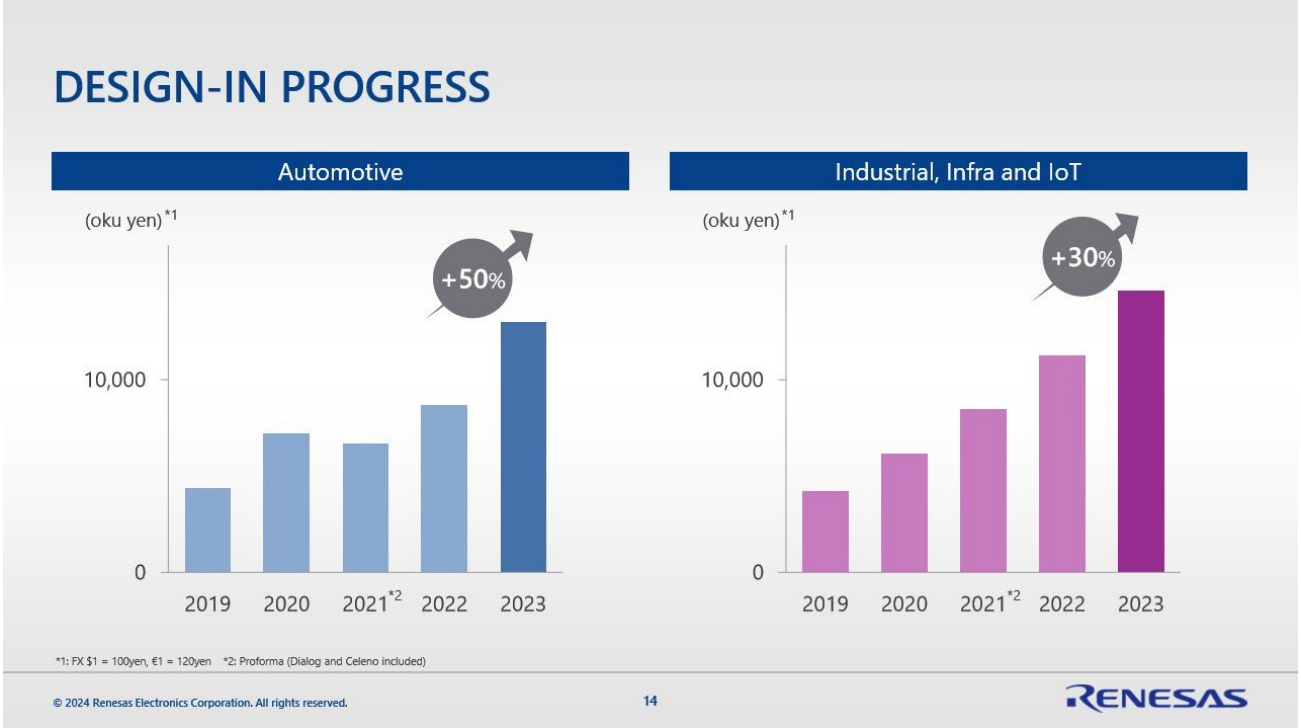
And although it is a bad story to tell, we should be proactive in telling bad stories, so I prepared this slide. This is nothing new since you already asked this question at the last earnings briefing. In the third-party market share estimates published around this March, we saw that our overall semiconductor market share increased as shown in the left pie chart here, but as shown in the middle, we lost a little in the MCU market.

As we have already talked about, the main reason for this drop in market share was the 32-bit microcontrollers for automotive applications. I personally analyze that about half of the drop were due to short-term factors, including foreign exchange rates, but I take it seriously because the other half of the drop was attributable to our actual market loss.

As I mentioned at the time of the earnings briefing, the current market share should be showing a time lag of approximately five or seven years, so I do not believe that we are talking about a timeline where the market share can be regained significantly again this year or next year, for example. However, I want to talk here about the fact that we are preparing to regain a solid share of the market over the next few years.

In the short term, this is related to the margin or financial model that I mentioned earlier, and if we plan to expand margins more and more, we may find ourselves in a situation where our price points will be a little tougher than our competitors. We would like to maintain a certain degree of flexibility in our pricing. In order to do so, it is important to lower costs more and more, so our first and foremost initiative is to lower COGS and costs more than before. This is already underway and we would like to have this result as soon as possible.

At the last earnings meeting, we told that there was a mismatch between our products and the market needs in specifications. We are now able to address this issue appropriately, and I believe it is important to respond quickly to the market needs, especially for EVs, which are likely to change rapidly in the future, by further evolving these efforts. At the end, I wrote digitalization, but in near-term, I think that rather than a big digital experience, it will be more important to expand AI, tools, and other such areas that I talked about on the previous page, and as I mentioned earlier, this is something that we will talk about later in Vivek's session.

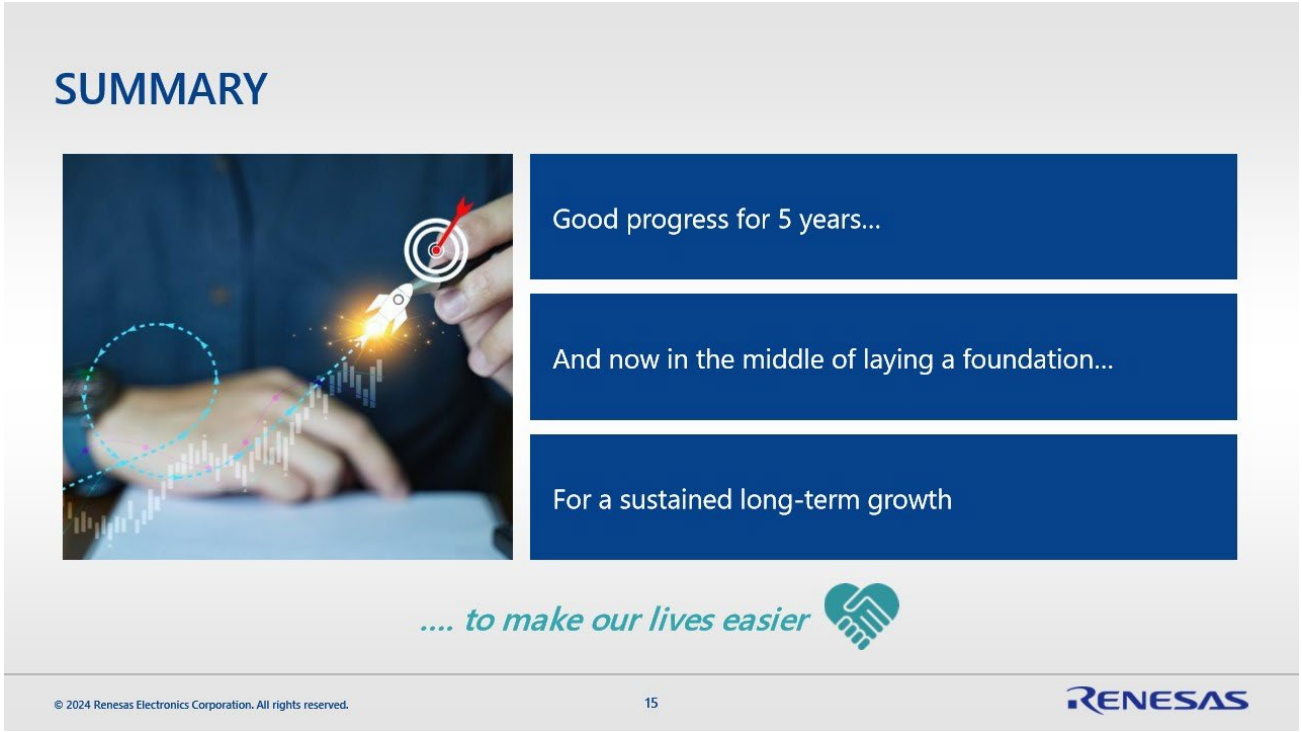


As for MCU, we have to work hard from now on, but as I said at the financial briefing, I am actually not too pessimistic. I have prepared this slide in the hope that the figures in this design will allow me to share my own perspective with you.

This shows the design achievements for automotive on the left side and IIoT on the right side. You have already seen the figures up to 2022. The results in 2023 were 50% YoY growth in automotive, and a significant 30% growth in IIoT.

As I have said in the past, the automotive business grows rapidly when there are large business deals and not so much when there are not, as you can see in the 2020 to 2021 trend. However, if you look at the trajectory from 2019, you will see that the growth is fairly steady.

Especially in the last year, there has been a large increase compared to a year ago. This effect will emerge not in one year or two, but in five years or so, but for the future, the solutions we have currently provided are not so bad, and I hope you will accept this as a source of support.



So, I've rambled on a bit, focusing on updates rather than messages this year. To summarize, I think we've made a lot of progress in the past five years, not just in terms of numbers, but in many other areas as well. And, as is the underlining theme of the day, I hope you will take this as a time to really focus on getting the foundation in place for the next five to ten years of growth. We believe that only by doing all of these things properly will we be able to achieve this long-term growth.

Sorry, I went a little over the scheduled time. That is the end of my part and I will now pass the baton to Buvna. Thank you very much.

Moderator: Buvna Ayyagari, Vice President and Head of Software & Digitalization, will continue the presentation. Buvna, please.

Ayyagari: Thank you very much. Good morning, everyone. My name is Buvna Ayyagari. I am the Head of Software & Digitization. I would like to introduce the department, talk about our digitalization efforts, vision, strategy, and short and long term goals.

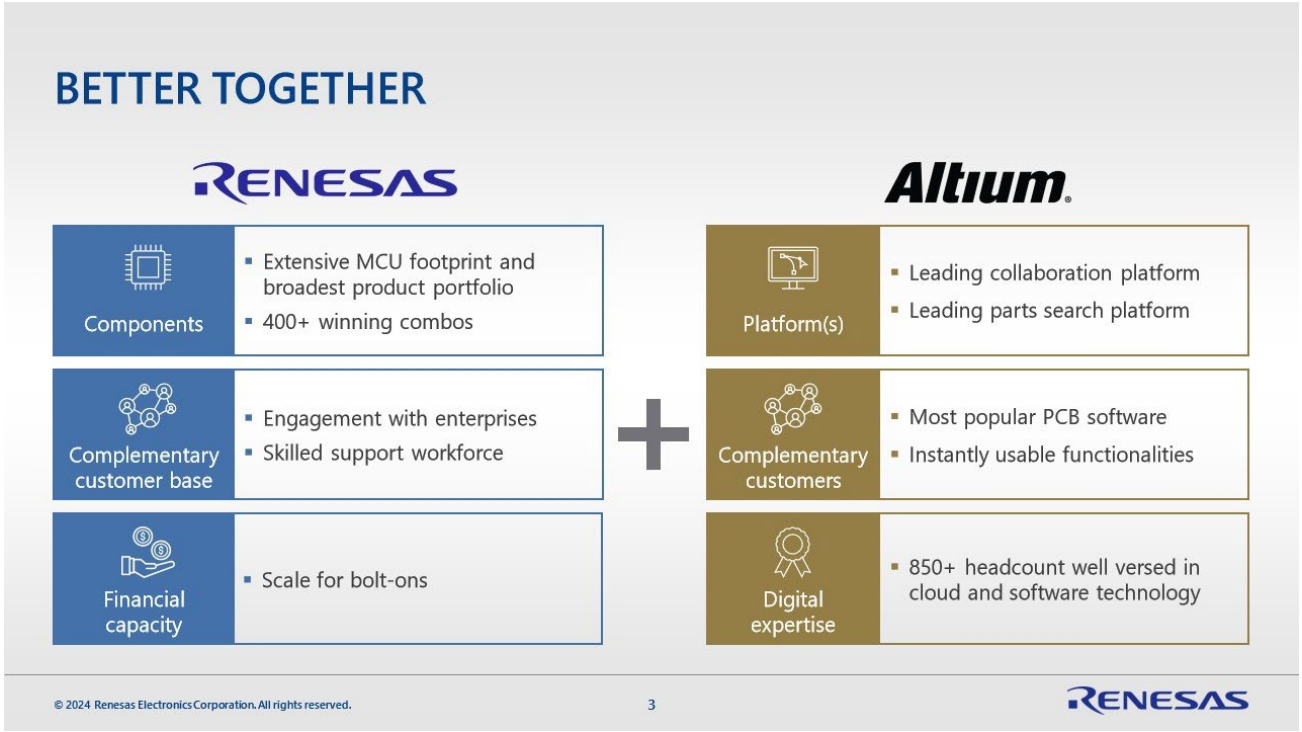
First, let me introduce our vision. This is the foundation of my presentation. We are currently living in an era of infinite appetite with respect to computing. There is an explosion of electronic devices in the automotive, industrial, infrastructure, and IoT.

Another change is with regard to the design of the system. Whereas the focus has been on more mechanical design, the focus now is on electronics design. In addition to that, there are many new entrants into the world of system design. And also the number of electronic devices is increasing rapidly. On the other hand, the reality is that electronics design is becoming increasingly complex. These new entrants have not invested in system design before and will require considerable effort and investment to build their know-how.

Large established firms are also under pressure to reduce time to market and the risk of design iterations. We want to lower the barriers to entry into electronics design and make it accessible to a broader market. And through our platform, we want to provide integration and automation, and promote innovation.

At Renesas, we want to build a platform and integrate electronics design and lifecycle management. And we will accomplish it with Altium. Through this integrated platform, we will address various challenging aspects of electronics design and life cycle management.

On this platform, process flow and data flow are connected and provided on a single platform, making it easier for users to design electronics.



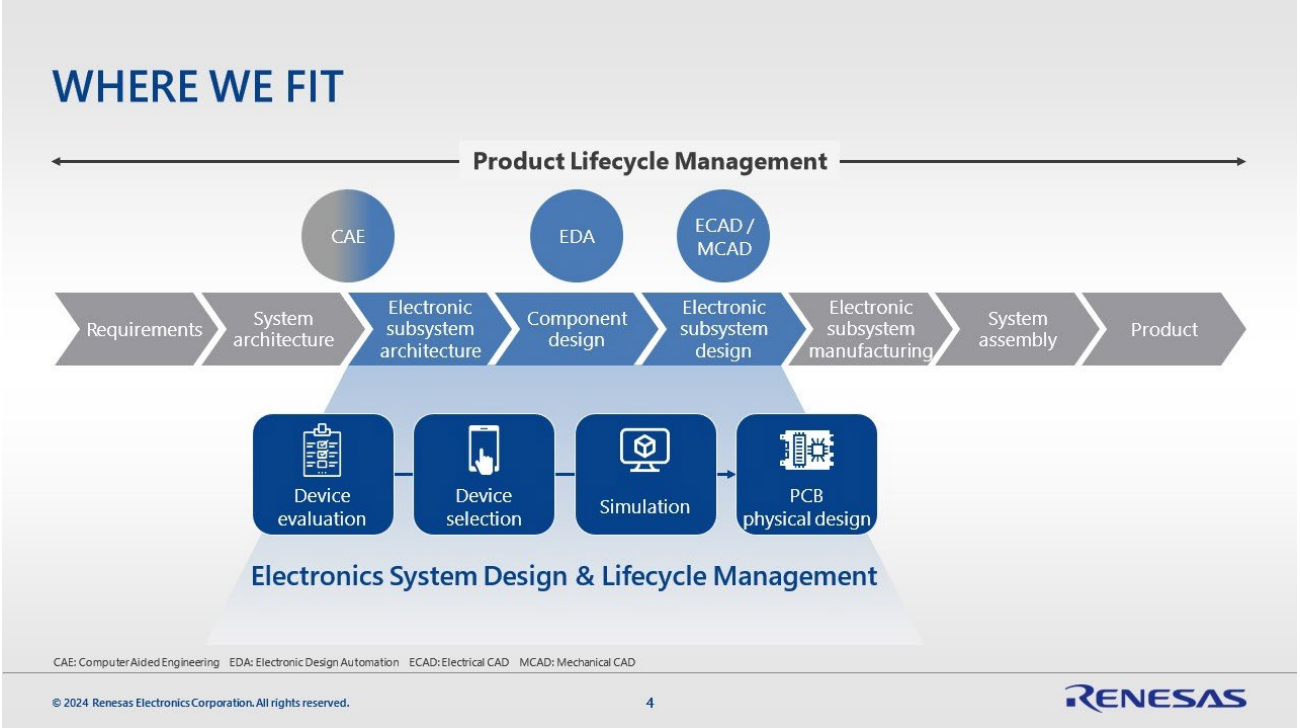
Now, to achieve this vision, we have chosen Altium as our partner. Why would these different solutions merge into one? That is, a traditional hardware company and a software company.

First, Renesas is a leader in MCUs and has a large footprint. It also has the broadest product portfolio in automotive, industrial, infrastructure, and IoT. We have a library of over 400 winning combinations, enabling our customers to easily create electronic designs for a variety of applications.

Renesas also has a large presence in the industry, enterprise customer knowledge, and relationships. We also have a workforce with specialized expertise. And in addition to this, Renesas has the financial wherewithal to make a bolt-on acquisition.

Now, turning to Altium, they are the industry leader in system design platforms. Octopart is the leader in electronic parts search platforms, and Altium365 is the cloud-based collaboration platform of choice for many.

And Altium has a workforce with expertise in PCB design. This is through Altium Designer, the leading PCB software provider. These are the cornerstones of putting our vision into action.



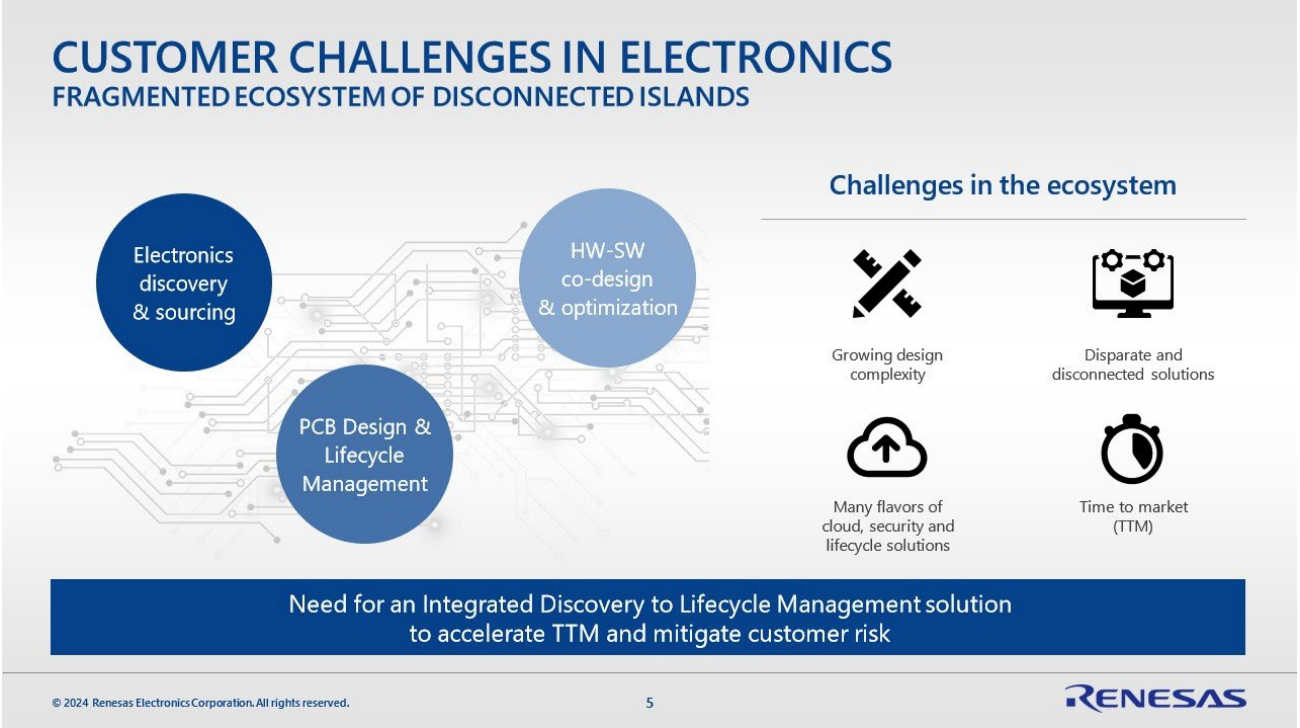
Now, the next slide. I would like to take a step back and talk about where what I have just discussed fits into the overall electronics design landscape.

Here is a brief description of the electronics design. We start with the left. System design usually involves defining requirements, then architecture, which leads to multiples, multiple subsystems. These subsystems are composed of multiple components, which are then grouped together as a board or multiple boards. The final product is then manufactured, assembled, and tested.

I have talked about electronics design in about 30 seconds, but there are a few things I would like to emphasize. If you look at this ecosystem, there has been a significant evolution in some parts of this ecosystem.

For example, EDA. EDA has completely revolutionized the way chips are designed and verified. In the early days, chip designers hand-drew gates, but now they can design the configuration, lacing, and routing of large chips with trillions of transistors using sophisticated descriptive language abstractions. What if it were handwritten on such a scale? Impossible, isn't it? So this is a major evolution.

Another revolution is the 3D package. Much progress has been made, especially in the most recent period. Now, while these are examples of evolution, the evolution of semiconductor electronics design is not occurring in all ecosystems in the same way. The areas I have highlighted in blue still remain as discrete mini-ecosystems. It is precisely in this area that we are focusing.

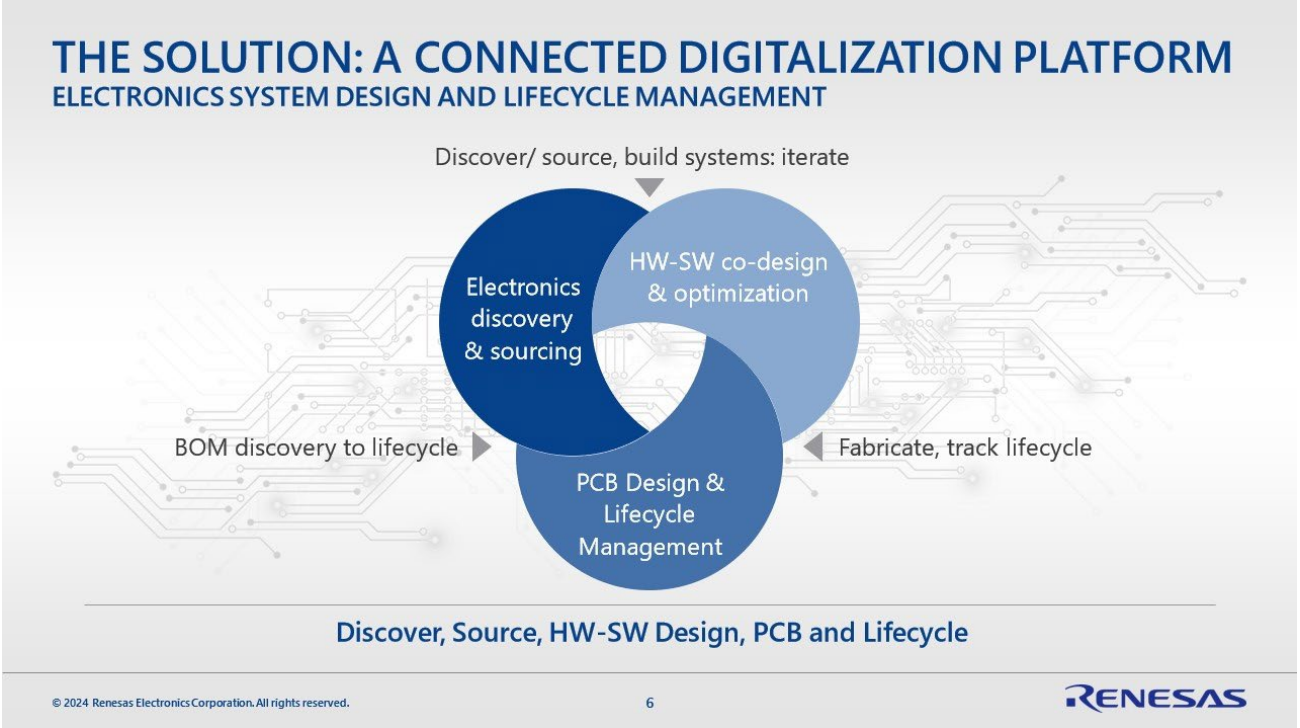


Based on this background explanation, I would now like to discuss electronic equipment design and life cycle management from the user's or customer's perspective. I mentioned that this is a very complex system design, and I would like to provide some specific examples.

One challenge is the sheer volume of platforms, software, CAD and CAE tools, data formats, and processes. There are also multiple options for cloud computing and security. And with the growing number of software and the expanding software-first approach, co-designing and co-optimizing is necessary between software and hardware.

How to connect this to PCB design and system simulation, again, requires co-design. Otherwise, design, and then manufacturing, will require many iterations. There is also the issue of traceability.

The pandemic made everyone share the importance of the supply chain and the importance of life cycle management. Traceability is required from discovery to sourcing of parts to the end of life cycle management. Today, these solutions are distributed like several islands. Users must then bridge between these islands to manufacture the product.



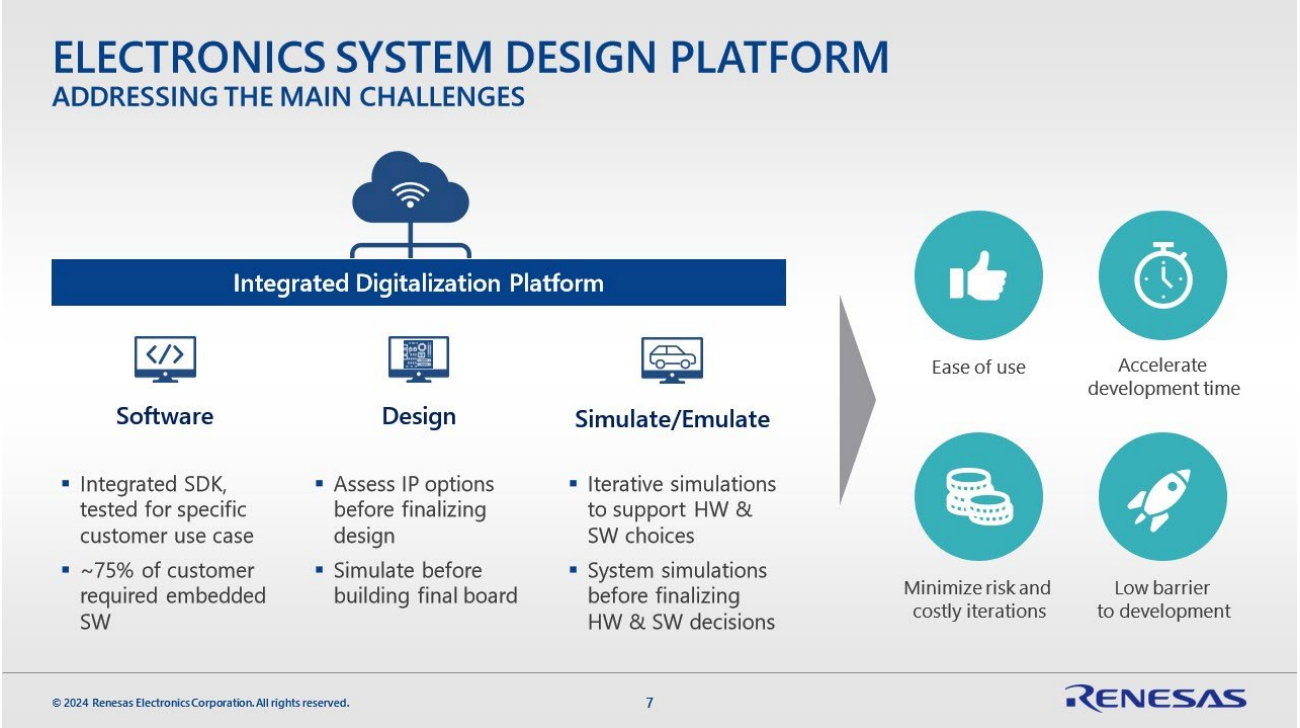
This is exactly what has driven our vision for our solution. The solution we are aiming for is a connected digitization platform. In other words, our goal is to create a system that integrates electronics system design and life cycle management.

This will allow us to offer component discovery, procurement, PCB design, simulation, publication, BOM, and lifecycle management all in one connected platform.

Of course, some of you may ask, then, if these solutions already exist as mature or if we need a platform to fit this. We are not redoing everything. There are already many mature solutions available today. Rather than developing new ones, our goal has been to partner with existing solutions and incorporate them into our platform.

The idea, of course, is to offer the connectivity and integration as a single digital platform, and by doing so, to connect each island beyond the users and make it available on one platform.

By combining the strengths of Altium and Renesas, we aim to create a platform that will bridge these islands and enable the semiconductor industry to deliver innovative products better, faster, and more efficiently.



This is a digital state-of-the-art platform that integrates electronics system design and lifecycle management. This is our vision. Now, I would like to take a few minutes here to talk about the first point. In other words, I would like to talk about system design directly. From the customer's point of view, the biggest challenges, or the biggest obstacles in designing an electronics system, are in these three boxes. From left to right, you can see software, first point, then PCB design. As for software here, I'm not talking about CAE software, but rather software that runs on top of hardware. Then there are PCB design and simulation. Those make three boxes.

In the embedded software world, the industry has made great progress, but even so, evolution and maturity are still occurring in the software module. And various layers exist in the software stack. So many initiatives are required. Customers still need to work hard to integrate modules for full SDK. Efforts are still needed to create a software development kit depending on the specific application.

In addition to that, there is a need to test the integrated SDK across users to verify that it fits their unique use case. And for software and hardware co-design and co-optimization, the ability to iterate virtually, in real time, is required. Therefore, in terms of design, you still need to be able to evaluate the selection of components. Simulation is required for each performance and metrics. Also, the challenge in simulation and iteration of hardware, software, and system-level selection is that the design is evaluated by system-level metrics, and only then is the design finalized.So, in digital, the goal is to have the user make various choices in the final hardware, and then respond to those choices with integrated software, so that, for example, 75% are on the same platform. My goal is to be able to do such things on the same platform at the same time as iterating, making various choices, selecting hardware, and strategizing software.

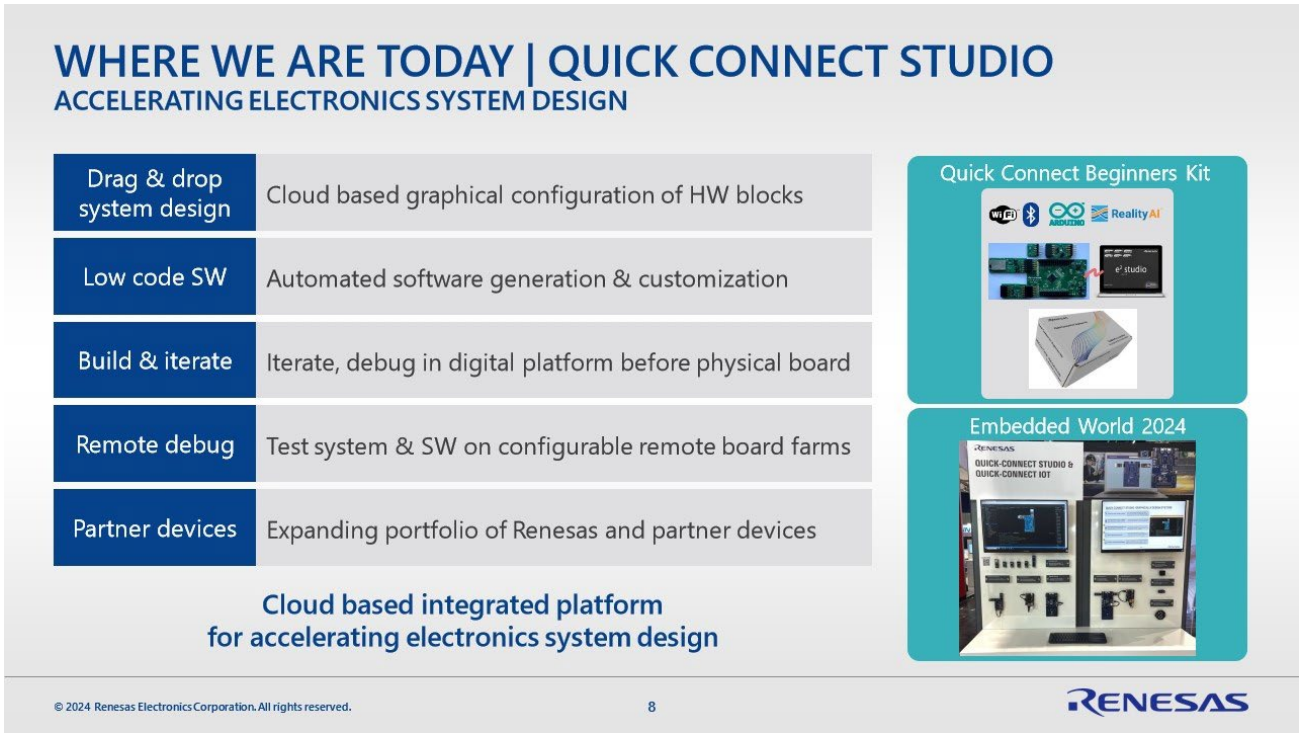
This is what we are considering. In other words, we are creating a digital platform in which all three pillars can be addressed and employed in a connected platform. Therefore, as a brand vision, which means what user benefit we can achieve through this vision, from the user's point of view, this is a single platform. It allows for evaluation, assessment, and then building, which makes it more user-friendly.

Of course, in the past, multiple platforms, multiple data formats, and CAD tools were required, but this will be easily done on a single platform. Then, development time is also reduced. Since this can also be done on

every single platform, development time can be significantly reduced. If this vision can be realized, and if we can do what we want, another benefit is that all of these iterations can be done on a digital platform.

So all the iterations, all the various options, all those simulations, all those evaluations, all those evaluations of various options, all those things can be done virtually because they can be done digitally. It means that you can do it on the platform. This will minimize the iterations, which can be very expensive, because the risk of finding bugs and problems in the physical system will be reduced, because only then can the physical board be made.

In addition, the platform of this is designed to be automated, so it can be abstracted to the design level. That way, users do not have to know all the details. For example, you don't need to know what the IP is, what the configuration is, or even what the CAD tools are. This kind of automation can greatly reduce the barriers to entry for development by eliminating the need for such detailed knowledge required for system design.

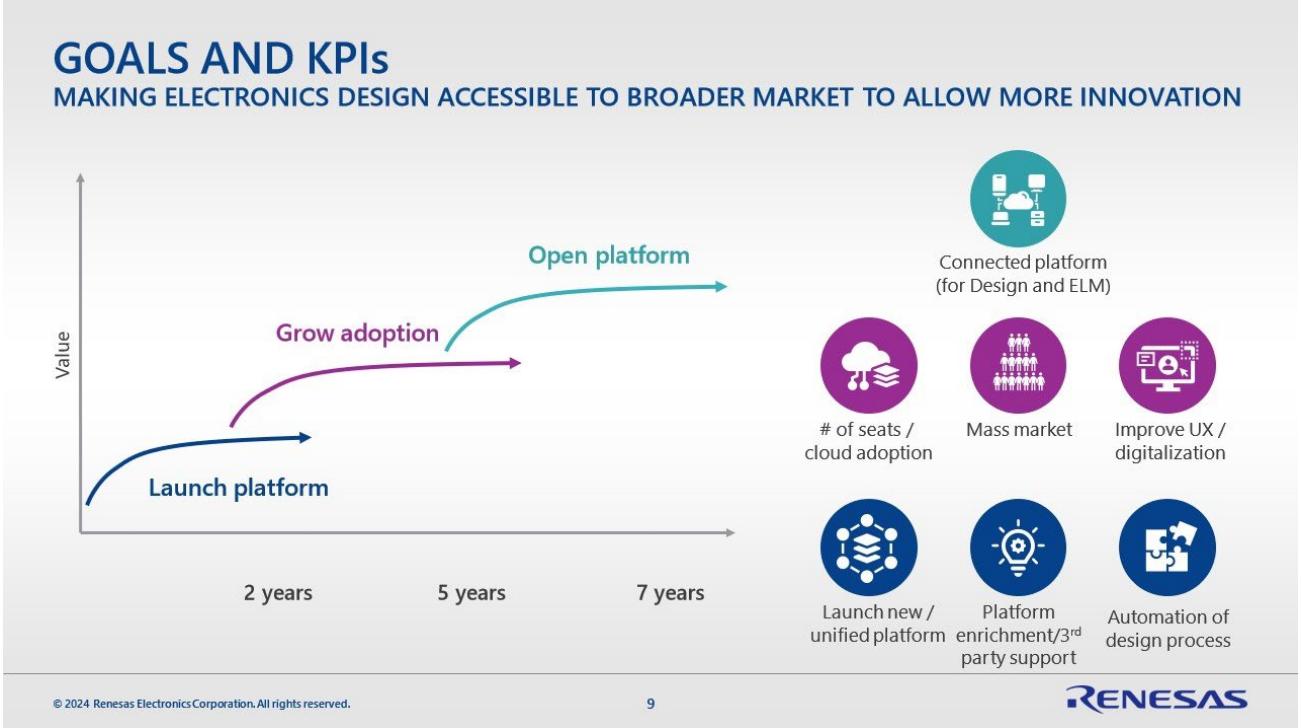


So where are we now? To be honest, we are still in the early stages of our journey. We have now Quick-Connect Studio, or a cloud-cased platform. As you may have seen at last month's embedded world, Quick-Connect Studio enables graphical drag-and-drop system design. By doing so, the design process is abstracted.

This platform allows users to iterate on a variety of component choices. For example, both Renesas partners and Renesas partner devices can be iterated, so you can create a physical board only after doing so. Also, with regard to embedded software, you can drag and drop various different components so that the software runs on the components in the same platform in real time. You can also modify it dynamically, and then you can match it to the hardware. In addition to that, within the same platform, users can change the SDK and software, thereby customizing it. You can then write your own application software on top of it. So it can all be done on the same platform. We now support not only Renesas components, but also partner components in this platform. The number of partners, and then the number of devices, that are supported by this platform is increasing. Therefore, we are also automating the process here. The process of onboarding partner devices is now automated.

And last but not least, since this system is built on a digital platform, it is also possible to connect this to a remote board farm. So users can select components, iterate, customize the software, generate a complete

SDK, and then run this on a remote board, somewhere else. That can all be done on the platform. You can then make the necessary changes. It is also possible to repeat the iterations on a digital platform.



We are still in the early stages of realizing this vision, and there is much work to be done. Once this acquisition with Altium closes, we have a lot of work to do. I would like to summarize here and talk about our plan to implement this vision, now in its early stages.

Please see from left to right. The horizon one, which is what we want to do in the first year or two, is to introduce an electronics system design and lifecycle management platform. Of course, not all of the elements I just talked about are in the first stage, and not all of the features are in place, but we will launch the first platform in the first two years. Functions will then be added sequentially.

The goal is to integrate this requisition management first, then service system sourcing, and then incorporate this component into the platform. The platform will also be further enriched with third party support. This means supporting existing solutions. As I said on the previous slide, the goal is not to redo everything, not to redo existing solutions, but to incorporate all those mature things and partnering with them to see how we can bring them into this platform. We are doing that for customers with alpha and beta now, so this will be our first priority.

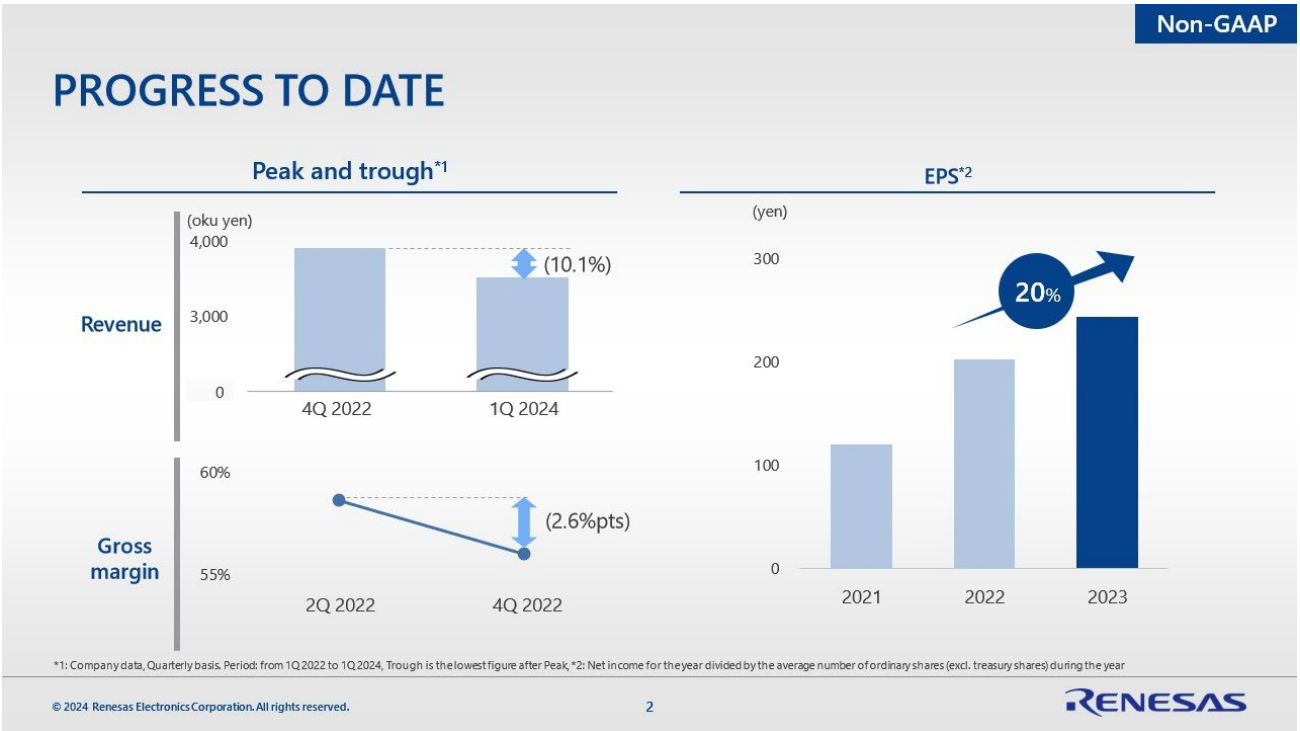
We would also like to further integrate automation into the design process, thereby abstracting electronics system design to a higher level. A little further down the road, our focus for the next two to five years will be to increase the number of designers. We will then work to achieve wider dissemination of this digital platform. In other words, the goal is to further promote the spread of the platform and expand it to the mass market.

We will enhance the overall user experience accordingly. By overcoming the challenges I mentioned earlier, we will improve the user experience. By leveraging digital platforms, users can experience a connected platform in electronics design simulations, thereby reducing the barriers to entry in electronics system design. And we would like to have this connected platform ready for the horizon three in five to seven years, which will fully integrate electronics system design and lifecycle management.

That concludes my presentation. Thank you for your attention.

Moderator: Thank you very much. Next, Mr. Shuhei Shinkai, Senior Vice President and CFO, will explain. Mr. Shinkai, please.

Shinkai: Hello. I am CFO Shinkai. In the finance part, I would like to add an explanation of how the challenges are being addressed toward the aspiration of sixfold market capitalization, the financial model, and then the concept of capital allocation.

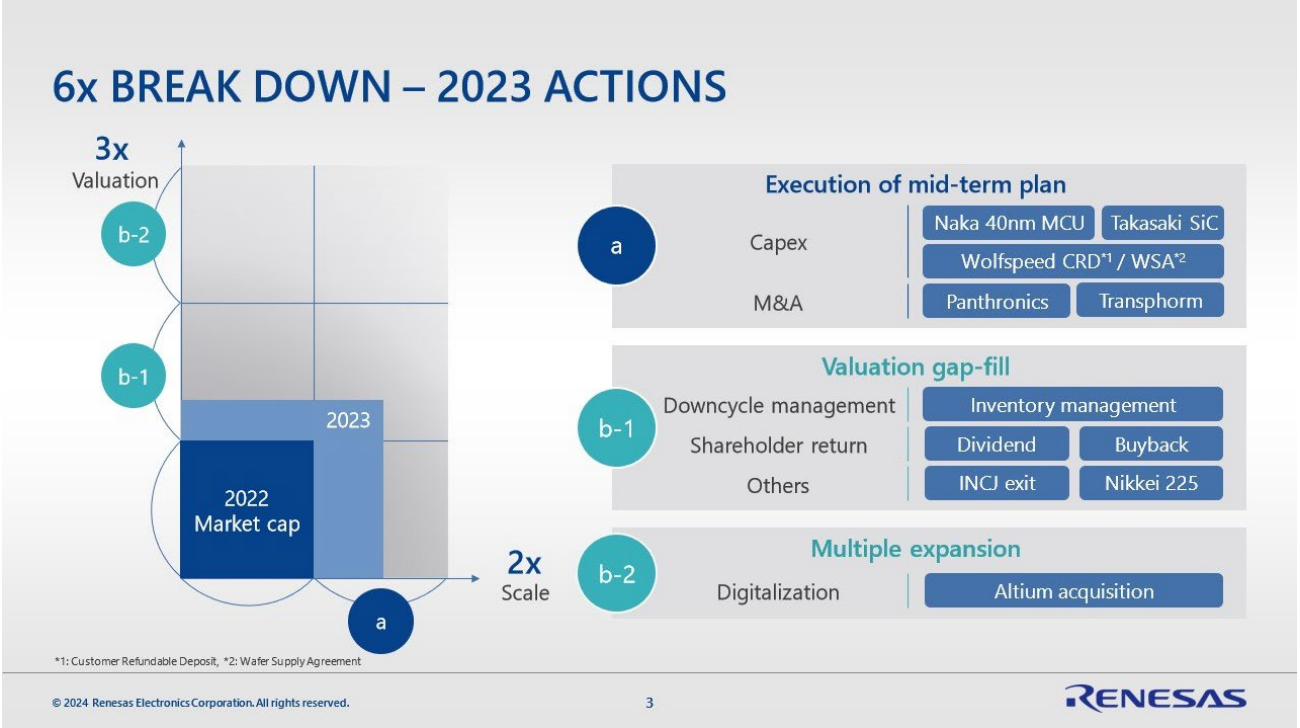


First, I have compiled some numbers on the FY2023 financial highlights. The left side summarizes peaks and troughs. I believe that we have succeeded in reducing the volatility of revenue and gross margin compared to the past. For example, the gap in revenue from the peak to the trough is about 10%, which of course is partially due to the tailwind from the weak yen, but even if we exclude the effect of exchange rates, the results are not at all out of line with the performance of the competitors.

Then, for gross margin, the gap is 2.6 points, which means that there is almost no foreign exchange impact. I believe that we were able to achieve significant results in both of these areas in comparison to the past and to our competitors.

I believe that this achievement is the result of our efforts to understand demand trends, engage with customers at an early stage, and proactively adjust inventories throughout the supply chain.

For the right side, I describe Non-GAAP EPS in terms of the bottom line. The growth of the bottom line has been our financial focus, even in a down-cycle trend. In 2023, it expanded 20% YoY.

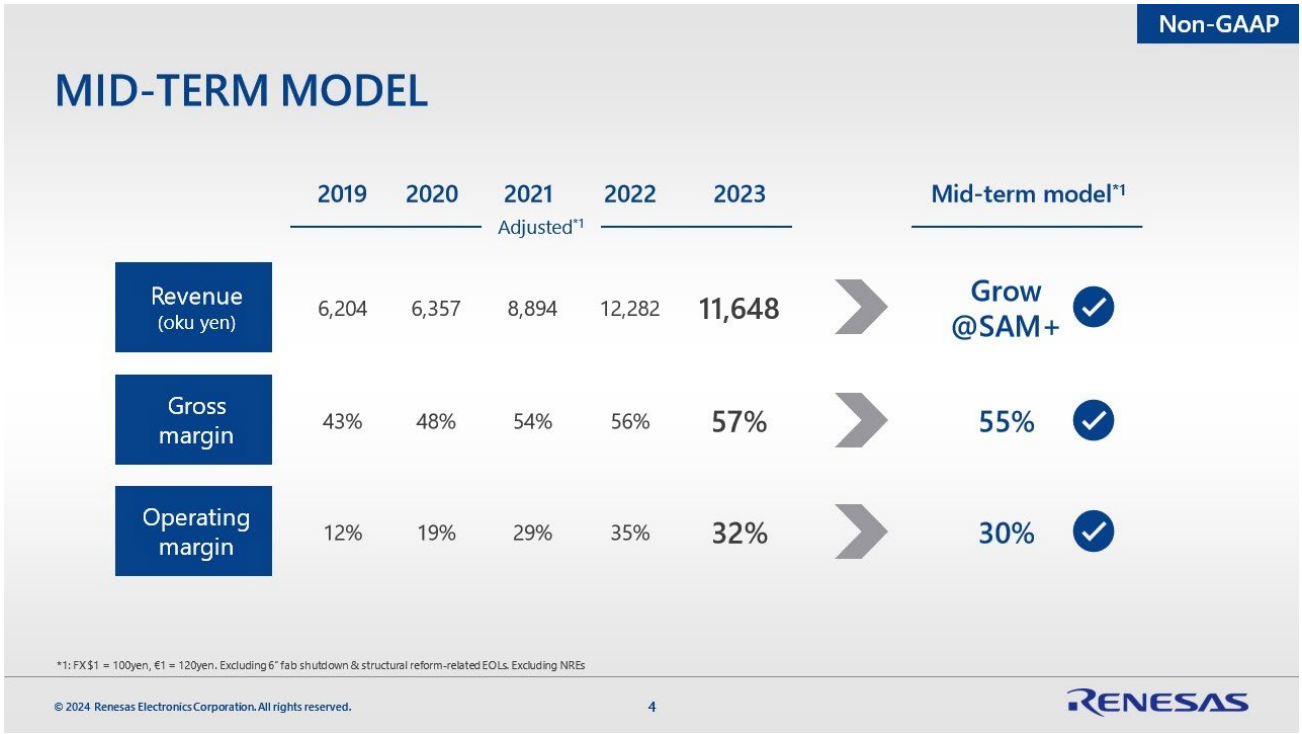


Now, let's break down this 6 times market capitalization and look at the area as 2 times in size on the horizontal axis and 3 times in valuation on the vertical axis. As of the end of 2023, the market capitalization had grown by about double, relative to the 2022 average. We have analyzed that its components were about 1.5 times in size and about 1.3 times in valuation, as represented in the figure on the left.

The right-hand side of the page summarizes what we have done in 2023 and part of what we will do in 2024, to make this happen. As for Part A, in terms of scale, we have decided to invest in in-house MCU production capacity, we have decided to invest in power discrete and SiC production capacity, and we have invested in SiC for power, GaN, and capability acquisition.

As for the middle row, b-1, valuation gap-fill, we have focused on down-cycle management, especially inventory control, as I mentioned earlier, and we have also made progress in returning profits to shareholders by starting to pay dividends.

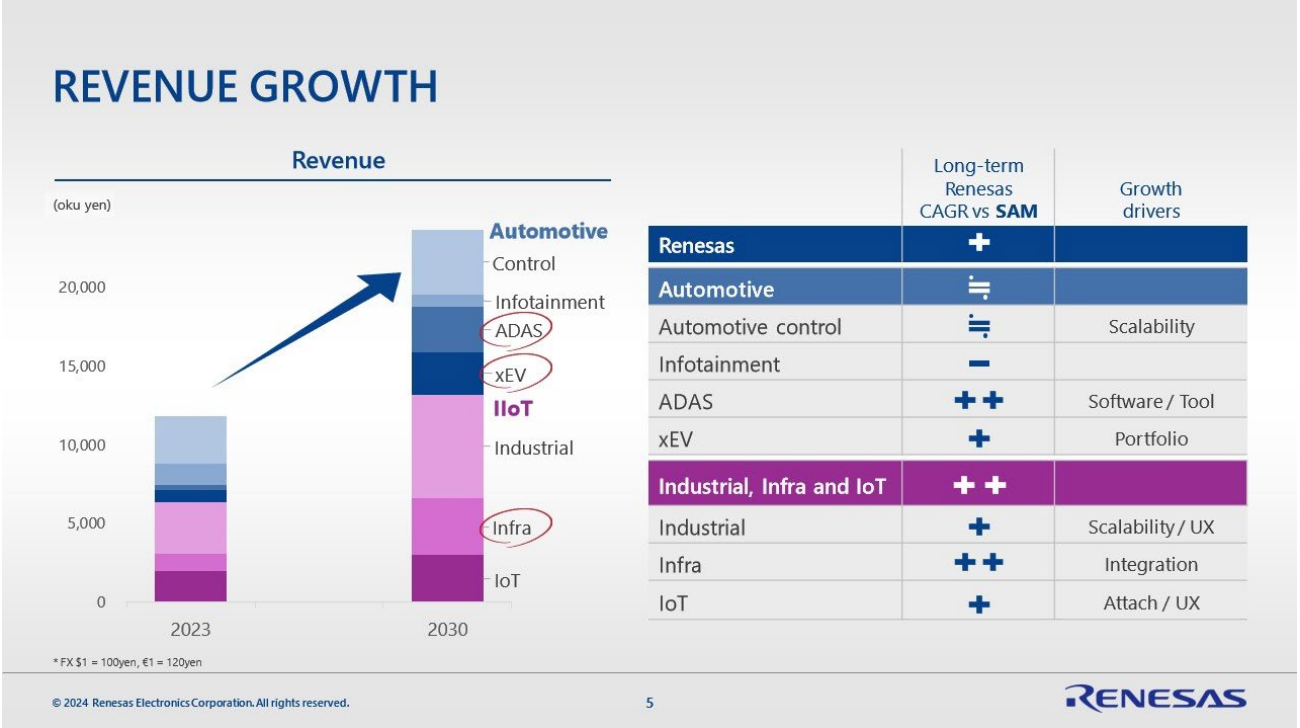
As for b-2, at the bottom, we still have a long way to go, but we have acquired Altium as our first major step in the digitization journey for our multiple expansion. We appreciate that the individual progress is showing one by one toward the 2030 aspiration.



From here, I would like to add commentary on medium- and long-term topics. This middle bolded parts, the full year 2023 figures, have been translated in adjusted figures. Adjusted means that the exchange rate is set to JPY100 to the US dollar and then JPY120 to the euro on a continuing basis, and only ongoing businesses are counted.

By this definition, as shown here, revenue was JPY1,164.8 billion, with a gross margin of 57% and an operating margin of 32%. The mid-term model on the right side of this page, as Shibata explained earlier, has undergone a minor update in that the lower limits for gross and operating margins have been eliminated, but the intention is to operate within this model even during the down cycle.

As for revenue growth, as the check marks indicate, we are maintaining a positive figure against SAM for the long-term range starting in 2019, and as you can see, we are in a situation where we are achieving this model for gross and operating margins.



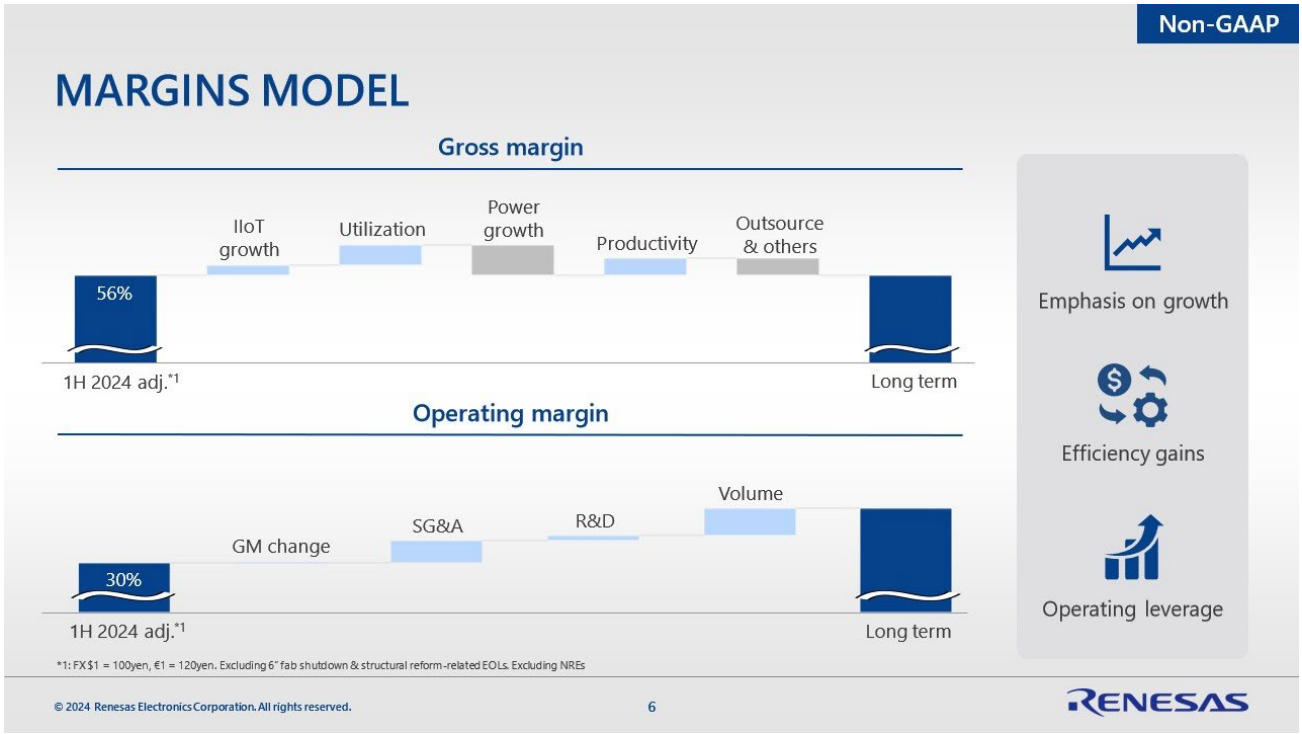
Now, here are revenue for 2030. The plan is to reach over USD20 billion by 2030. Each of these segments drives revenue growth. The bar chart on the left has three circled areas: ADAS, EVs, and infrastructure on the vertical axis.

On the right side, we have organized the growth prospects for the vertical segments, and then the drivers and themes of growth. I would like to have each product group explain the details.

First, the growth rates of the segments are the same as in the previous discussions, with automotive on par with SAM and the market, and then industry, infrastructure, and IoT are intended to grow faster than SAM.

When it comes to the details of the automotive, in addition to a scalable product line, especially in the ADAS area, software will improve the convenience in the tool. EV's strategy is to have a wide portfolio of MCUs in analog and with a full lineup from silicon to wide bandgap in power.

Industry, infrastructure, and IoT are planning to grow by expanding their base through largely improved UX. Naturally, we expect synergies with Altium in this area. Infrastructure is planning for growth by capturing strong demand through the integration in power.



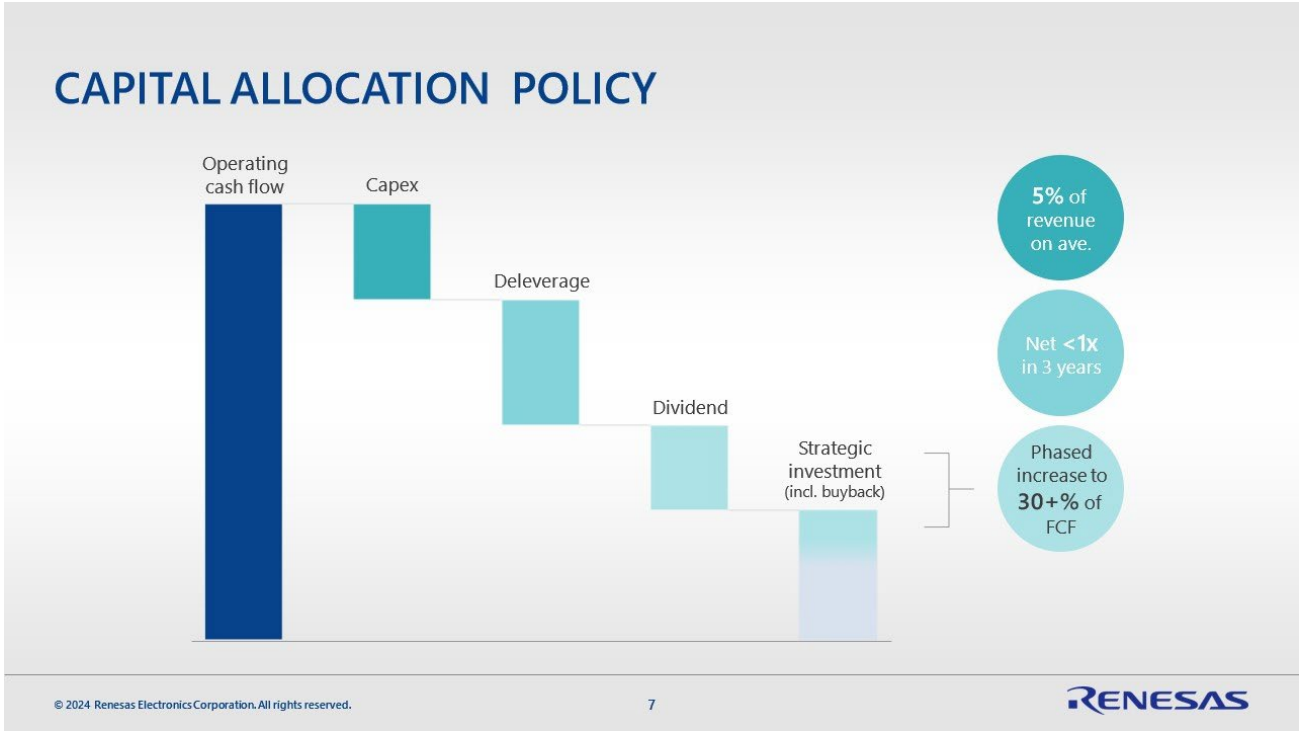
Next, we discuss the margins model. The mid-term model has been as shown previously. Here I would like to share a few thoughts on the longer-term outlook, with a slightly longer timeline.

The upper part shows gross margin. It means that the current number is not going to go up, but rather that we are aiming for a balanced approach. As the time flows from left to right, in the short term, the company-wide mix will improve with an increase in industry, infrastructure, and IoT as market conditions recover. Then, the utilization will also increase. On the other hand, as for our plan for the medium- to long-term growth in power, especially in discrete, we expect this area, including amortization expenses, to make a slight negative contribution to the mix of margins for the entire company.

Meanwhile, we will work to improve productivity. This is one of the economies of scale and will be a measure such as reducing the cost of management by consolidating production technologies. At the same time, in the medium- to long-term, we expect the production ratio of foundries in the high-performance computing and embedded sectors to increase, so we expect to be flat compared to the current level in a long-term perspective. On the other hand, as for the operating margin in the lower part, we expect to improve by reducing OPEX, or rather, utilizing scalability.

Although SG&A has been delayed, we expect to realize synergies from system integration, and in R&D, we will optimize cost-effectiveness through selection and concentration. Lastly, we expect that this increase in volume will also lead to growth in operating margin.

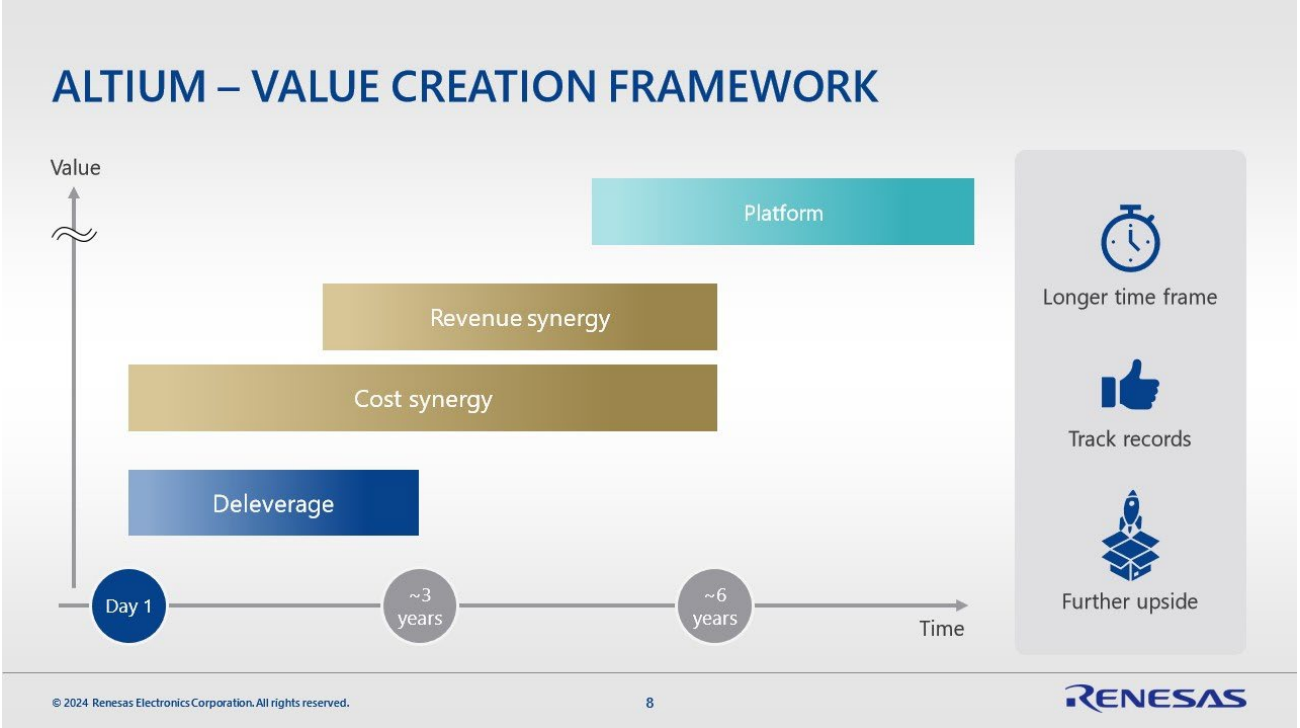
Therefore, among the three themes on the right-hand side, first is to manage margins by focusing on revenue growth as a whole. Then, we will increase efficiency so that economies of scale can be expressed to the fullest extent. Ultimately, it will be something like anticipating or contemplating the expression of operating leverage.



The next page is about capital allocation. Here is an idea of the immediate capital allocation after the acquisition of Altium. Overall, as you can see here in the blocks, we are thinking in the order of capital expenditures, deleverage, dividends, and then strategic investments. This strategic investments include M&A as well as flexible share buybacks.

With regard to capital investment, we will invest mainly in the area of power discrete, where in-house production will be the main focus. On average, we expect to achieve about 5% of revenue. Deleverage is based on the assumption of Altium's acquisition financing. We aim to achieve a net leverage of 1 times or less in three years.

Regarding dividend, we are resuming on a small scale this year and will continue. We are considering raising the level in the future. Specifically, we are considering raising the level of total return, including dividends and share buybacks in strategic investments, to a little more than 30% of free cash flow in a phased manner.



We have organized a framework for the acquisition of Altium, including the time frame for value realization going forward. As Buvna explained earlier in the form of a digitalization journey, here I have rearranged that from a finance perspective. First, we will proceed with deleveraging from day one. As I just said, we target net 1 times within three years. We consider this deleveraging to be a similar item to past large M&As.

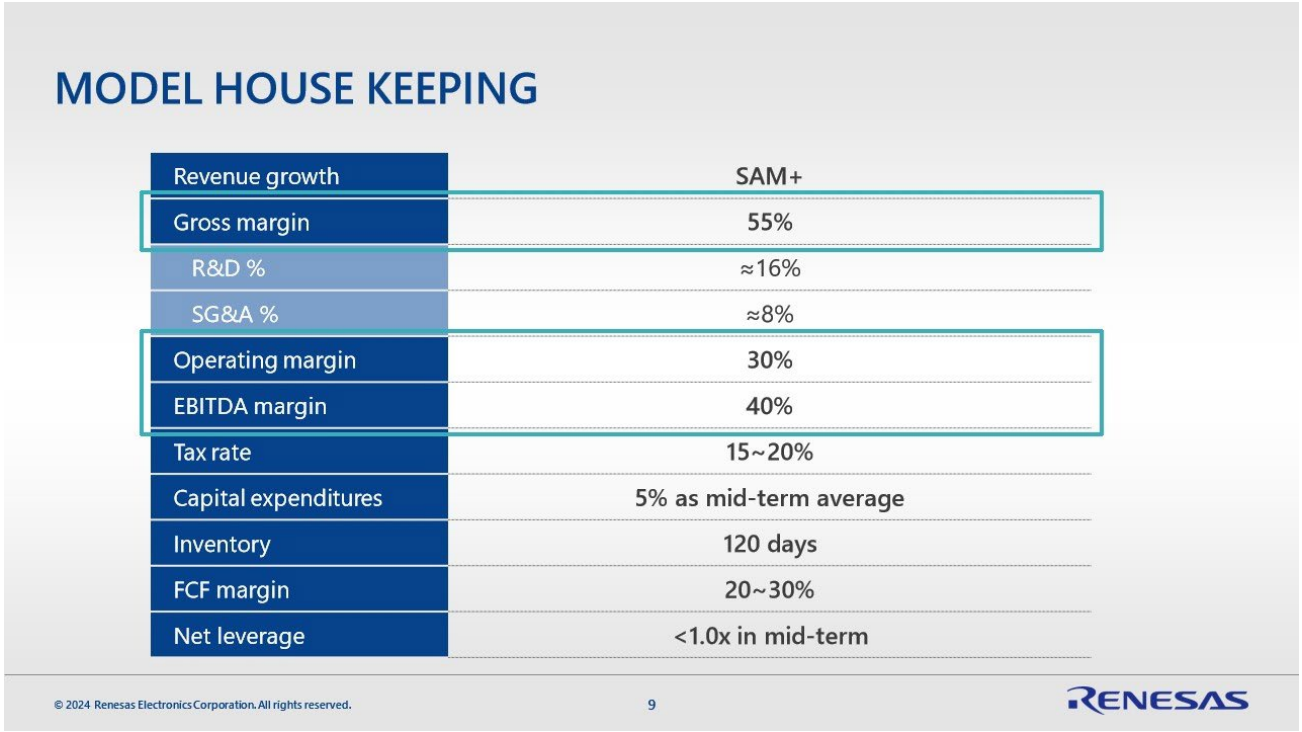
Next, there is the realization of synergies, which is another item similar to past large M&As, with the difference being that the timeline is slightly longer. As you can see from the two bars here, cost synergies come first. This could include the cost of maintaining the listing that will no longer be necessary immediately after the acquisition, or the use of Renesas' resources to achieve savings.

Then there is revenue synergy. This includes increasing Altium's own investments to expand and accelerate revenue growth by becoming part of a larger group. We intend to maintain an arms-length relationship with Altium, but at the same time, we believe that these synergies are entirely compatible, and as shown in the timeline below, we expect the synergies to emerge within six years, at which point the return on investment will be complete.

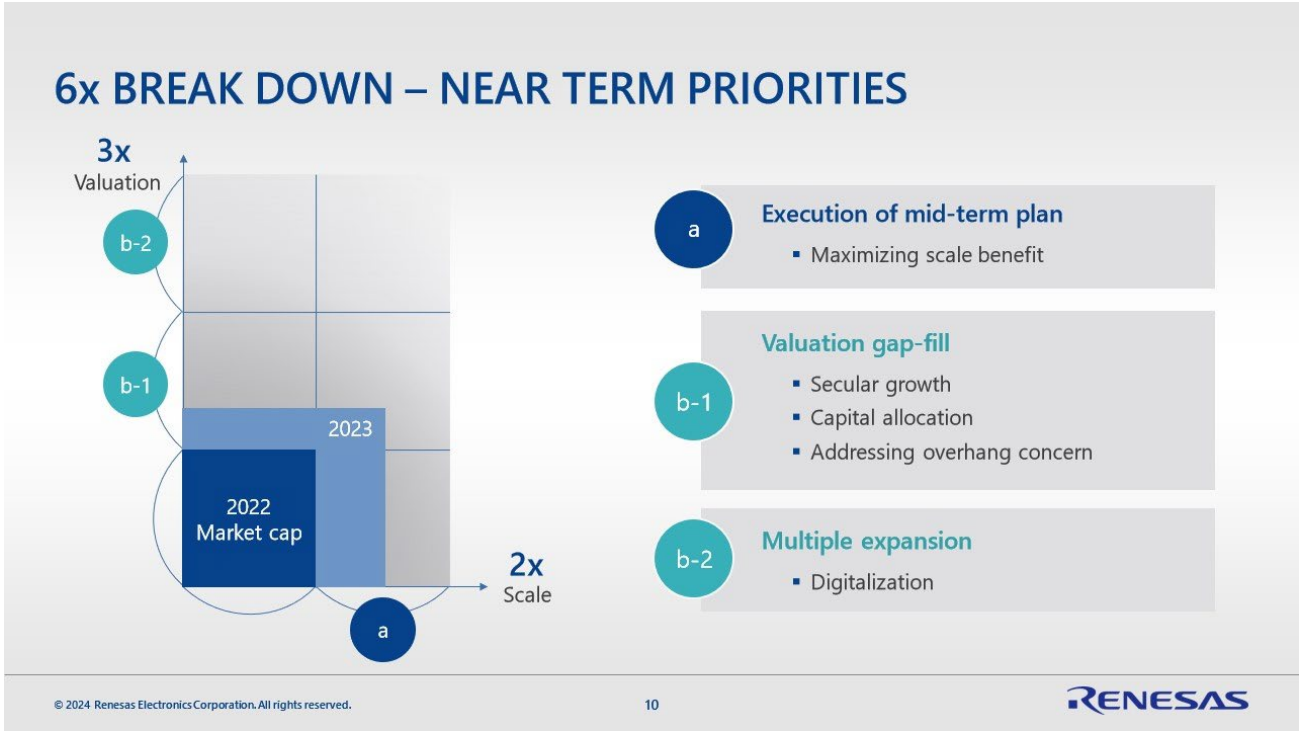
On top of that, we are thinking about building a platform to realize value as the very vision of digitalization. Therefore, we consider this top bar to be completely positioned as upside.

The three points are summarized on the right side. Compared to M&As in the past, it will take longer time. There are differences in the nature of software, and then there are differences such as maintaining at arm's length. However, we believe that the content of the synergies, and then the actions we take to realize these synergies themselves, are not significantly different from the large M&As we have done in the past, and we have a track record of realizing these synergies.

Therefore, the message here is that if you fix one, two, or three of these from the bottom, the rest will be upside.



Regarding the model update, we have not changed anything other than the point that we have now removed the lower limit of the margin range.



This is my last page. Our immediate goal is to expand this area map sixfold, and although we believe we were able to show some progress in 2023, we will continue to make efforts.

The most recent action items are summarized on the right side of this page. As for a measure for Part A, we would like to focus on maximizing scale benefits, and as measures for b-1, valuations, there is still room for improvement. We would like to take a more in-depth approach than we have in the past.

With regard to b-2, although we have not yet closed, we intend to steadily implement the value realization framework after the completion of the Altium acquisition.

We look forward to being able to update you again on this progress at the future meetings. Thank you for your attention.

Moderator: Thank you very much.

Question & Answer

[Questioner 1]

Q: Thank you very much for your very interesting presentation. I have two questions. I understand that you are going to gradually introduce to existing Renesas customers in this software strategy, but I would like to know the response, or how positive is the customer response, and what kind of applications you are going to introduce. I would like to know if there are any areas that are easy or difficult to introduce depending on the application.

I understand that you are aiming not only for the mid-sized companies where Altium is expanding, but also for larger companies and your existing customers, as you are planning to implement a unified platform. What is your idea of how customers would react to the introduction, or what kind of applications would be easiest for them to start with? Please.

A: It is actually too early to tell this. So, the majority of the decisions will be made and implemented in the future, but what Buvna mentioned, in particular, is that we are trying to integrate the bits and pieces that we are offering to our current customers, and to add third-party solutions to it. We are proceeding with this project with the expectation that our current customers will say that it is becoming very easy to use.

On the other hand, if I talk about creating a complete platform with the addition of Altium, there is no customer response at the moment. We are now a separate company and we have to do things separately now, so there is no response.

However, rather than customers, there are already a number of expectations within the ecosystem. It is a bit early to say, but we have already begun conversations about proposals to discuss collaboration. I have to be careful with the wording here, but my image of such user base is that they have not been able to use electronics to its fullest extent. We would like to expand our users more and more, other than those who are already advanced and have some scale in the electronics market in countries where electronics are already advanced.

We have brought up India here as an easy-to-understand example, but we also want to create a new market by encouraging customers who used to outsource most of their electronics to do it themselves if it is this easy to use. As I have said many times, we have not started yet, so we are just getting started. It may have been difficult to understand because I talked about different initiatives together, but these have different time frames.

Q: Second, you mentioned that this strategy is very important for increasing valuation from a financial point of view. As for what will cause the valuation increase from our perspective, probably you are thinking that the current strategy of digitalization will increase the top line by enclosing more companies in the market.

In terms of profitability, is it the price of your product based on usability, or is it the higher profit margin, or is it more use of your products? This may be in terms of both revenue and profitability. I would like to know what you expect in terms of financials, or I would like to know if you could break it down a bit more about what items you base your valuation increase on.

A: I think we need to take a longer timeline, but one angle that you didn't mention is volatility. By increasing recurring profit and revenue, we expect to have the effect of reducing volatility and data in financials.

Volatility is the biggest factor, and in terms of finance from the standpoint of actual management, if predictability increases, it will be easier to take management actions. We naturally have to respond to the market change on a daily basis, but if we can reduce the influence of such factors as much as possible, and if we can proceed in a more systematic manner, this will be reflected in our financial performance.

[Questioner 2]

Q: I have two questions. First, I would like to ask about what Buvna said. I think digitalization and this strategy are very good, but as for your earlier explanation of Altium, what Mr. Shibata mentioned in the presentation a few months ago was that Schneider is a benchmark company in terms of digitization.

So my question is, is this analogy appropriate? I am asking with Schneider as an example in digitalization, but is it also appropriate for the semiconductor industry? Then how does it compare to Texas Instruments in PCB design? I would appreciate your answer on this point.

A: You asked two questions. I couldn't hear you very well because of the noise, so as best as I could tell, PCB design was the first question. Then the competition in that area. The latter question is about your analogy. Since we mentioned Schneider in our last presentation, you would like an explanation about it and what the similarities are. Is that all right with you?

Now, I would like to answer the first part, which was the competition for PCB design. Of course, Altium is now a major PCB design house, and Altium 365, which is a new collaboration platform, is very unique. In other words, the architectural form is very unique.

What this is intended to do is to foster collaboration across design teams and then across system designs. We are considering this in many different areas. What we are planning now is how to make use of this. To repeat what Mr. Shibata said before, we have not yet closed the deal, so this is still in the idea stage. Basically, we would like to realize this vision by having customers utilize this platform to combine some elements of electronics system design and lifecycle management together on a single digital platform. This is what we are trying to achieve through a single digital platform.

So, we are thinking that this is an area where there is actually a gap in the industry and remember the slide that I showed you earlier that showed the landscape, the blue parts of the electronics system design. Those blue parts have a gap. Solution exists, but they are not connected, and they are on separate platforms and separate software in different data formats. They have totally different processes. They are connected in that way, but there is still a gap.

I think there will be many benefits for customers if they are able to connect this gap with this digital platform. I am thinking about this. Of course, it is still an idea, or a vision since the acquisition has not yet closed, but this is what we are thinking about. I do not believe a similar solution to this exists in the ecosystem right now.

M: Mr. Buvna, please also answer about the similarities between Schneider and our vision.

A: This is also premature, as this acquisition has not yet reached closing. We are at a stage where we cannot talk about it. I would like you to consider the fact that Renesas and Altium were both on their own paths to digitalization before the acquisition.

So, I mentioned the biggest challenge for their customers, but for Renesas customers, the biggest challenge for semiconductor and customers is how to use these electronics components to make system design more efficient, better, faster, and with less risk.

Reducing time to market has been the big challenge. This is especially when you think about it in the context of Renesas customers, how they get the software and then how they optimize or iterate or co-optimize the software without having to turn a bunch of physical boards, which always accounts for half of digitization.

Now, on the Altium side, their main focus is on the Altium Designer. This is PCB design software. In addition to that, the collaboration platform I was talking about is another element, and the analogy there is to increase the number of applications, respond to more customer issues, and connect and integrate these things into a single platform.

The challenge is to do so, so that users do not have to enter and leave multiple systems, that they do not have to use many data formats, and that they can design systems without using separate software for each. This involves life cycle management. It does not end with one system. So these life cycle management processes are also involved here.

When you put these two concepts together, the analogy at a high level, the analogy I think about the Schneider situation, is that there is basically a digital platform, a software platform, and here we are tacking it together. By connecting all of these things together, we can create a single integrated platform from the customer's point of view, and the underlying applications will be actually designed to make electronics design faster and more efficient.

[Questioner 3]

Q: First, I still have a question regarding Altium. At the time of the acquisition, I believe you mentioned that Altium had 20,000 customers. How many accounts does Renesas currently have, and how many Altium-based customers are over-lapping? I think the potential market is very large, so I would like to know, if possible, how much market share you have by adding Renesas and Altium to the potential market, roughly or by ballpark number.

Second, Mr. Shinkai, if I recall correctly, you said the return on investment would be complete in about six years. If you divided JPY900 billion by six, that will be about JPY150 billion. Their revenue size is about JPY40 billion, so I do not understand the definition of the return on investment. I would like to ask you to define or redefine what you are aiming for over the next six years.

M: Shinkai will answer these two questions. Mr. Shinkai, please.

A: Regarding the first question, the number of customer accounts, I have no idea right now. There is a restriction of information, but I don't think there is much overlap in our company. Regarding the second question, return on investment, our definition of return on investment is the point at which the return on investment exceeds our cost of capital. Thus, from that point forward, the return exceeds our cost of capital. That's all for now.

Q: As a follow-up, I would like to know if you have a general idea of WACC or cost of capital, as the cost of capital is partly dependent on the definition.

A: To give you a rough idea, it will be 8%. Since the investment is between USD5 and USD6 billion, we are calculating that the run rate of USD480 million, 8% of USD6 billion, will be achieved after-tax as cash flow.

Q: It is clear. Thank you very much.

A: I always find this part about return on investment troubling every time you ask us about it. For our part, we made the Altium acquisition because we thought we had the pieces we needed to grow, so we looked first

at how much margin we could have beyond our WACC, at a minimum, as Shinkai just mentioned. At that time, cash-on-cash is the way to go.

In the mid- to long-term, as you has asked before, I would like to raise the discussion on how to look at the so-called ROIC. We have not yet reached the point where we have the resources to do everything organically, so we have made acquisitions.

I don't think we are going to make a lot of big acquisitions from here on out, but on the other hand, I think we need to do a few more bolt-ons of, say, USD1 billion to USD2 billion. We are thinking of doing this from the same perspective, and after that, we would like to raise the discussion about our investment returns.

[Questioner 4]

Q: I would like to ask you to make one major point regarding your perspective on the Indian market. As a slightly medium- to long-term goal, you mentioned that you are aiming for a range of 10% to 15% of sales. If we roughly calculate the current situation, I think we can say that you are aiming to launch sales of JPY200 billion or more at once. What kind of sales are you aiming for, though, in terms of this taking of sales? Will you be taking on applications, or will you be taking on existing overseas customers who are expanding into India, or will you be aiming for local customers?

You also said that you would acquire human resources, but what is the nature of the human resources that are needed? I don't have a clear picture, but I would like to know what elements your company will need in the market for human resources to take on this kind of work. Thank you.

A: We are not thinking mainly of so-called transfer business, but mainly local business, so basically our main theme is to drive the growth of Indian companies and customers, from which we will also increase sales.

So what kind of application is this? I don't think it will be that much different from the applications we are focusing on. However, if there is a market in that application or segment that is significantly complex, say, Japan or the US, then the Indian market will want a simpler version of that for the time being.

EVs, for example, are a very good example. Of course, four-wheeled vehicles are also very important because they will grow very large, but what is very unique about markets like India is that 2-wheelers are becoming more and more electrified. The solutions required for the automotive segment are not decisively different from the solutions we already have for the automotive segment, but of course the complexities are quite different because of the two-wheeled vehicle, the different price point, and the smaller screen. So we will target such things.

The same is true, for example, of the white goods in the industrials. Compared to the white goods that you use in Japan today, for example, we will focus on something a little simpler, but we do not think that the basic requirements will be very different or anything like that. At present, many of these electronics products are being produced by suppliers in Taiwan, China, and other countries without some major directions given. Our major theme is to accelerate the process of in-house production by Indian customers, and to expand our own pie in the process.

In terms of what kind of human resources are needed for this kind of work, given the state of education and the human resources market in India, it is a matter of acquiring so-called R&D talents. Although competition is fierce, there is a considerable abundance of human resources, so whether it is software, digital, or hardware, there are R&D talents available. We believe that the next step is how to take the best people from among them.

The problem, or rather the bigger challenge, is the leadership management layer from the perspective of creating business. This is where we will acquire human resources in India or promote more and more from among our Indian human resources. In addition, I am sure you are aware that there are many Indians, especially those who are currently active outside of Japan, who would like to return to India to work from the viewpoint that the changes in India are truly different from those in the past. We are thinking of increasing the number of people who want to return to India and work there.

So I am not too worried about R&D. By doing a good job of recruiting for the University Program and other programs that I mentioned earlier, we can achieve normal results if we do things normally here. What we need to do more creatively is to create business, and that is what we are working hard on, so I hope we can move forward even while going through troubles and uncertainties.

[Questioner 5]

Q: I would like to ask you about power. I think the business side will come up later in the session, but I have some questions regarding the corporate side. In Mr. Shinkai's presentation material, he gave the growth potential of xEVs as one plus against the market, but I think he gave two pluses, so I wonder if the pace of growth has been lowered slightly.

Since you mentioned dilutive to gross margin, is it safe to assume that as long as that does not fall below the target of 55%, you will continue to accelerate? Then, in SiC, etc., there are many competing companies that are subsidized by various countries, and I believe that competition will be quite tough if you cannot get this. Under what conditions would a scenario that would allow you to obtain this be possible, and what is your approach to the overall balance of power business in this area?

M: So, let's have Mr. Shinkai speak first, and then I will add to it. Mr. Shinkai, please.

A: As for the power part, I would like to talk about the growth potential of EVs. There is a slight difference in the figures, whether it is a single-digit or double-digit increase compared to the market forecast, but the basic policy is the same: strong growth is expected.

We are making various investments for this purpose, but we certainly need to carefully watch the mix or relationship between margins and sales growth. On the other hand, we would like to manage margins in such a way as to promote growth through various efforts, including cost management, investment management, management of the timing of the start of amortization, and other such details. This is the current view from a finance perspective.

A: Regarding the question of how to think about SiC power, I would like to know if my understanding is wrong, but I don't think that the subsidy for SiC, for example, will make a big difference in the actual situation. Except for China. Except for China, I am not aware of any other country where everyone is building new hubs that are being subsidized.

Some of them have been heavily subsidized, and then a significant portion of the announced plant construction has actually been cancelled, or something like that. Therefore, I do not think that this will be a very decisive factor.

On the other hand, for our part, we will basically have all the wide band gaps, and while we have silicon as well, we would like to keep in mind that we will sell our products as solutions anyway. Therefore, although we will achieve a certain level of scale, we do not intend to grow that much in a very large way. In that sense,

we want to grow, but we do not intend to make it a very dominant volume, so the impact of power growth at a gross margin below the corporate target of 55% is somewhat limited.

Thus, in other words, we do not consider that even power discretes should not be sold unless the margin exceeds 55%. Even if it is below 55% here, we will compete hard to get it depending on market conditions. However, if the gross margin becomes too large, the gross margin of corporate blending will naturally decrease. Our thinking is that by controlling the ratio of other devices to a certain percentage, the impact on margins will not be so large.

Incidentally, if you look at our footprint, SiC is still at 6 inches at the moment, but will naturally migrate to 8 inches at some point in the future. As for the Gallium Nitride, I think we will hear more and more about 8-inch tools, and some tool vendors are talking strongly about launching 12-inch compatible tools in the market sooner rather than later.

If you look at our footprint, you will see that several, maybe one or two sites, even at 8 inches, will be converted to wideband gap in the future. As for 12-inch, we still have a silicon floor and another floor in Kofu available for use. Therefore, rather than investing more and more in greenfield, we believe that we can manufacture sufficient volume at our own locations while controlling amortization to some extent. Therefore, we do not believe that the subsidy will be that critical here as well.

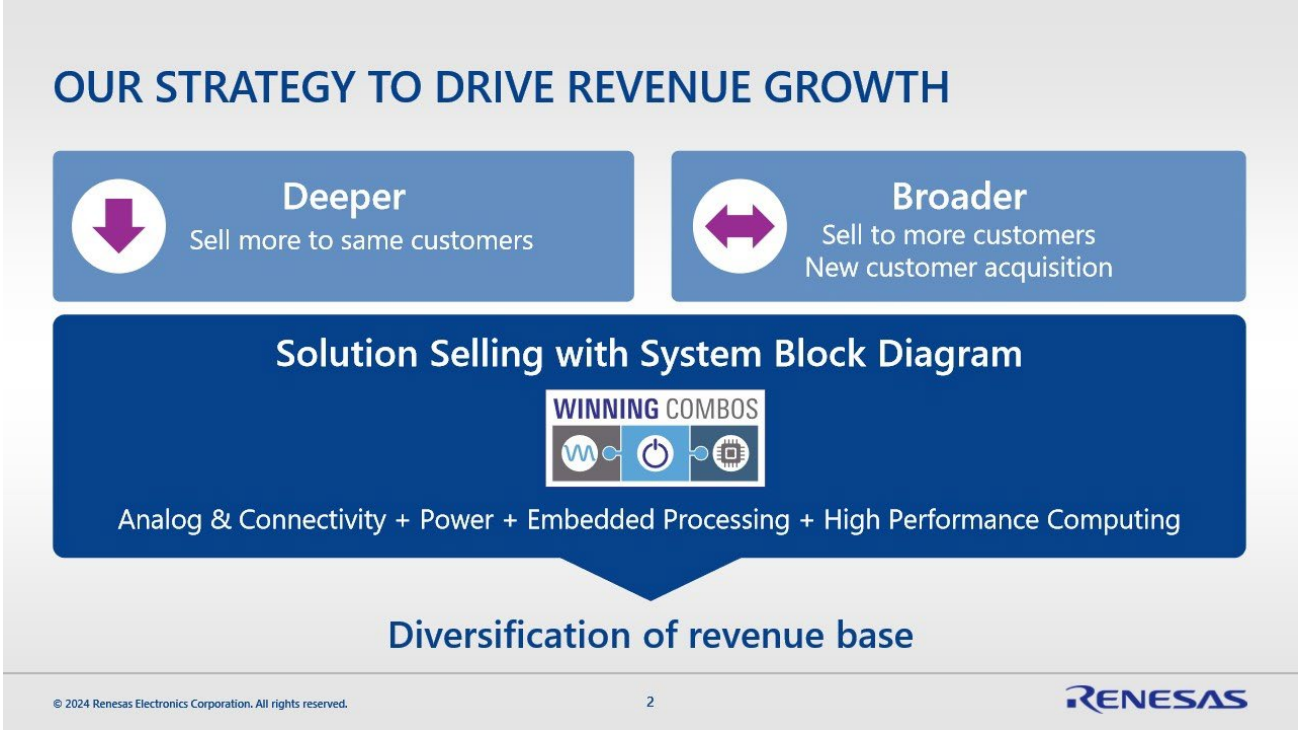
So, I'm afraid this is a bit of a long story, but we believe that both SiC and gallium nitride are very important in the development of our solutions, and that they can be adequately covered by the production footprint we are looking at right now. In this mindset, we do not consider it to be a dominant factor in company-wide sales, for example, so we will operate with the idea that even if this results in a lower gross margin than the company-wide margin, the company-wide margin will be well controlled.

M: We have received other questions, but we have reached the end of our scheduled time, so we will now conclude the first half of the Q&A session.

Presentation

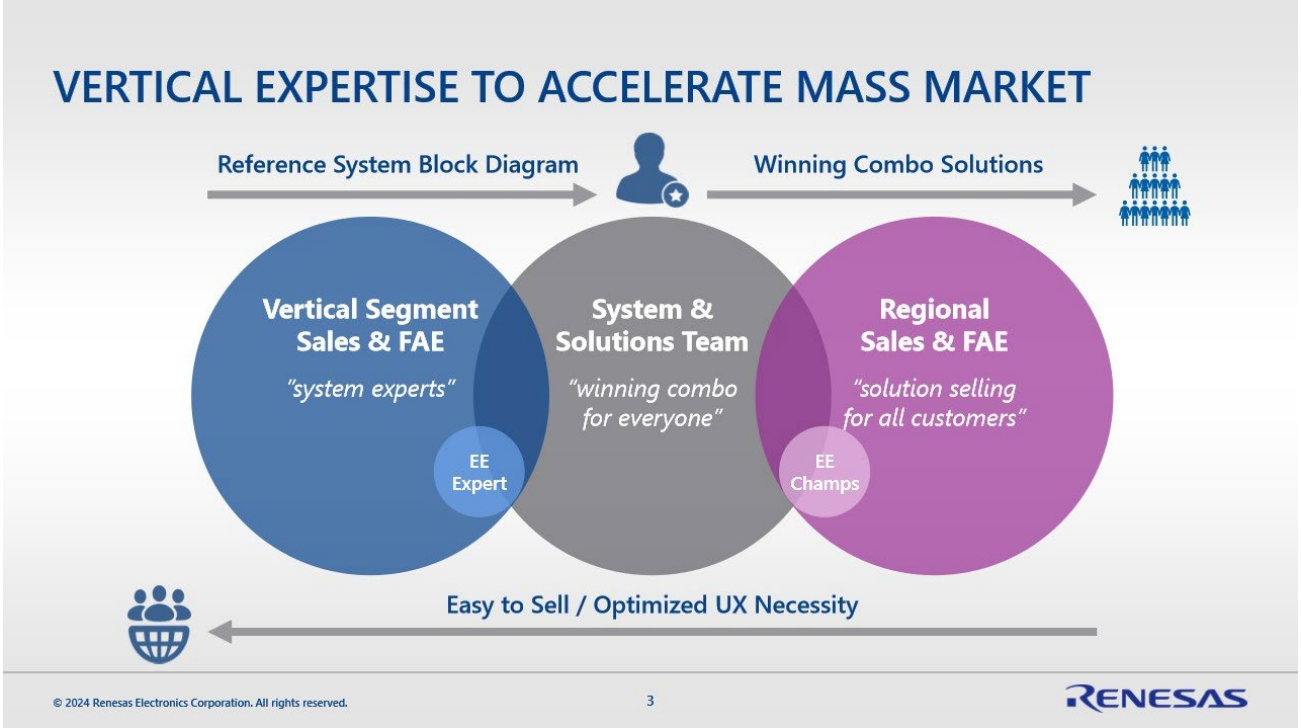
Moderator: We will now hear from Bobby Matinpour, Executive Officer, CSMO and Head of Sales and Marketing. Bobby, please.

Matinpour: Hello, everyone. I am Bobby Matinpour, Head of Sales Marketing. In my presentation, I would like to talk about the Go-to-Market strategy, its execution, and the results we have achieved so far.



Let me begin by discussing our go-to-market strategy, in essence, a deeper and broader two-pronged strategy to grow and diversify our sales. This means winning more sockets per MC, MPU, SoC, power, analog connectivity, per system, and also more content per board.

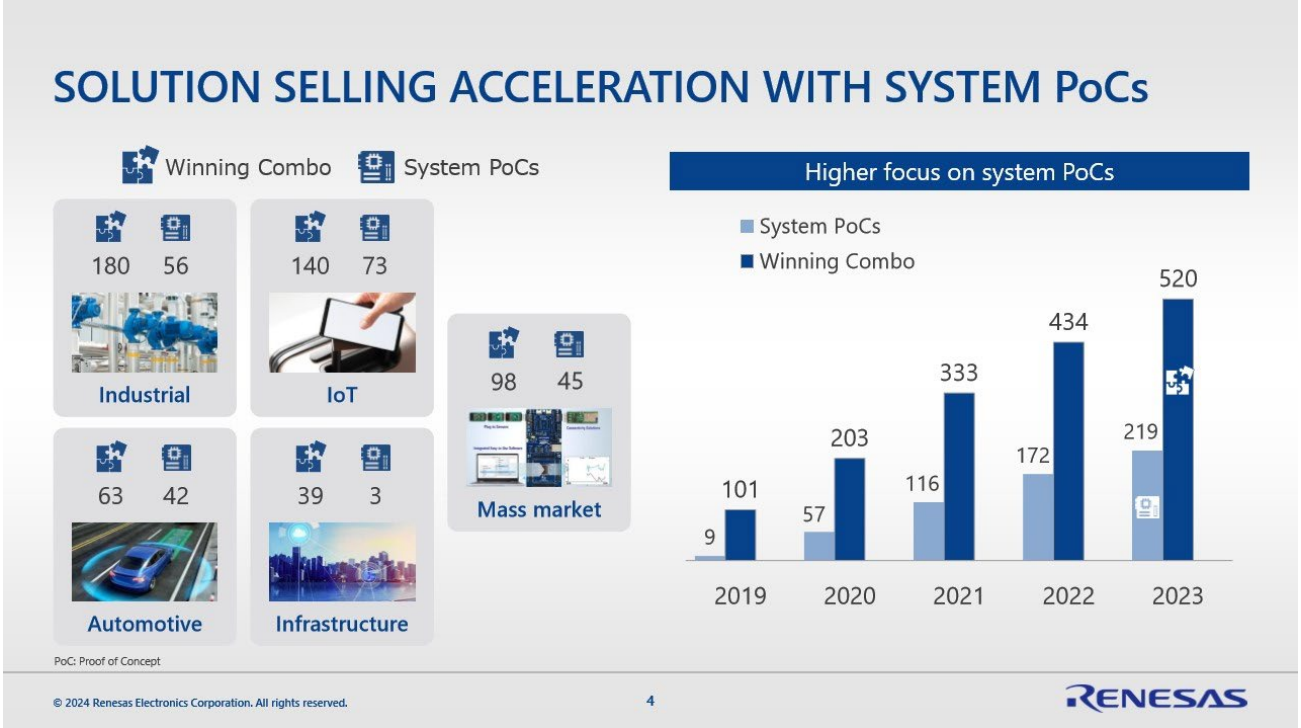
In offering our full portfolio as a solution, we interact directly with many of our customers as they interact with our sales team. And this is something we hope to do in partnership with our distributors, as well as with mid-size mass-market customers, to further deepen that exchange in the future.



Now, from here, I would like to talk about how we intend to accelerate the process in the mass market. This is still an important part of diversifying the customer base. But first, I would like to talk about the 4-plus-1 go-to-market model. We have four global vertical teams here. This is where we cover key accounts in places like Industry, Infrastructure, IoT, and automotive. Then there are teams for each region. It has a region team that interacts with medium and small accounts directly or through a distribution network.

By doing so, we can not only increase our design-in vertically, but also increase our design-in within the mass market and contribute to it. This has the advantage that the various insights from the vertical team can be leveraged within the overall global team, and each socket, insight, and best practices can be deployed to other customers.

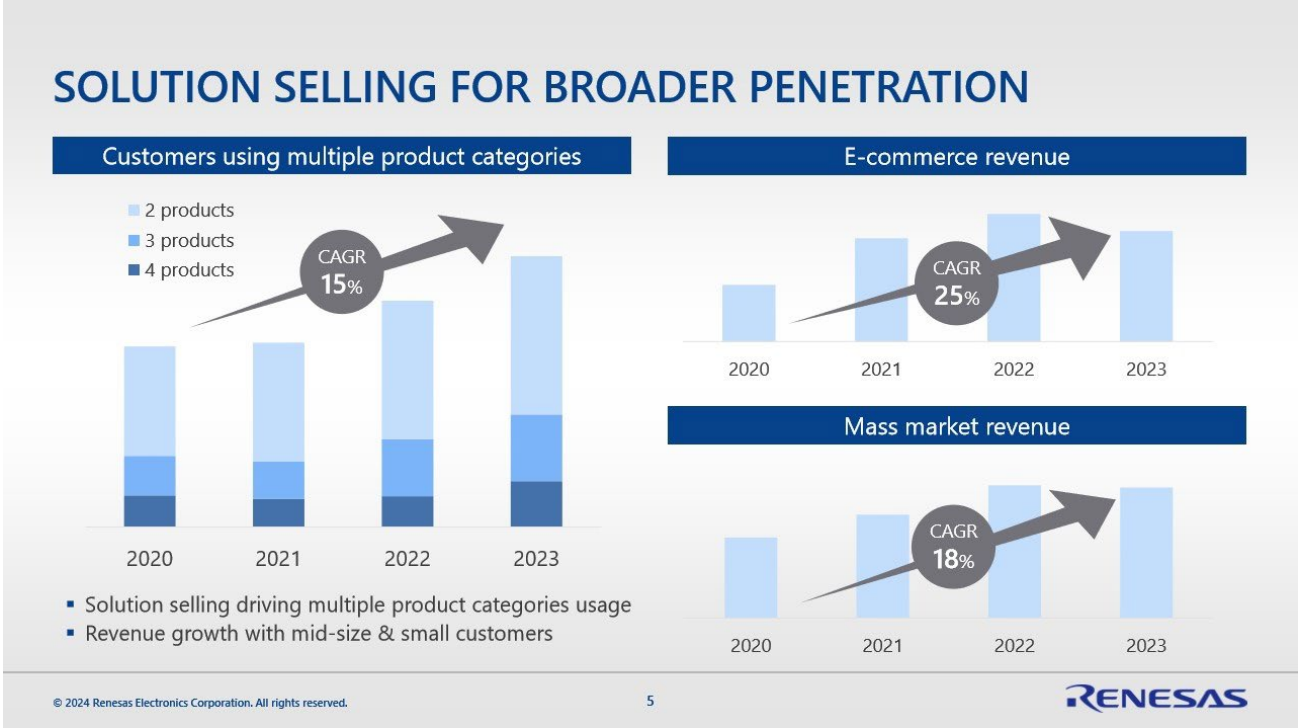
In addition, this system block by E/E will be utilized by our System Solutions team, which in turn will be utilized by each Winning Combo. This is our ability to respond to demand, which allows us to be more active in sales, distribution, and the Web.



This process, however, is not only indicated by the number of Winning Combo. Of course, we believe that this will also help us in winning the Winning Combo in more System PoCs in the future.

We can reduce this by doing Time to Market for our clients, and I think we will see more implementation in our larger portfolios in the future, which will also allow us to grow our content per board.

Customer feedback has been very good so far. We are still able to make the necessary adjustments and contribute to making production more rapid. Last year, Winning Combo was able to firmly achieve its target of 500. We have a target of 600 this year and would like to shift to the PoC place for mass market customers. And I believe it is possible to make this contribution and contribution firmly from our approach.



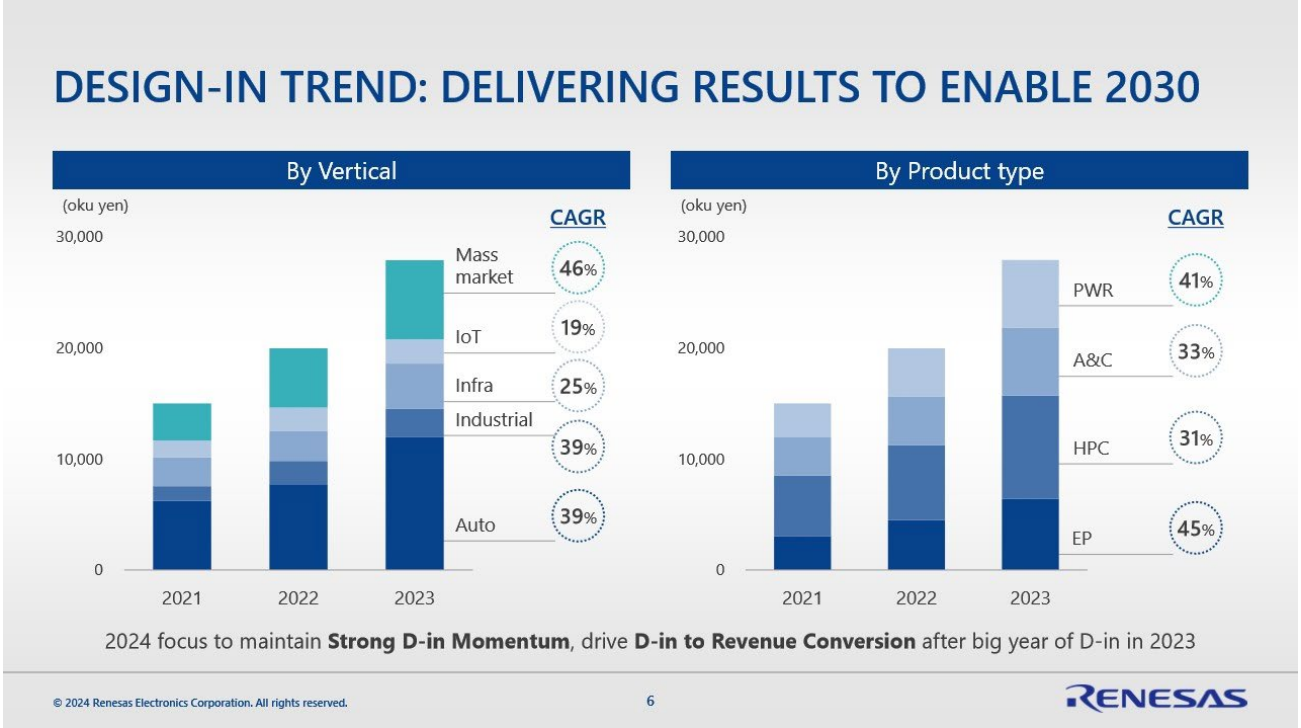
As I mentioned earlier, this approach in the area of solution selling is working. We are in the process of increasing the number of customers purchasing multiple product categories from Renesas.

The plot on the left shows that customers who purchase one or more products from Renesas are achieving a growth rate of approximately 15% per year. Therefore, those who buy more than one product are expected to grow more than those who buy only one product. With three or more, the growth rate is even higher.

And we know that e-commerce, on the right, is accelerating as well. The mass market is one indicator that we are able to grow while producing our overall portfolio, and I think you can see that we are digging deeper here as well.

After all, in 2022, we were growing there, where we had customers who were more dependent on e-commerce for procurement. Therefore, even though we peaked in 2022, we are still able to grow very much in 2023.

Also, if you look at the lower part of the market, we still expect to see very strong growth in the mass market. This growth is expected because of our four plus one sales structure, our strategy, our focus on solution sales, and our ability to leverage our go-to-market Winning Combo and System PoCs.

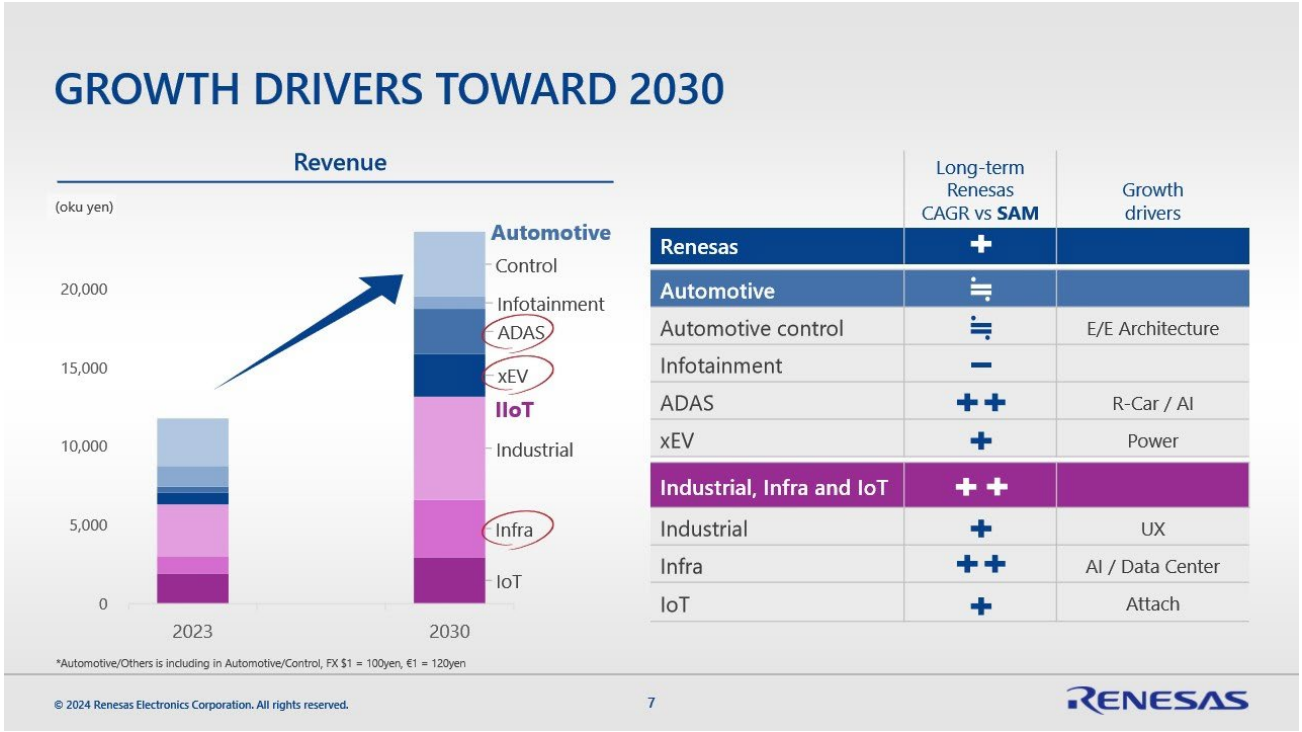


Now, there is also strong momentum on design-in, a leading indicator of future earnings. For the full year of 2023, sales were up 40% over the previous year, driven by mass market and automotive. This is a strong financial performance, well above our target of a 20% increase.

Design-ins also showed strong growth across all product groups. Embedded processing and power in particular further drove growth, benefiting from recent investments in new product portfolios by the Embedded Group for the mass market and the Par Group for infrastructure and automotive.

In FY2024, we will continue to focus on design-ins and promote a shift to revenue to ensure that the 2023 design-ins are followed, utilized, and then converted to production and revenue.

We are very encouraged by the results to date, both in revenue diversification and design-in growth, and believe we have established a solid foundation for long-term revenue diversification and achievement of our USD20 billion goal.

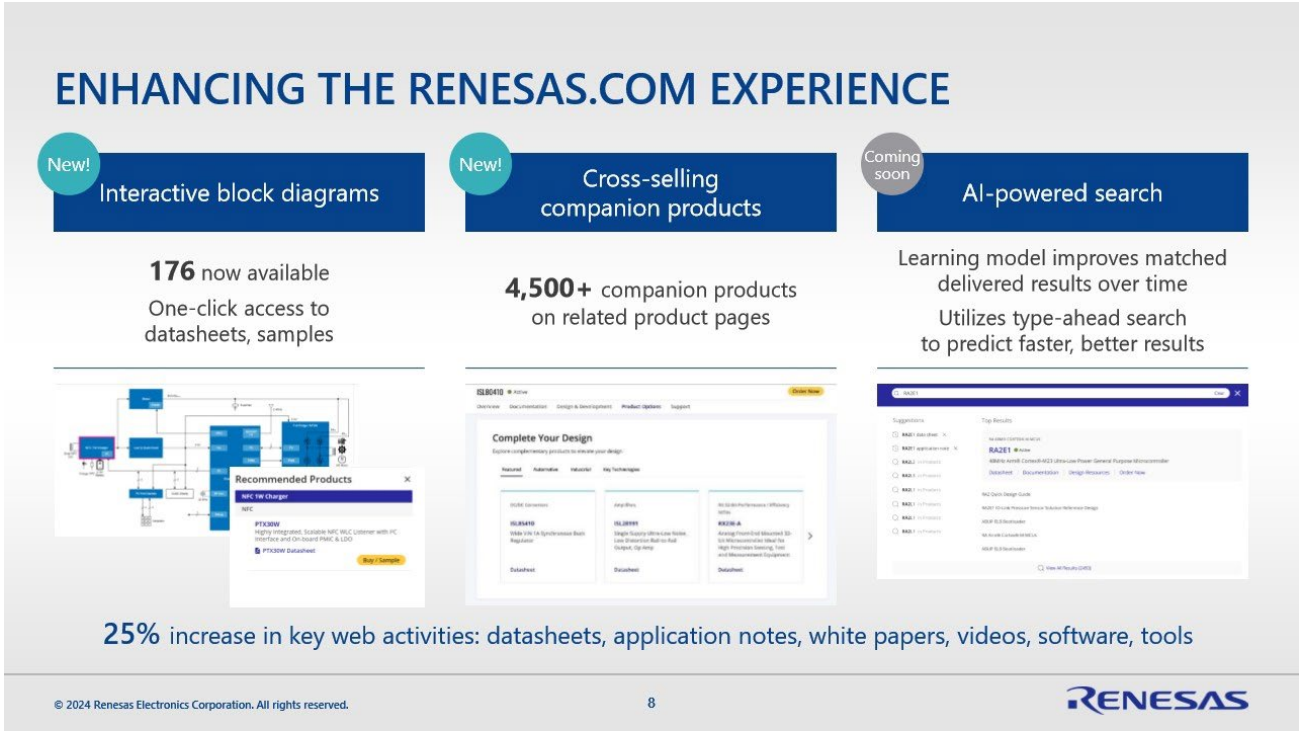


Now I would like to talk about the long-term vision from the market and segment perspective. First, at Renesas, at the top of the list, we expect to increase our overall market share by investing in our product portfolio and through our go-to-market strategy and execution. In Industry, Infrastructure, and IoT, we expect to expand our market share by leveraging IoT solution sales and attachments, expanding our product portfolio, and improving the user experience for our customers. This is true for both large customers and the mass market, both small and large.

In infrastructure, we continue to see significant opportunities to leverage our differentiated power and timing portfolio, strong relationships with CSPs, enterprise customers and suppliers, and our existing footprint to gain market share in data centers and AI.

In automotive, the design-in momentum is very strong, especially for R-Car SoCs for ADAS, and MCUs in the automotive control area, as well as Power Attach for system solutions. In addition, we expect significant growth in EVs over the next two to three years as we increase our investment in power discretes.

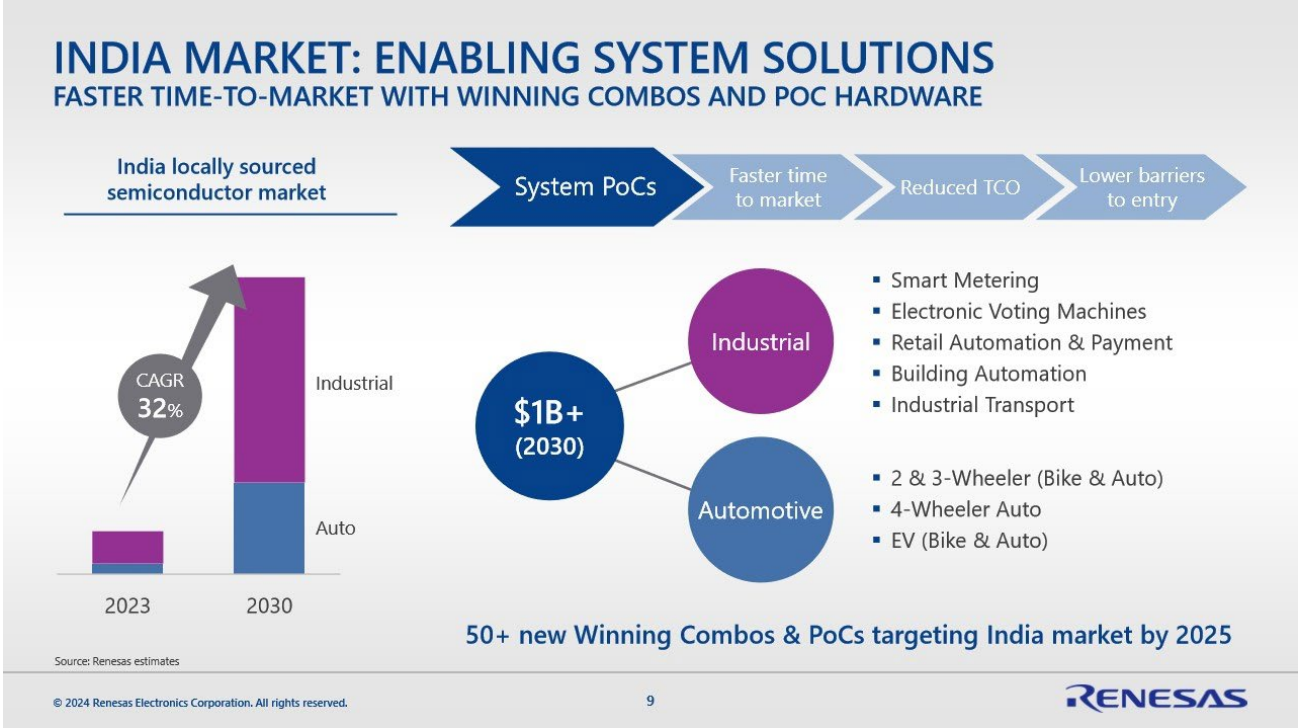
Overall, automotive is expected to perform in line with the market in the short term, but over the next few years, we expect growth to accelerate as our recent design-ins monetize as customers launch their programs.



Then the web and renesas.com are very important to the success of everything I have just described. The online experience remains a key pillar of our go-to-market strategy for all customers. The focus is on ease of use, with products that improve quick access to contents, navigation, and documentation, and that complement the approach taken when selling solutions.

At renesas.com, we have seen a 25% increase in down-funnel activity, users are staying on site longer, our content is perceived as more relevant, and we are taking the next step in device selection and design.

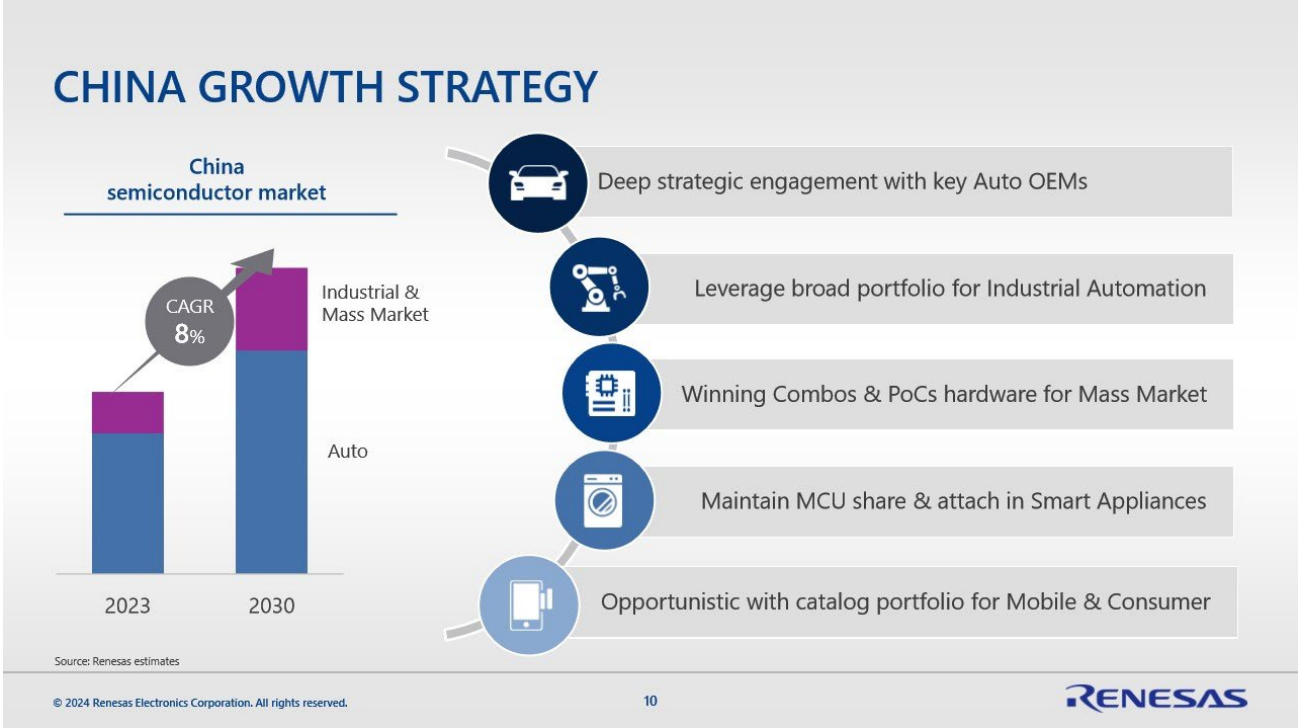
To further improve, we are currently investing in AI-powered search to enhance findability and customization to end-user behavior for a better experience.



Let me take a moment to talk about a few important regions. First, India. India is a very important region, as Mr. Shibata explained earlier. In addition to strategic local investments, some of which have already begun, this is an important market in terms of demand generation, especially in the automotive industry and for industrial equipment.

The Indian market has significant synergies with Renesas' portfolio and investment focus areas. Also, looking at the Indian market and customer base, we are seeing a growing number of small and medium-sized customers with limited design infrastructure and capabilities that are very well suited to our solution sales approach with our design, Winning Combo and System PoCs. We hope to assist these customers in reducing their R&D costs and time-to-market, thereby reducing barriers to market participation.

As Mr. Shibata explained earlier, we intend to leverage both our local Indian team and the support infrastructure of our global engineering team to focus specifically on Winning Combo and PoC tailored for the Indian market.



Finally, I would like to talk about our China strategy. Sales from Renesas' Chinese customers are relatively small but remain an important region. On the other hand, it goes without saying that competition is tough. In particular, there has been an increase in the number of local semiconductor suppliers.

Therefore, in order to succeed in the Chinese market, we will be very strategic and target each segment. Automotive is a fast-growing and competitive market, and we believe that by deepening our relationships and developing deep partnerships with selected Tier 1 vendors and OEMs, we can see, apply, support and grow their unique requirements firsthand.

In addition, we have a strong foothold in differentiated SoC and MCU products, which we can leverage to our advantage. Industrial and mass markets are also areas of interest. While not as large as other segments, we expect rapid growth over the next few years.

This sector is also a good target for our portfolio and solution sales approach, with Winning Combo and PoC that can differentiate and win with user experience.

In the field of smart home appliances, where we have a large market share, we expect fierce competition from local semiconductor vendors, especially in low-priced models targeting the local market. The strategy here is to defend the position by focusing on higher-priced and export-oriented models whose performance, supply, and quality are still highly valued by OEMs. This limits where local vendors can expand and push them back.

In addition, Renesas does not see mobile and consumer applications in China as a focus area. We are open to opportunities for existing catalogs and semi-custom products. With this segmentation strategy, we believe we can increase revenues in China and chart a course for success, despite the challenges we and others face in this market.

SUMMARY

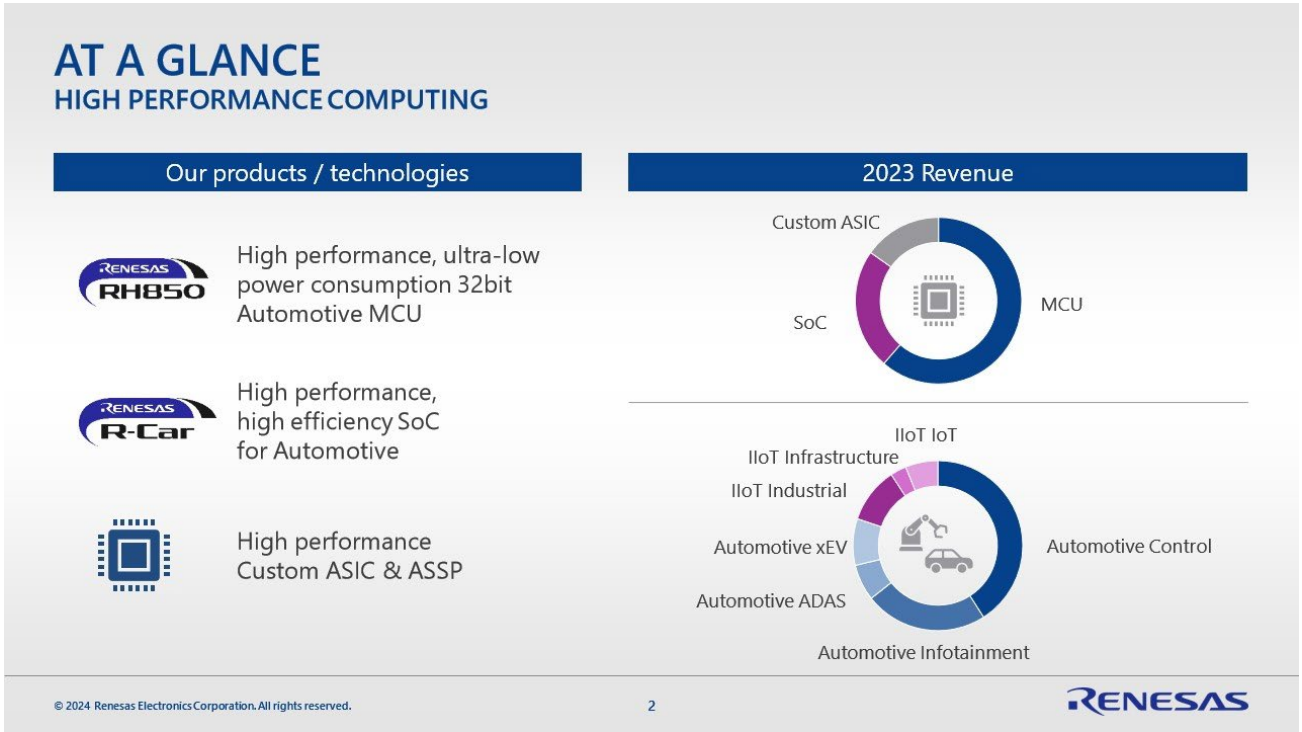
- Going Deeper & Broader with Solution Selling approach
- Progress in revenue diversification & design-in
- Market & regional strategy to accelerate growth to $20B

In summary, once again, Renesas Electronics is committed to expanding and diversifying its revenue more broadly and deeply through a solutions sales approach that sells a larger portfolio of products to a larger number of customers.

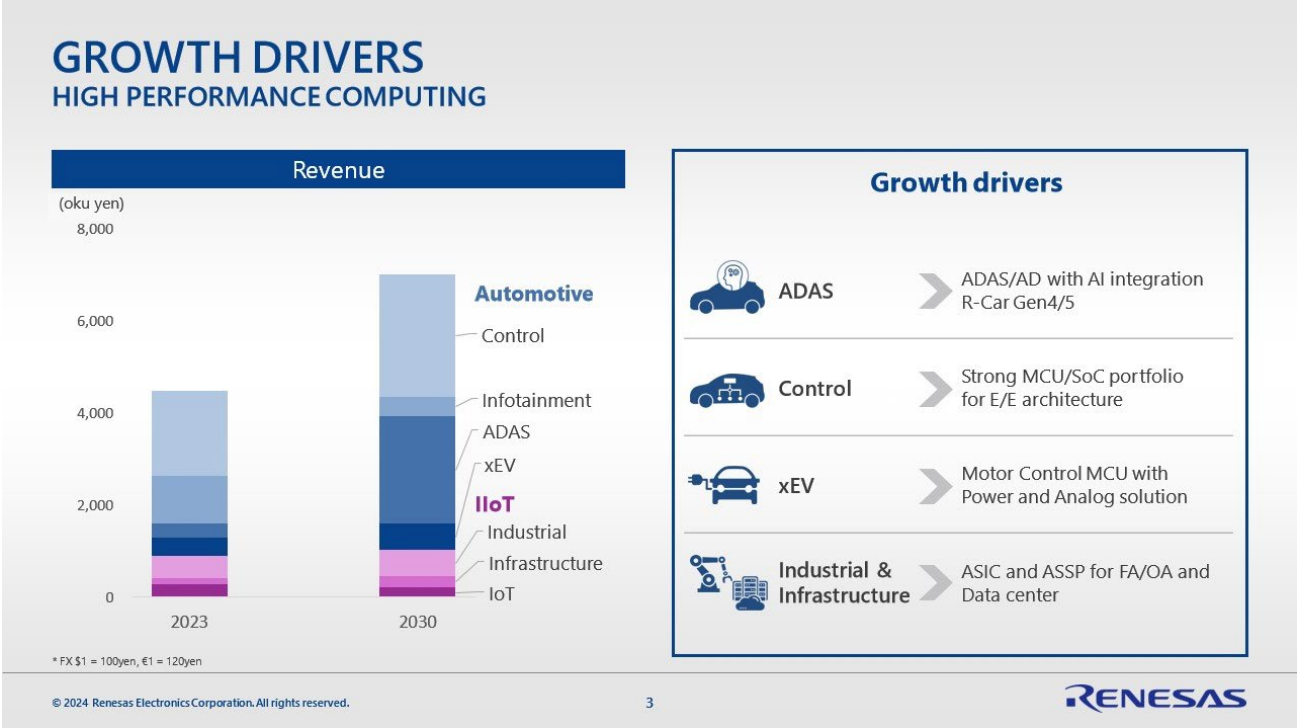
We are seeing signs of great success, including revenue growth in both e-commerce and reseller sales, and an increase in customers purchasing Renesas products across multiple product categories. We believe that the combination of momentum, a clear market-regional strategy, and strong execution is putting in place an excellent foundation for long-term sustainable earnings growth. Thank you very much.

Moderator: We will now hear from Vivek Bhan, Senior Vice President and General Manager of High Performance Computing. Vivek, please.

Bhan: Good morning, everyone. Hello. My name is Vivek Bhan. I am SVP and GM of the High Performance Computing Group. In my presentation, I would like to discuss some of the key aspects of our group strategy and the progress we have made in these areas.



First, I would like to take this opportunity to talk about our focus products. These products are focused on high-performance computing. MCUs and SoCs are developed for automotive compute. Then we also produce customized compute solutions for non-automotive applications. This includes industrial and factory automation. I believe we are in a unique position. In the automotive industry in particular, we believe we are unique because we have a product portfolio that supports both MCUs and SoCs.



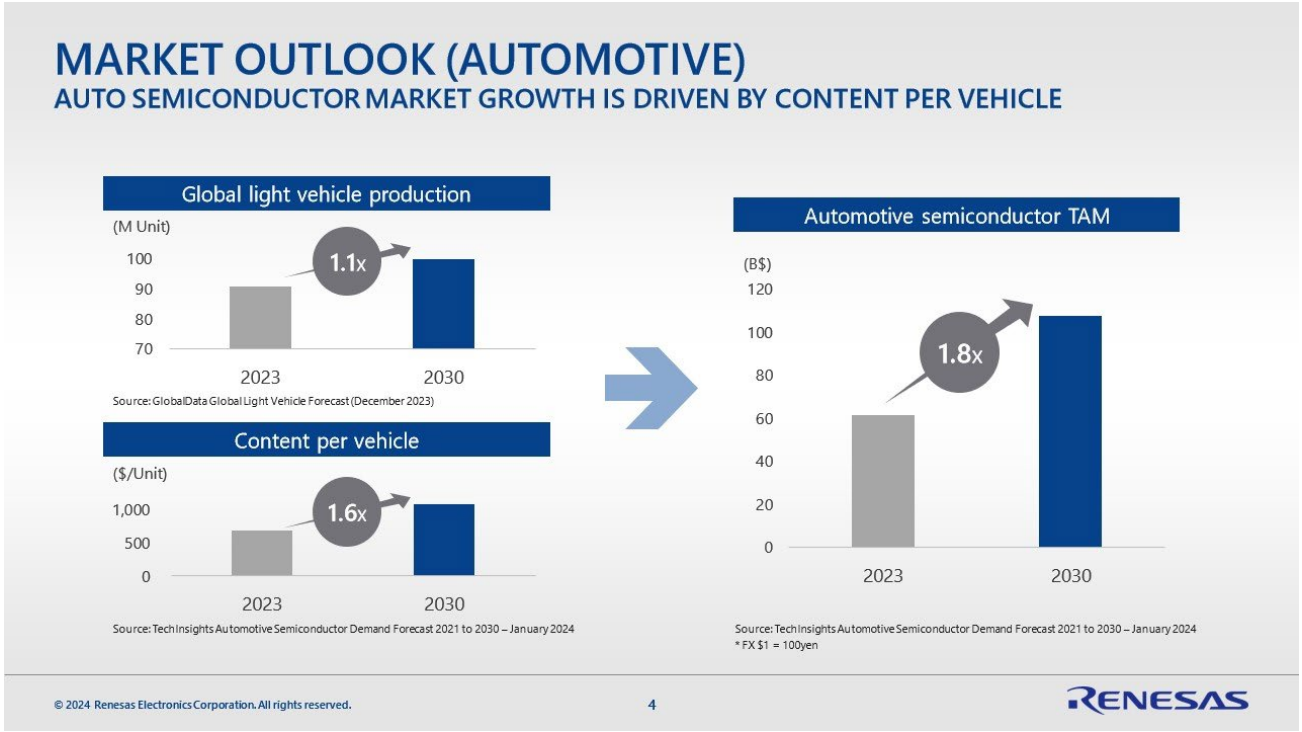
We are investing in growth areas within the market. ADAS, EVs, and industrial automation. Our goal is to expand in these areas. In ADAS, we have Gen4 and Gen5 product lines, which are scalable families of compute products, each with different degrees of AI integration. In control systems, we are expanding our e-Architecture portfolio. This includes domain zone control and both our RH850 and ARM -based architecture families.

In EV, we are able to provide more integrated solutions around MCUs. We are able to incorporate analog power for applications such as inverters, OBCs, on-board chargers, and the like.

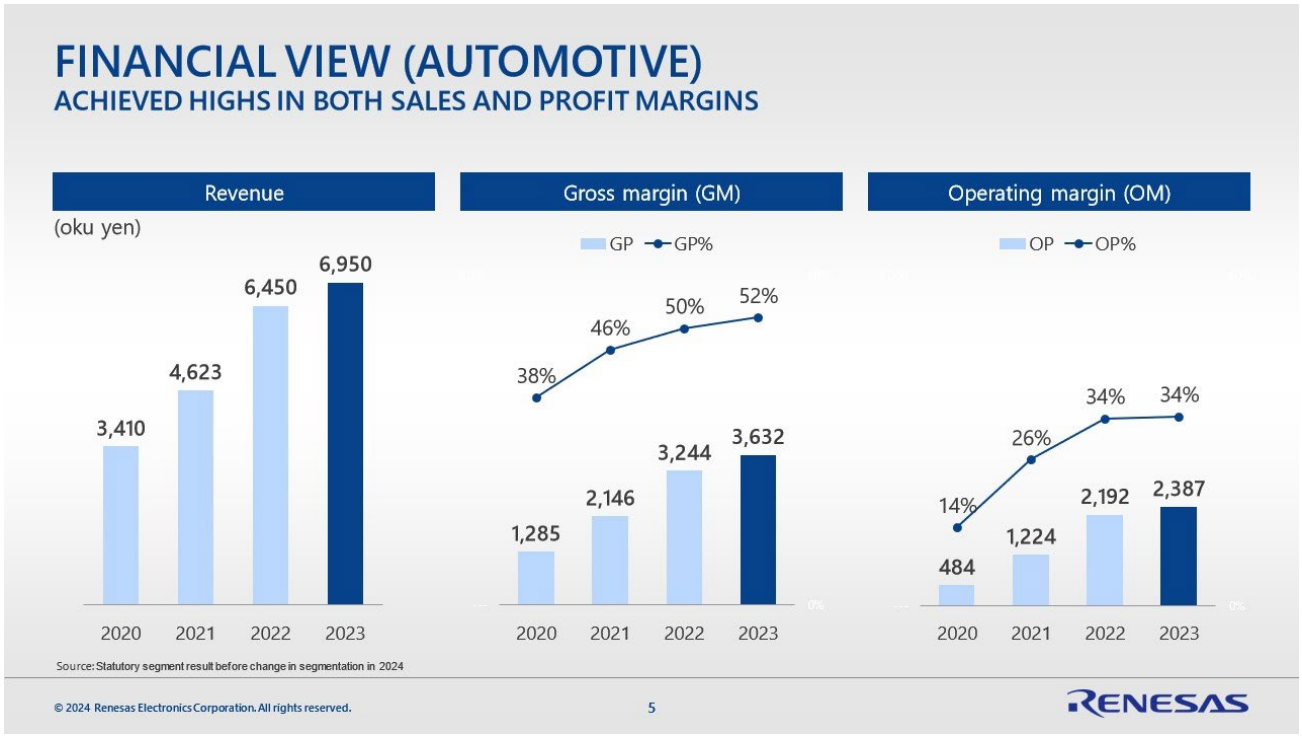
We also combine industrial networking and automation, compute solutions, and application-specific customization. This is our strategy for the future growth of high-performance computing.

In addition to what Mr. Shibata said earlier, you mentioned earlier that Renesas is losing its leading position in the market for MCUs for the automotive industry, and we are aware of this.

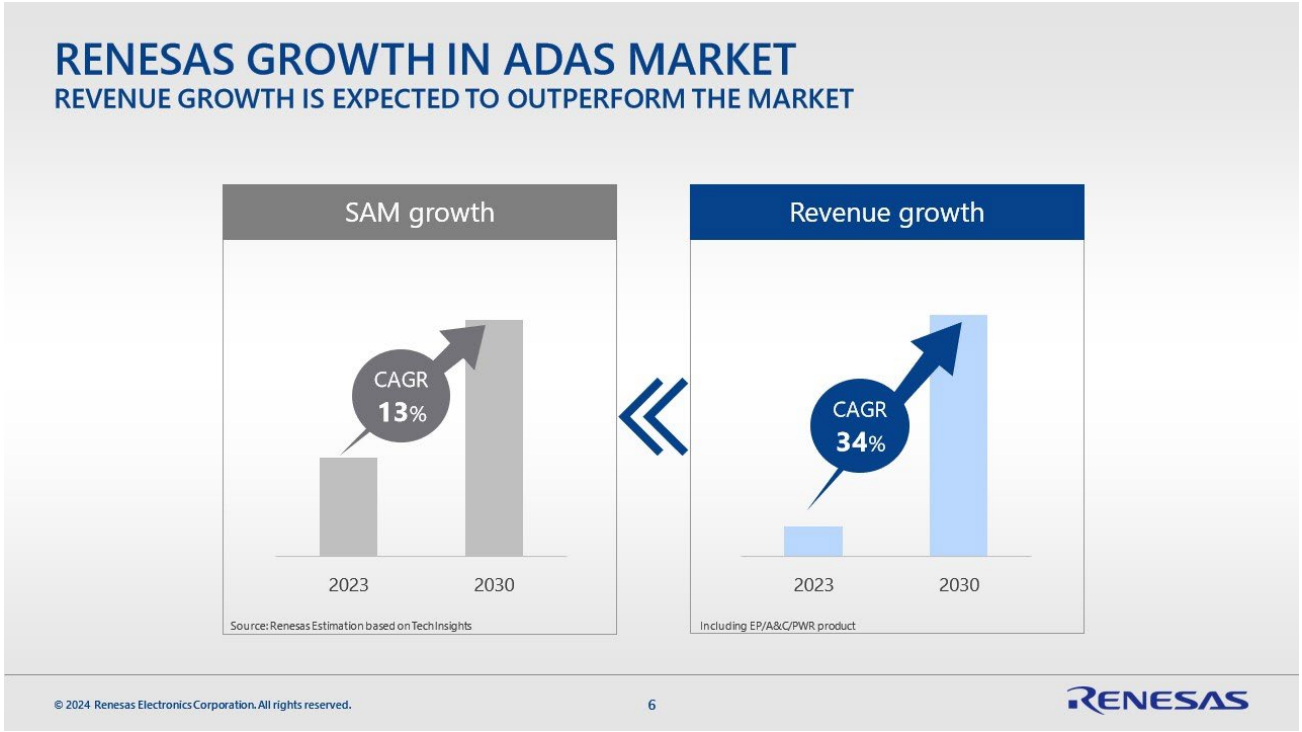
We have faced headwinds in maintaining our leadership position, but we have begun to take steps to address gaps in our product portfolio and are further advancing our R&D efforts. We are also taking steps to further expand our product offerings, especially those that fit the market fit.



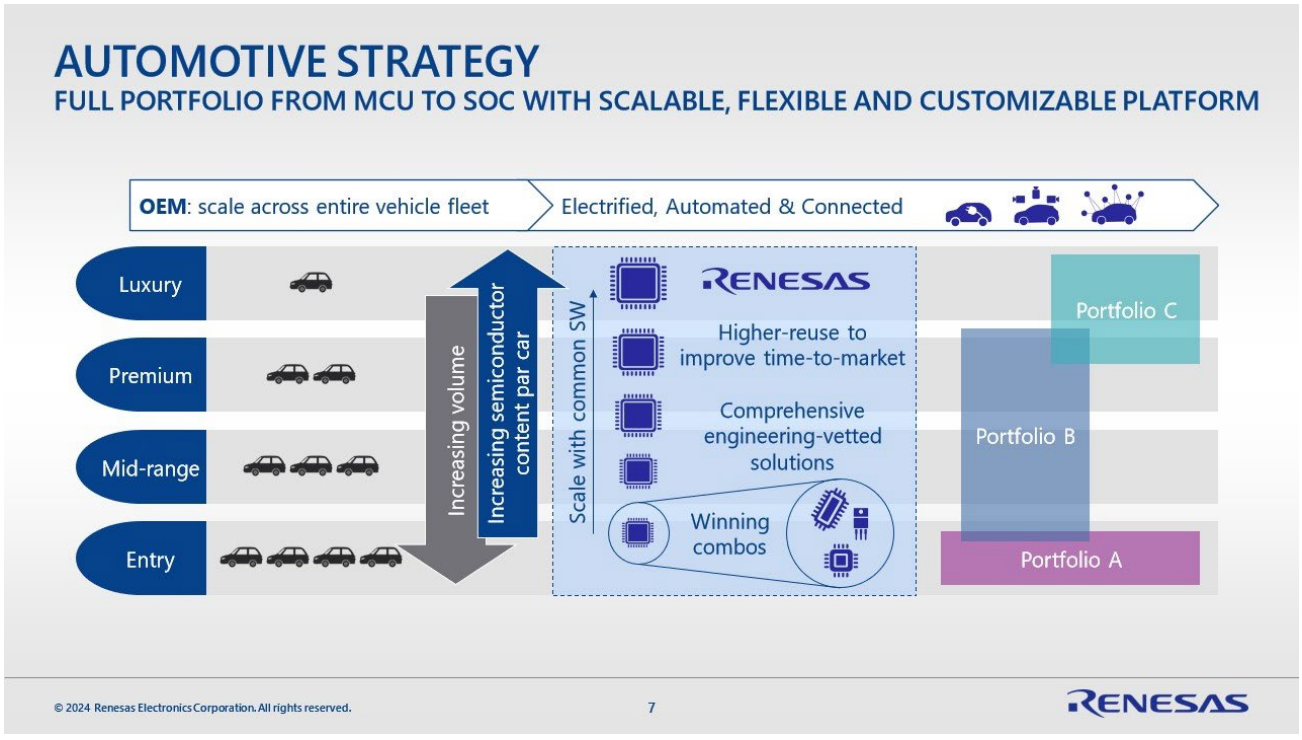
From a market perspective, our view of the automotive market is that global light-vehicle production will remain relatively stable. However, I believe that its automotive semiconductor TAM will grow. I say this because I believe that semiconductor content per unit will increase in the future. Furthermore, we believe that our market reach could be further deepened based on future industry trends.



This is the financial performance of our automotive segment, which includes high-performance computing and analog power, which has achieved the highest level of revenue and profitability.



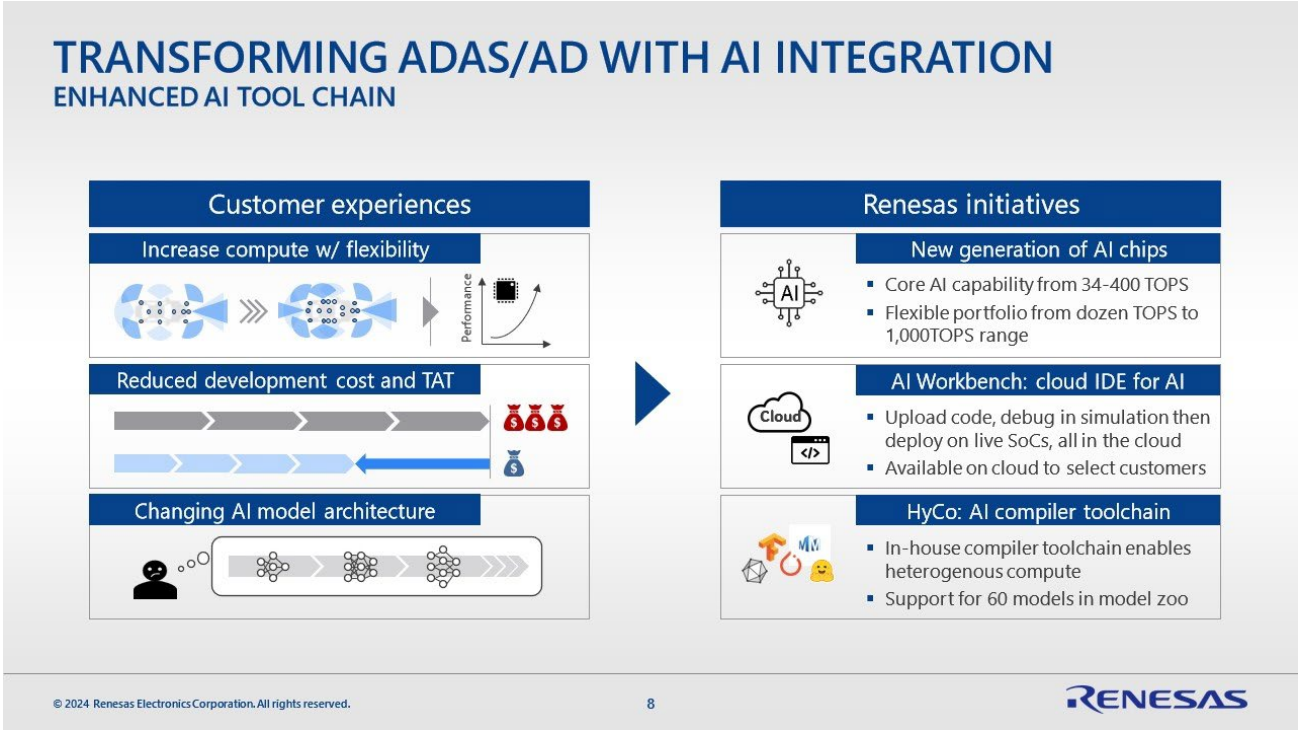
I would like to talk a little about ADAS here. ADAS occupies a very major area of our focus. We believe our revenue growth will exceed that market. With our scalable computer family and integrated system solutions, we expect to outpace the market. Renesas offers MCUs, sensors, analog, power management, software products, and system solutions at various levels of integration. We offer these things embedded as SoCs.



As you know, Renesas has a long track record in computing and safety products. Renesas has a full portfolio, covering all segments for automotive applications. Scalable and flexible solutions for all vehicle classes. Our solutions are also largely open-platformed. So it allows OEMs to take advantage of our compute solutions and add their own customized add-ons for unique differentiation.

We also have a comprehensive portfolio of state-of-the-art products, ranging from basic control systems to real-time applications and high-performance compute. We are able to do this because our MCU and SoC families are widely deployed in the market. This puts us in a very unique position.

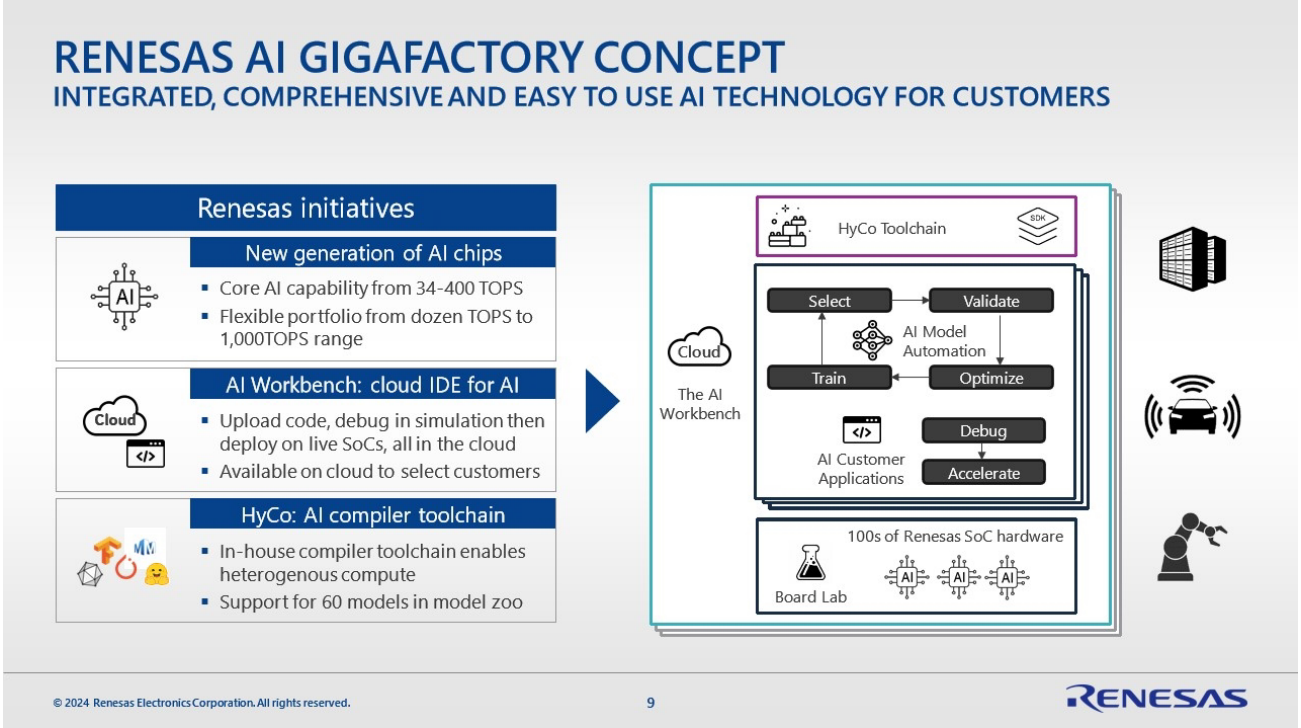
In addition, since we make microcomputers, SoCs, software, and tool chains the same, we are able to integrate them more efficiently and quickly, enabling our customers to reduce development costs and time. In this sense, we believe that we are able to demonstrate our uniqueness in this area as well.



As part of our automotive solutions, Mr. Shibata mentioned AI, and we are specifically expanding our AI tool chain and capabilities and additions to make it easier for our customers to adopt existing and emerging AI networks. This enables us to deploy ADAS/AD solutions in the market. So customers are aiming for greater flexibility and faster optimization agility for future AI networks and applications.

We have published our AI Workbench. This AI workbench enables an AI-type virtual software integrated design environment in the cloud. This allows customers to build workloads faster and also optimize their own additions.

Hybrid compilers have also been released. This allows for software reuse across multiple R-Car generations. On the other hand, it is also possible to increase utilization and performance on different hardware architectures. We are continuously deploying groundbreaking optimization experiences for your AI. This allows for faster product deployment.

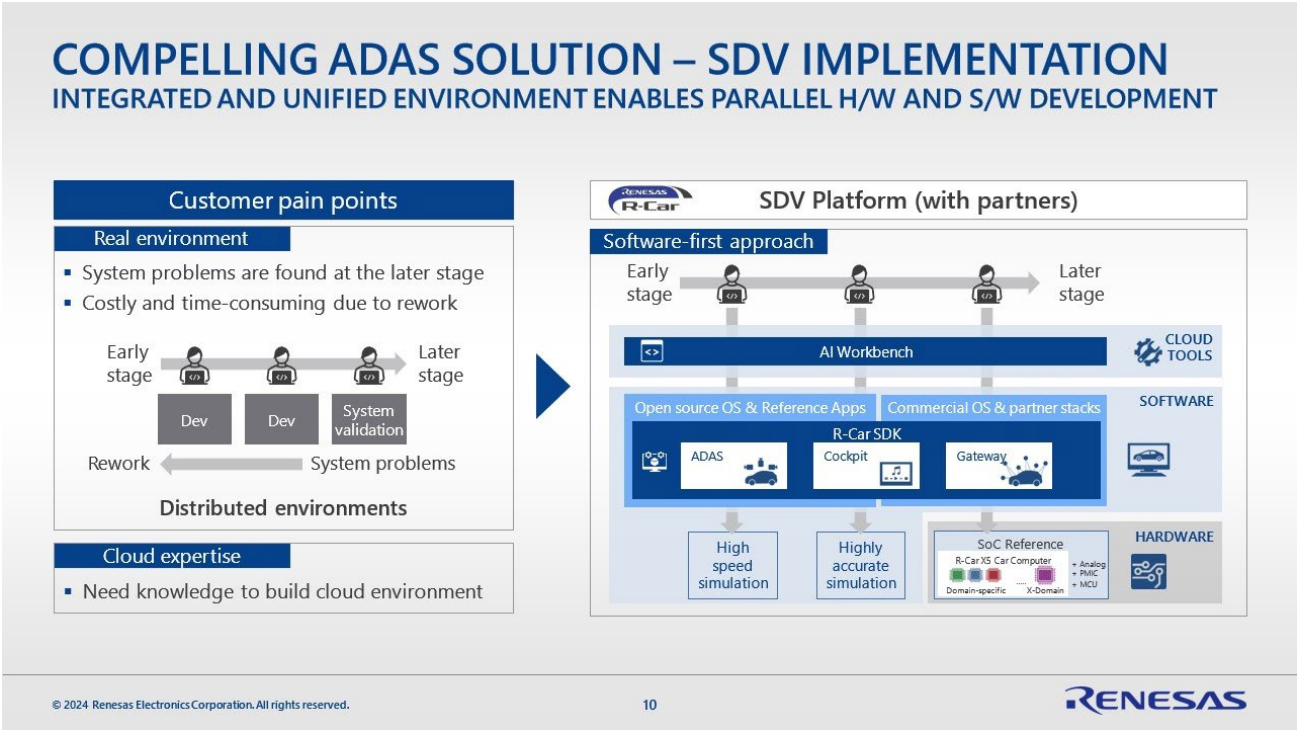


And as we continue with our vision, our vision of AI, the software-defined vehicle, this demand can and does close the loop of hardware and software solution development. This also allows us to create a better system.

Our vision will be to provide ready-to-use, scalable solutions in an integrated environment for our customers. This will be accessible from anywhere. While using Renesas tools, we allow access to our boards, reference designs. This is made possible in the cloud.

This allows us as customers to build a variety of AI-based models in a variety of factory-like environments. This integrated environment will enable many software developers to more quickly develop applications while using our products. This will include safety critical items. We will then provide our clients with an integrated, comprehensive, and easy-to-use technology framework.

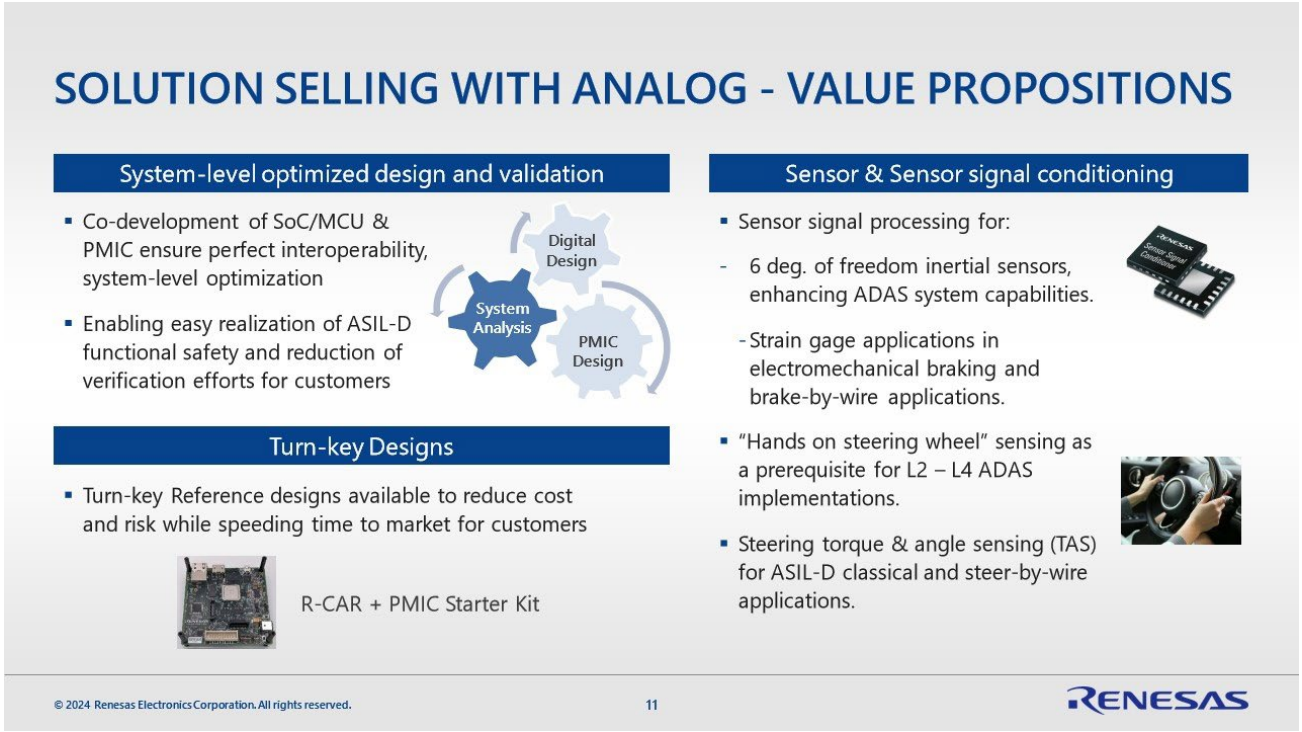
This will allow us to develop solutions for software-defined vehicles while using our hardware and software capabilities.



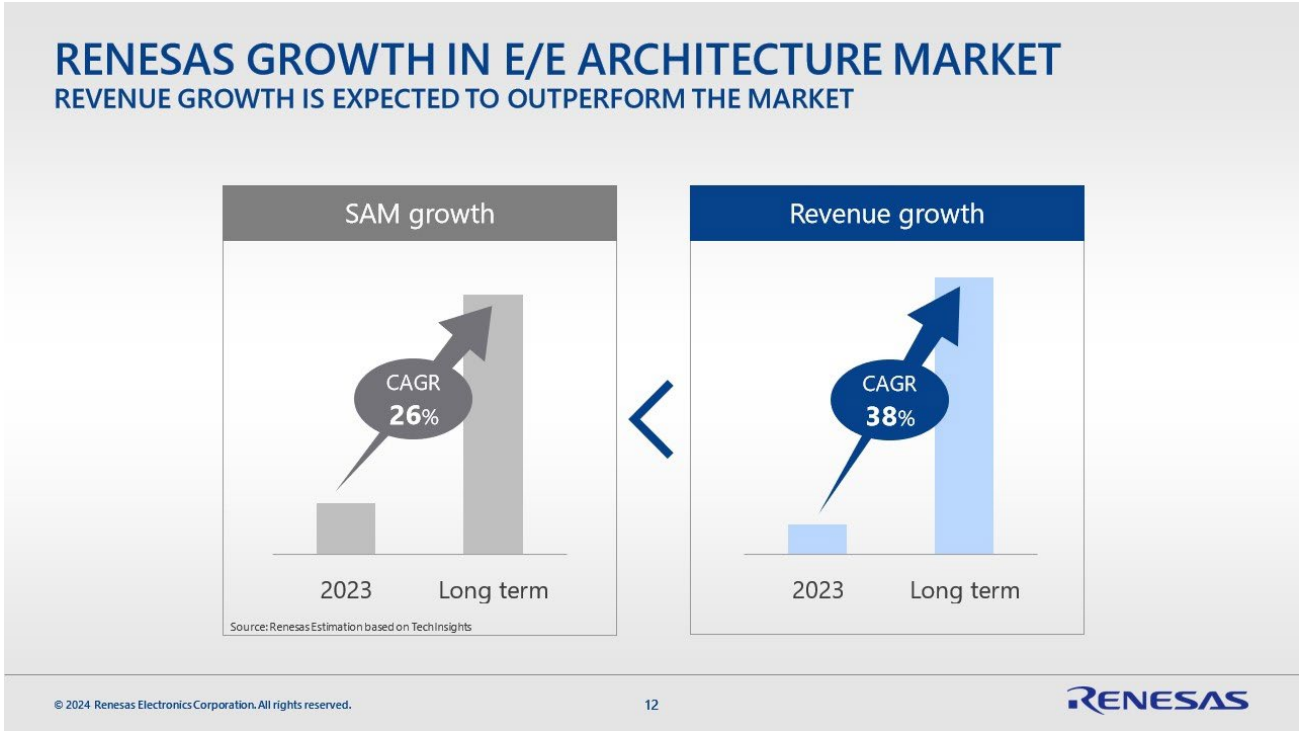
As you know, in the past, customers, and automotive OEMs, were the ones whose development cycles were more time consuming. So was the cost. This was due to the time required for software and hardware integration. And in many cases, the end result was a delay in finding problems with the system, and in so doing, unwanted trade-offs or further project delays.

To this end, Renesas will continue to invest firmly in software and hardware, while continuing to provide software and hardware that can be integrated more quickly and in a way that supports real use. As we continue to make this shift firmly, we are utilizing a framework that allows us to develop in one modern, integrated environment, i.e., hardware and software running side by side.

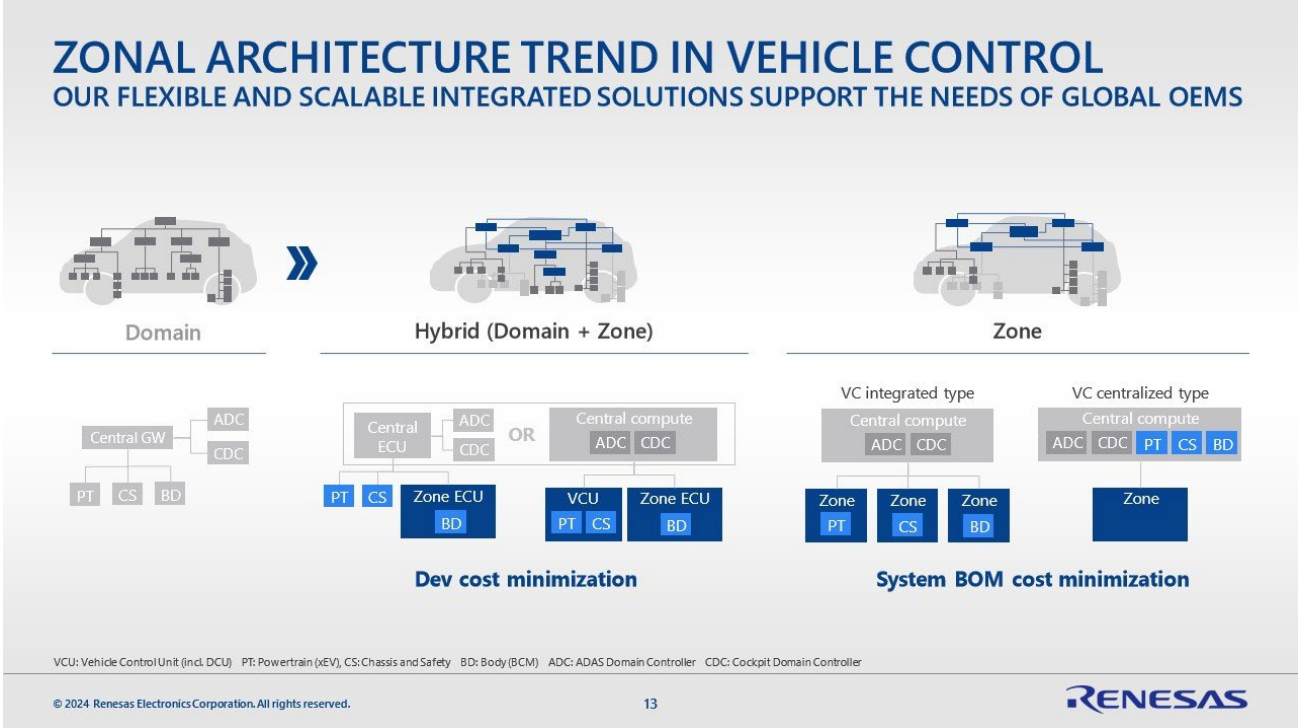
Our tools, and developments, allow us to accelerate SDV development, Time to Market, by OEMs using our computing products. The architecture of the SDK is open, and this allows OEMs to differentiate themselves. We are able to develop solutions for them while utilizing pre-integrated platforms that would enable our safety.



Bobby and then Mr. Shibata talked about how extensively we expand our portfolios. In the case of automobiles, we are also doing this from the perspective of ADAS, and we also offer a broad portfolio of digital computing and analog power. This allows Renesas to enter at the system level and at an early stage. We can provide a more integrated and verifiable solution, and we can deliver solid, optimized performance at the component and even system level.



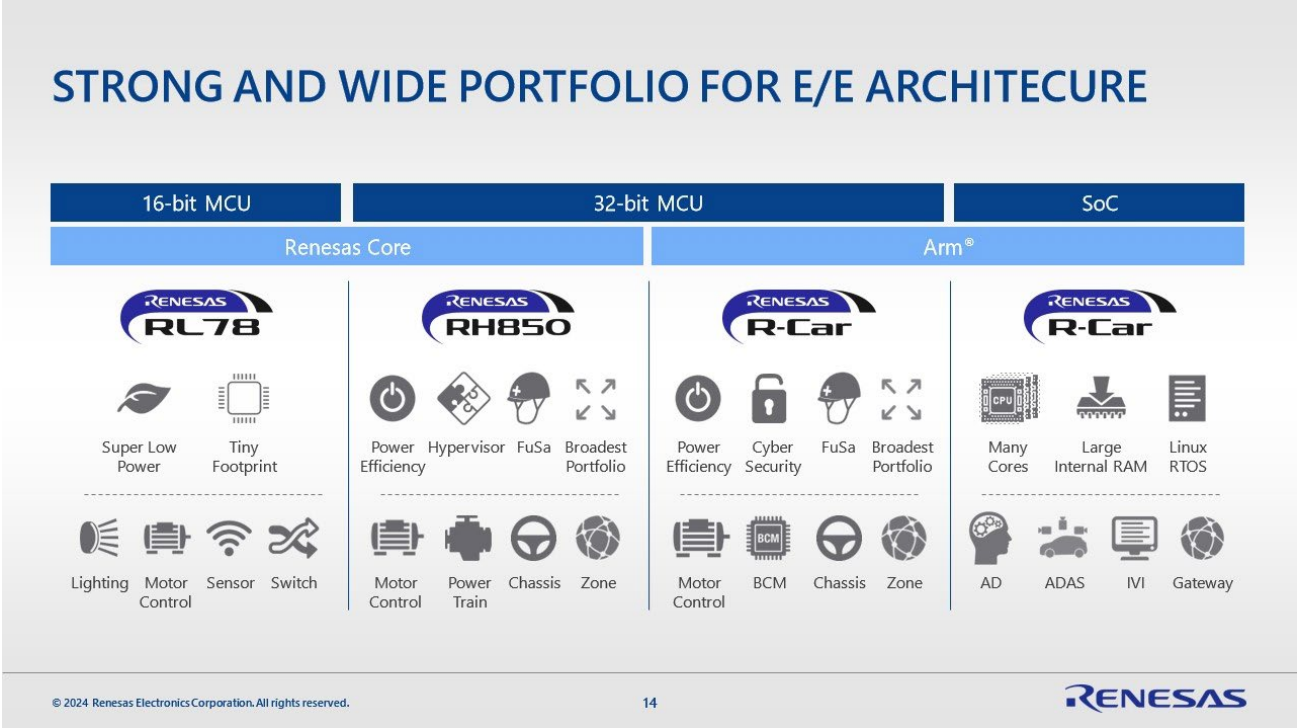
Now that we have talked a little bit about ADAS, I would like to take this opportunity to talk about the progress we have made and what we have been able to do under our E/E architecture strategy. With our products, and with the growing interest of our customers, I believe we will be able to grow our sales in a solid way and outperform the market. I believe this can be demonstrated well at the central compute zone and domain.



OEMs are utilizing zone hybrid architecture in these E/Es. It is then utilized according to centralized or distributed computing.

Renesas offers integrated solutions that are very flexible and scalable. This is something that allows for a variety of options depending on what level of integration is needed by the global OEM.

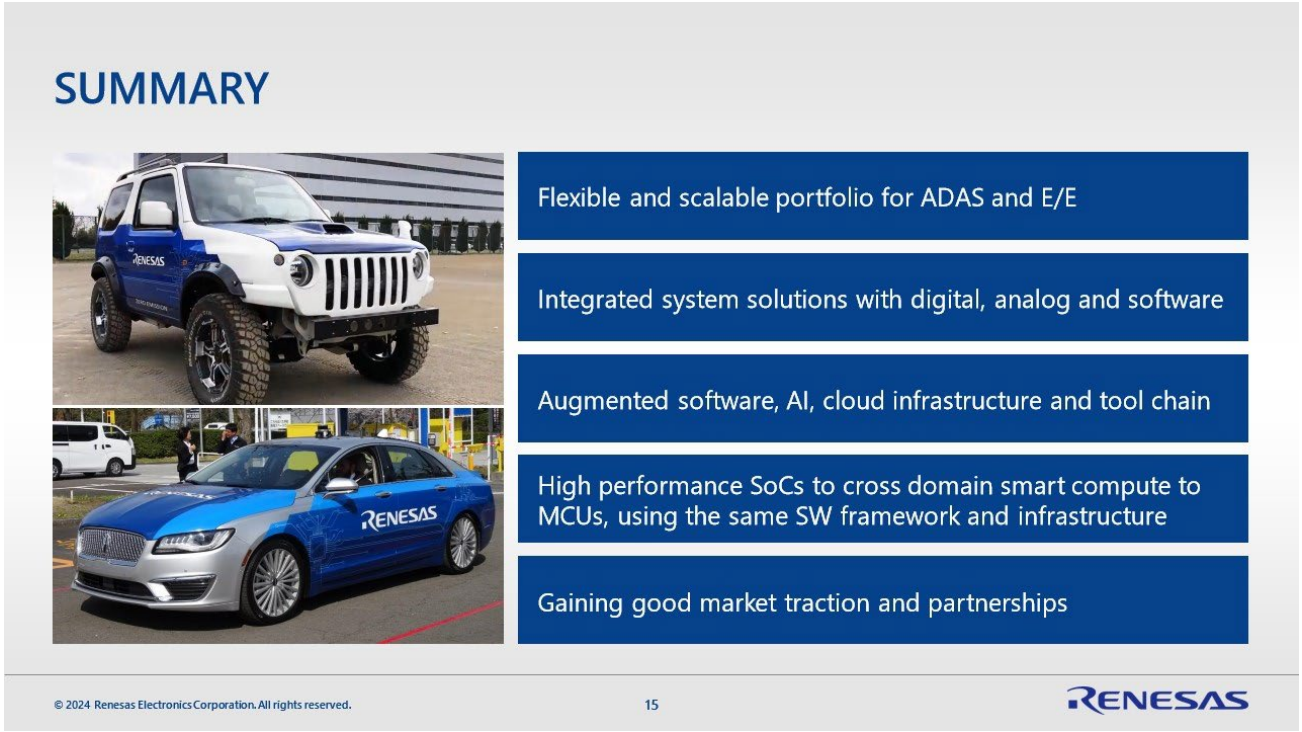
We are able to offer a variety of product ranges, for example, whether it is a domain, a hybrid, or a full zone solution. It provides real-time support and can even leverage its now existing software installation base on top of it.



In the area of computing, this means that Renesas offers a comprehensive range of products at the central and even zone level. We continue to offer 16-bit and 32-bit MCUs firmly considered as our mainstay.

And the MCU portfolio has recently been extended with an ARM-based 32-bit family. In addition, Renesas offers a solid and full range of SoCs for centralized computing.

We are also able to offer solutions for different levels of AI integration. In addition to that, we provide a reusable common software platform and its framework. We have a range of products to cover a variety of computing products ranging from MCUs, cross-domain, and fully integrated SoCs.



This is my last slide. The main focus of Renesas' attention is on the automotive sector. So we are really looking forward to increasing our product offerings here.

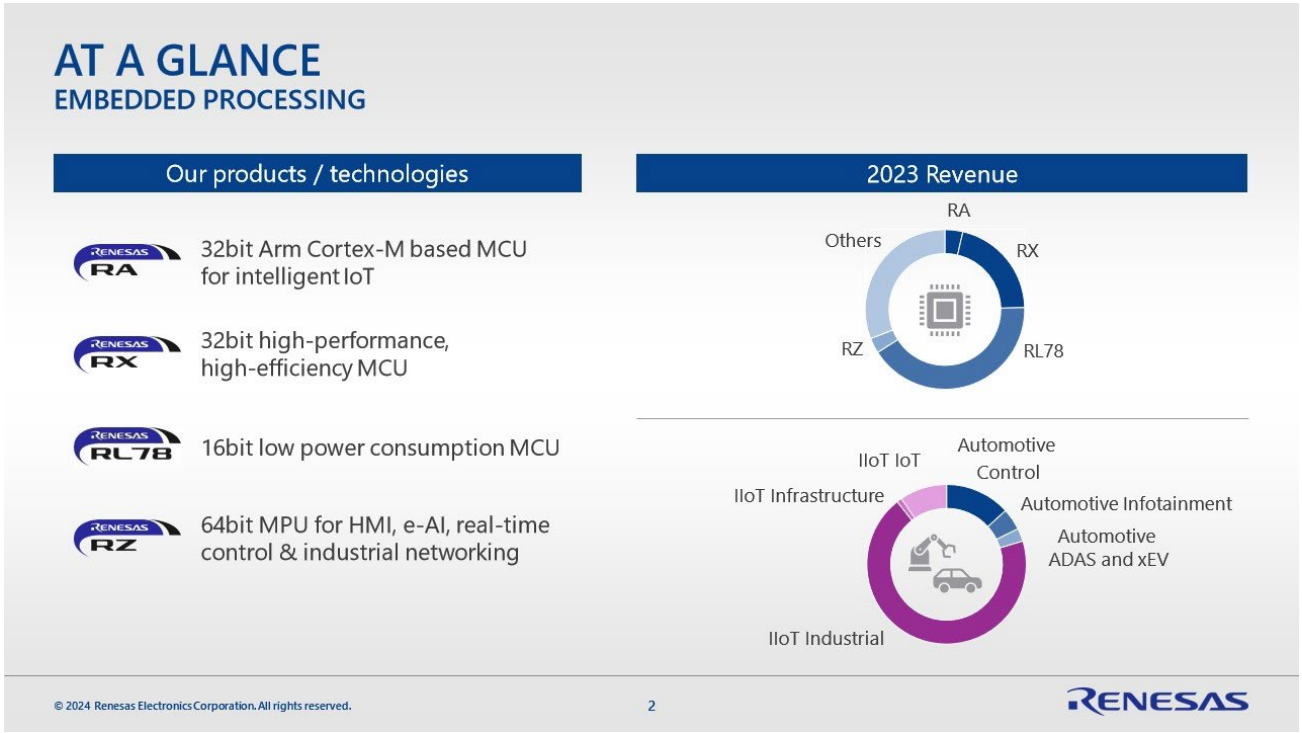
Renesas has a very flexible and scalable ADAS and E/E portfolio among them. Renesas also has a full system solution. With the power of digital, analog, and analog power products, as well as software, we have the ability to provide system solutions that integrate this. We are also increasing our offerings of augmented software. We provide AI, cloud infrastructure, and a tool chain for our clients to use.

And Renesas has a diverse portfolio, from high-performance SoCs to cross-domain computing to MCUs. This can be provided utilizing the same software frame and infrastructure.

This shows that we have a solid customer engagement, and as Bobby introduced the progress of D-in, we can see that we are getting a lot of attention from the market, and we would like to further expand our business in this way in the future. I would like to further expand our business in the future. That is all. Thank you very much.

Moderator: Next, Toshihiko Seki, Senior Vice President and General Manager of Embedded Processing, will give a presentation. Mr. Seki, please.

Seki: My name is Seki, and I am in charge of Embedded Processing. Thank you for your cooperation.



First, let me give you an overview of embedded processing.

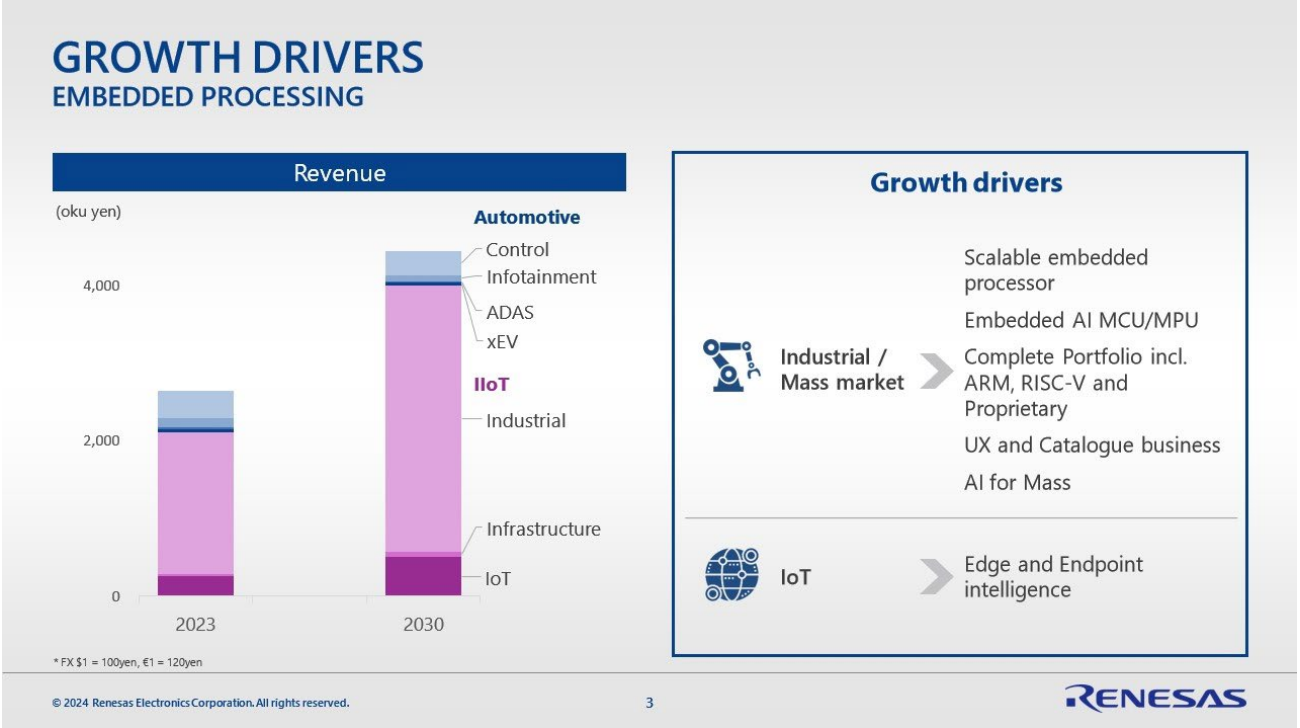
The product coverage of my division includes MCUs and MPUs. There are two main types of MCUs and MPUs. One is Renesas original cores, which is what Renesas has been doing for a long time. We have two original core product groups: the RX, which is based on 32-bit technology, and the RL78, which is based on 16-bit technology.

We released RA about five years ago, and since then we have been focusing on the Arm core-based RA MCU, a 32-bit MCU, and this time we are working on a 64-bit MPU called RZ. We used to have different teams working on these products, but we are integrating them into my team. with our own cores and then Arm cores. We are developing both our own core and Arm core-based products.

Looking at revenue for 2023, RX and RL78 products currently account for about two-thirds of total sales. This is a unique feature of my business, a product feature that has really long life and still has not reached peak sales for a product released 10 years ago.

Therefore, while the RX and RL78 are the mainstay of our sales at this time, our two recently released Arm core-based products, RA and RZ, are also steadily gaining traction, especially over the past few years. As I will explain separately later on the next slide, I believe that this is a key product group in terms of acquiring new customers and gaining market share. My team's target is to expand this area further toward 2030.

The main fields are the so-called mass market and industrial applications, which include appliances and other industrial applications.



As for sales, between about 2020 and 2023, we are doubling our sales about, as I think Bobby mentioned earlier. This has been supported by the RX and RL78 in the industrial field. By 2030, we expect the market to grow at a rate of 7 to 8%. Our target is to exceed this rate by 10% and double our sales by 2030.

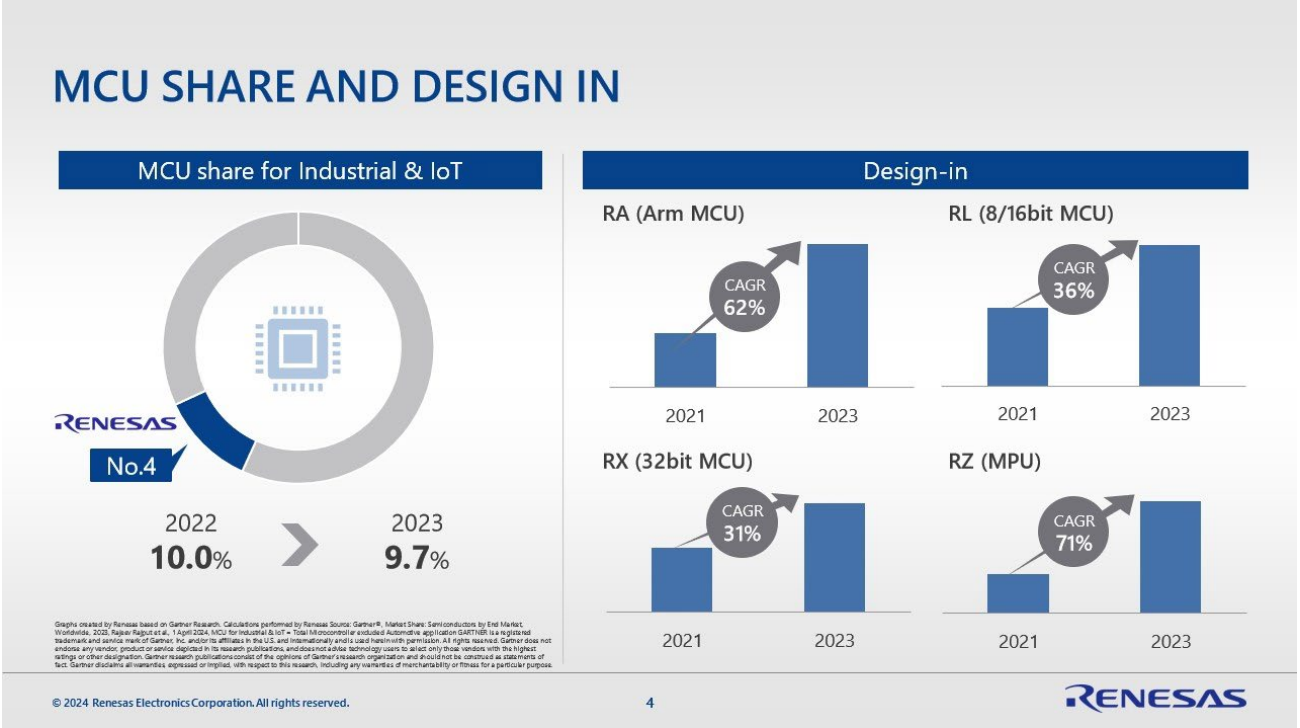
The basis for this will be a very broad segment, the industry segment, including the mass market. In the introduction of the new organization, the word catalog was also raised by my jurisdiction. On this side, we will continue to strengthen and optimize our portfolio so that our customers can find the best product they need from the range of products we offer.

In addition, scalability, which is future-proof, the point is that our product is really a product architecture that will be used for 10, 15, 20, or in some cases 30 years. Therefore, it is very important to provide support for the future in this sense and to guarantee upgradability. In this sense, we are committed to this scalability and will continue to strengthen our portfolio.

In addition, there is another thing that was mentioned in Buvna's explanation, and also in Bobby's explanation, which is UX. After all, we want our customers to feel comfortable and continue to use our products, and at the same time, we want them to use them as product solutions that provide a very easy-to-use development environment. I believe that our mission is to provide our customers with the flexibility to develop their own products, and to provide an environment that enables them to realize a time-to-market strategy.

We believe that focusing on these two areas, scalability and UX, will be the drivers of this increase in sales.

One last point. This is an RL78 16-bit, there is roughly a certain scale of business for the Automotive. The main focus will still be on the product line that was introduced by Vivek earlier, which will become the mainstream for Automotive. However, the low end of 16-bit is still being used, especially for body control applications. This one is still expected to be in 2030, and then we still expect to see some more demand for this 16-bit, so we expect to see solid sales on an ongoing basis.



Talking about market share, there was a little bit in Shibata's explanation and in Vivek's explanation, but if I just cut out my part, there is a slight impact of yen depreciation, but from 2022 to 2023, the market share will be almost flat. Somewhat unfortunately, it is down.

On the other hand, as Shibata mentioned in his presentation, when we look at design-in, we are seeing very strong and solid results. This is now 2023 and 2024, and the market environment is very difficult, but looking at these design-in figures, we are confident that we have achieved sufficient results for the future, especially in 2022 and 2023.

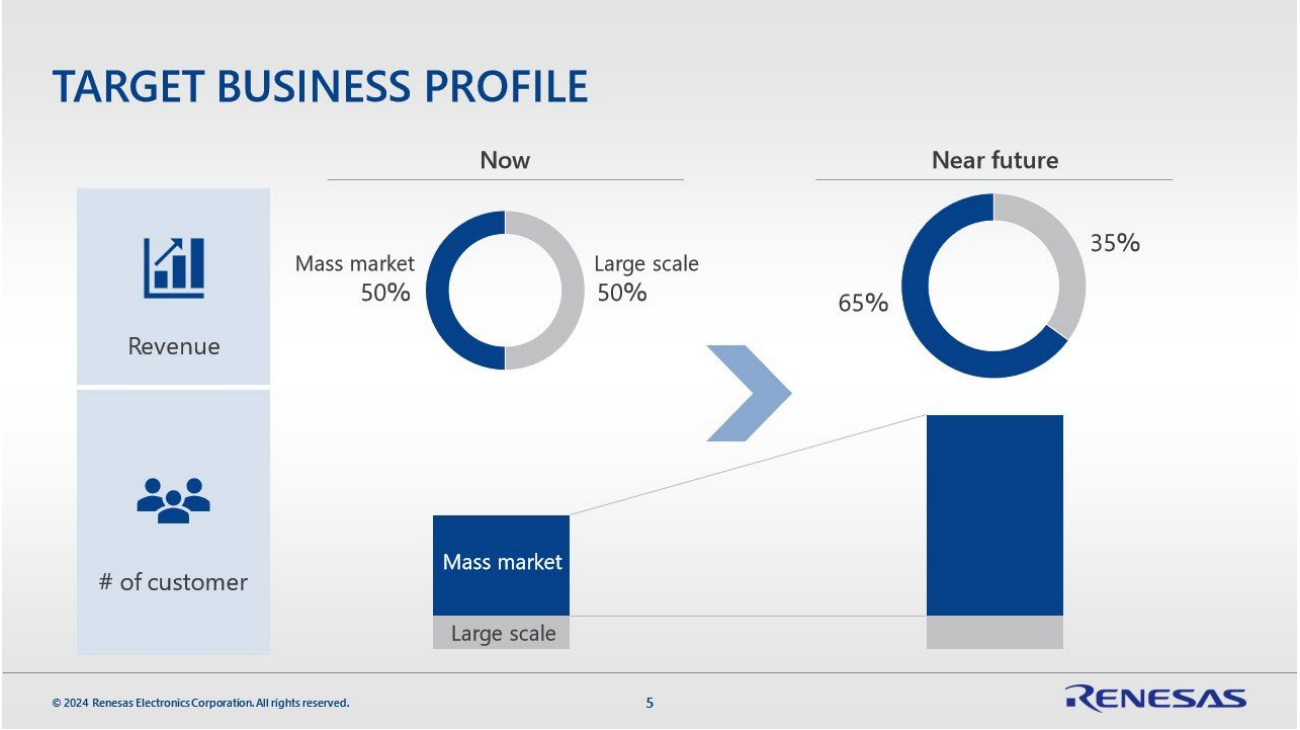
We will also continue to build on this momentum and work toward achieving our 2030-year goal, and then continue to strengthen our product and solution capabilities.

The RL78 and RX are also showing a strong design-in rate of over 30%. Compared to the usual 10% mentioned earlier, the design-in is very strong. One is our support capability. Especially around two years ago, when the market was in turmoil due to various supply shortages, Renesas' supply capability was highly appreciated. We appreciate the level of trust in this area and the confidence that our customers have placed in us, which has led to these strong design-in numbers.

On the other hand, as you will see, RA and RZ are experiencing very steep growth. Already in terms of scale, the design-in record is about the same size as the RX and RL78 that were mainstream earlier. Until this is converted into revenue, I think it will still take another three or four years, especially to build up, but there is no doubt that this will be the driver of our sales in the market.

It should be noted that the RL78 and RX families are mainly for customers who have been with us for a long time, while the RA and RZ Arm core products are basically for new customers, especially those who have been using other vendors' products. When they switch or start a new project, they find that Renesas' solutions are superior to those of other vendors, and this leads to design-ins.

We see this area as a seed of growth for our future. On an ongoing basis, we intend to follow up on this by supporting customers through to sales.



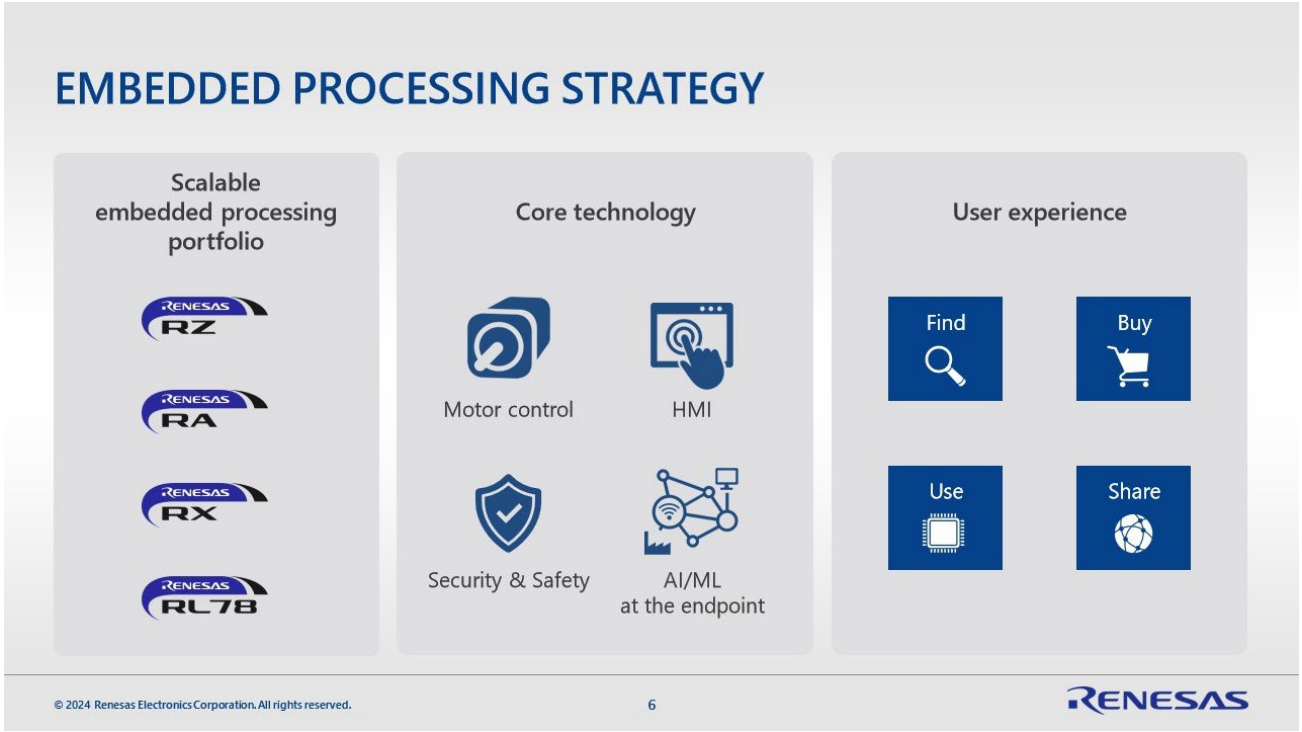
Bobby and Buvna explained the same thing, mass market, and the creation of a platform to do it. My business itself is, in a sense, the core of Renesas, and in essence, the key to Renesas as a whole is how to expand the customer base at my place.

At the same time, I also consider my division to be the one that must lead the profitability of the Company, and in this context, I have been working very hard over the past few years to improve our business and sales profiles.

As a result, at this point, we are no longer dependent on any one major customer in particular, and the ratio of mass-market customers and sales has already reached half of the current level. We believe that the key is to further increase this in the future, especially in increasing the number of customers.

The means to achieve this are digitalization and the tools to achieve it, as discussed in Buvna's explanation. And then, as Bobby explained, the key is to provide a kind of PoC for customers who need so-called support, and the core technology that will be the piece of that support.

Therefore, we would like to realize this near-future target in cooperation with the horizontal departments in this area.



This is how I have mapped out our strategy. Somewhat repetitive, but first, on the left side, these are the four product groups. Especially for RX and RL78, we have an existing customer base and community, so we believe it is important to develop a roadmap that meets the needs of these customers.

On the other hand, RA and RZ still have a great deal of room for growth. This is the driver of growth, as I mentioned earlier. As for RA, at the end of last year, we introduced RA8, which is the industry's first high-end product to be equipped with Arm's CM85 core. The product will be in a crossover role position among high-end products, standing between the MPU.

In addition, now we have the low end of RA last month, at the beginning of April. This means that in terms of price range, we are rolling out 32-bit Arm core products for the market that the 8-bit, 16-bit and RL78 has supported. This covers a very broad RA coverage, from low end to high end.

In addition, the key to this portfolio is the continued enhancement of the RZ 64-bit MPU, which is positioned above it.

We have identified four core technologies that should be sharply focused on in the functions of a microcontroller. We believe that this is the core technology that will lead to the PoC and Winning Combo that we are working on in sales and will make our solutions more competitive against the competition.

Specifically, motor control and human-machine interfaces around the edge, which have been the main application for MCUs and MPUs. For example, touch, images, video, and audio. We will continue to invest in these two areas as we have done in the past, and we will also work with various partners to improve usability and strengthen our support and proposal capabilities in this area.

Then there is AI, machine learning, just about everywhere now. I will explain the proposal for this area, and how to provide this widely, in the slides that follow.

As the IoT and AIoT, with the addition of AI, penetrate further into the market, customers and the market are paying more attention and concern to security and functional maintenance. I would like to propose this as a technology that is sufficient for us as well.

In addition, there is UX. Specifically, we believe that the four elements of UX are important: finding the product, buying it, using it, and sharing the experience in various open communities. I would like to talk about the UX part and AI, which I mentioned briefly earlier, in the slides that follow.

In particular, we have been working hard on UX, and over the past few years, we have been putting a lot of effort into improving these two areas, Buy and use, in particular.

In the buy section, we have received feedback that the availability of samples of our products, in particular, is not very good. We have therefore reorganized our system to include free samples, free of charge, and our main catalog distributors, Mouser, Digi-Key, and Farnell, and have organized our sample assortment. We have also built a system that allows customers to find what they want and have it delivered within 48 hours or 72 hours when they want to try out the development, while maintaining a good inventory. Of course, there were some inconveniences caused during the supply shortage, but we now have enough of this in our lineup.

In addition, we have received positive feedback from our customers for our Die bank and multi-layered production lines in terms of actual mass production support. This is a system that allows us to respond to customers' needs with flexible lead times and short delivery times.

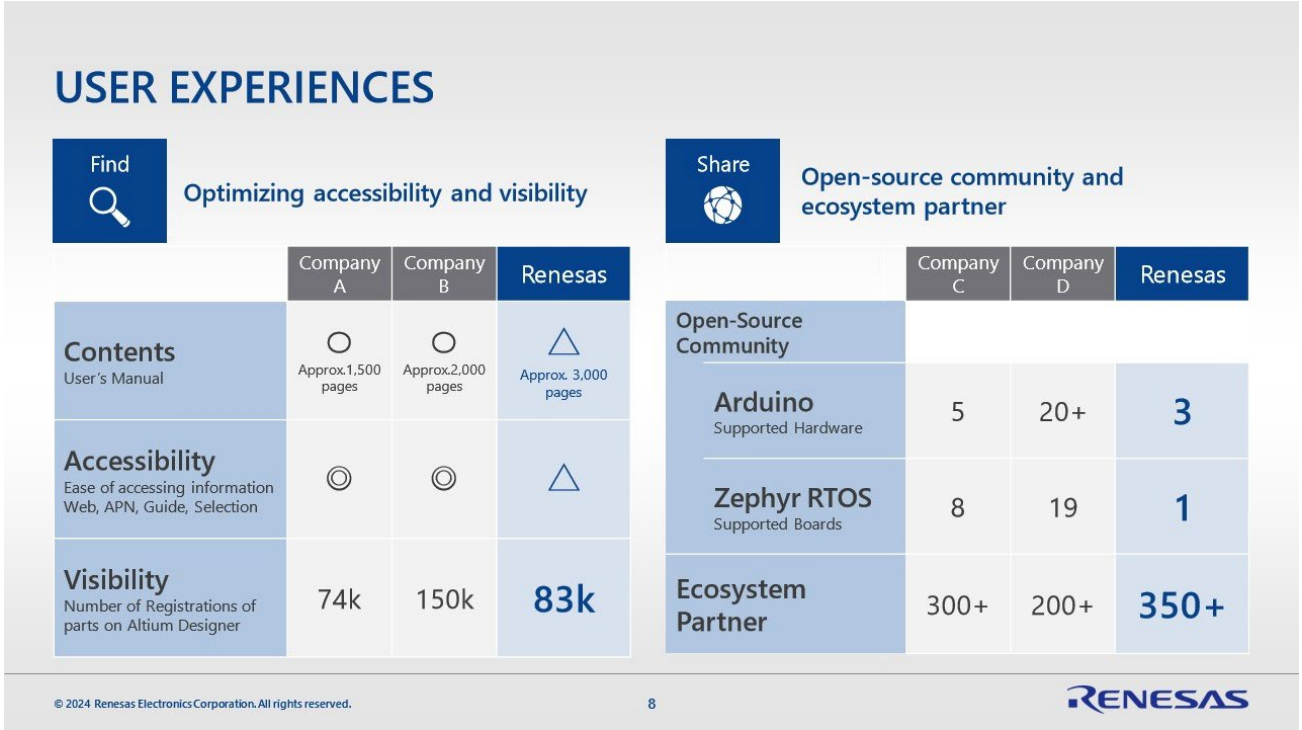
Fortunately, we have not had many production problems due to the multiple lines, but we do not know what will happen in the future. Then there were the various geopolitical problems, and the tariffs, which were discussed yesterday, the day before yesterday. In this situation, I think it is very important to have multiple lines of operation in order to respond to customers' requests for products made by any company or for backups in case of emergencies.

I believe that we have been able to demonstrate this to our customers over the past several years, and we will continue to strengthen this area in order to build a system that allows customers to use and buy our products with peace of mind.

The use section is the main part of this UX. We have created design guides and application notes that can be used for actual development and tooling based on the FSP software platform. We have also enhanced the

tools for adjusting the developed products, as well as video content that provides online training on various information.

So, although there is no end in sight for these two, I believe that we have begun to achieve a certain amount of success within the past few years.



On the other hand, I believe there is still room for improvement in the find and share areas.

First of all, regarding the find section, we are often told that there is a lot of documentation, but that it is difficult to find information. In particular, we are first targeting the documentation area, in this case, the hardware manuals. Currently, a single manual is roughly over 3,000 pages, but we would like to organize this a bit more and change it into a form that is easier to read.

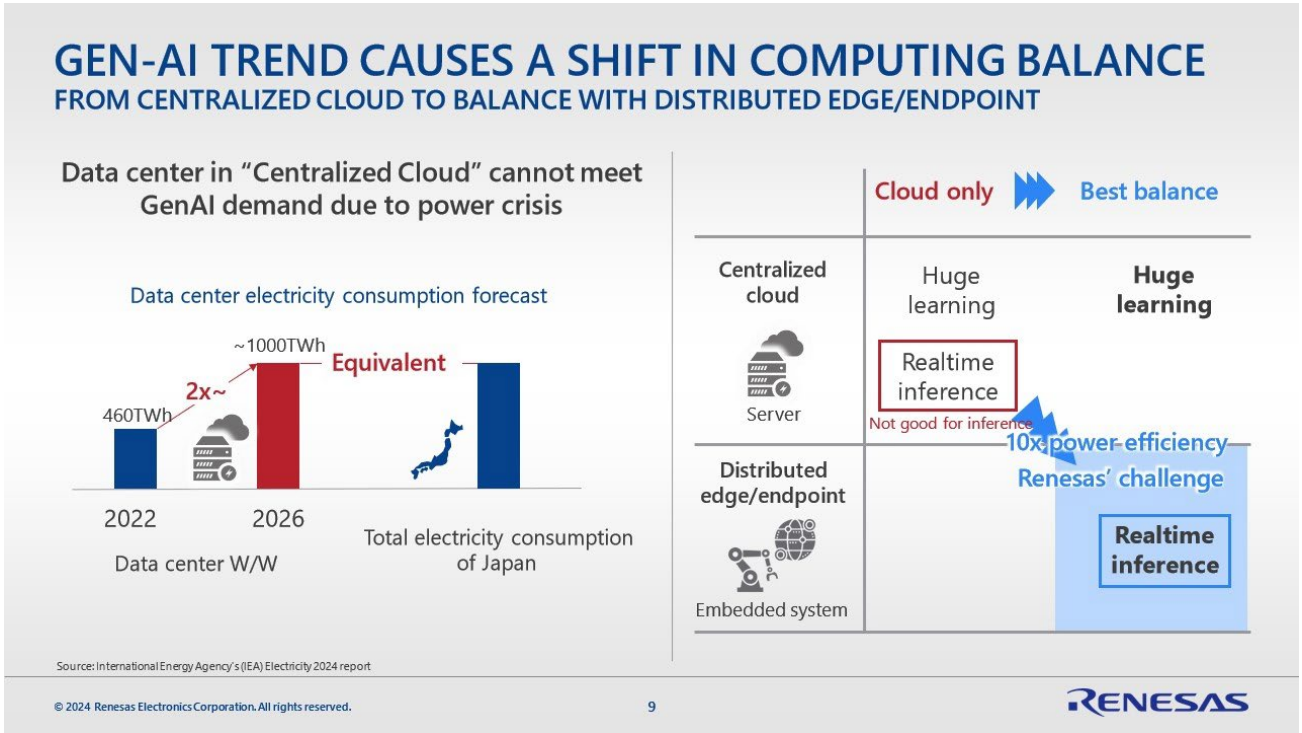
In addition, as Bobby mentioned earlier about AI-based search, I believe that AI is getting to the point where it can be quite useful. Within the next few years, we would like to make more and more use of AI to achieve things like smart search and AI search and provide an environment where customers can easily get to the information they want.

In terms of the share section, there are also factors of our core business, and I regret that we have been working in a very closed environment without paying much attention to the past. The main reason for adopting the Arm core was to leverage the ecosystem in an open manner. So, as we further strengthen RA and RZ, which are this current growth driver, I would like to do so with this share part in mind.

Specifically, we have been trying to increase the number of our partners first, especially after launching the RA for the past several years. We are now working with more than 350 partners, as many as any other companies. In the future, we would like to further improve the quality of these partners and provide more robust solutions, and since each partner has its own regional characteristics and specialties, we would like to focus on developing our services in a way that allows us to specialize in those areas.

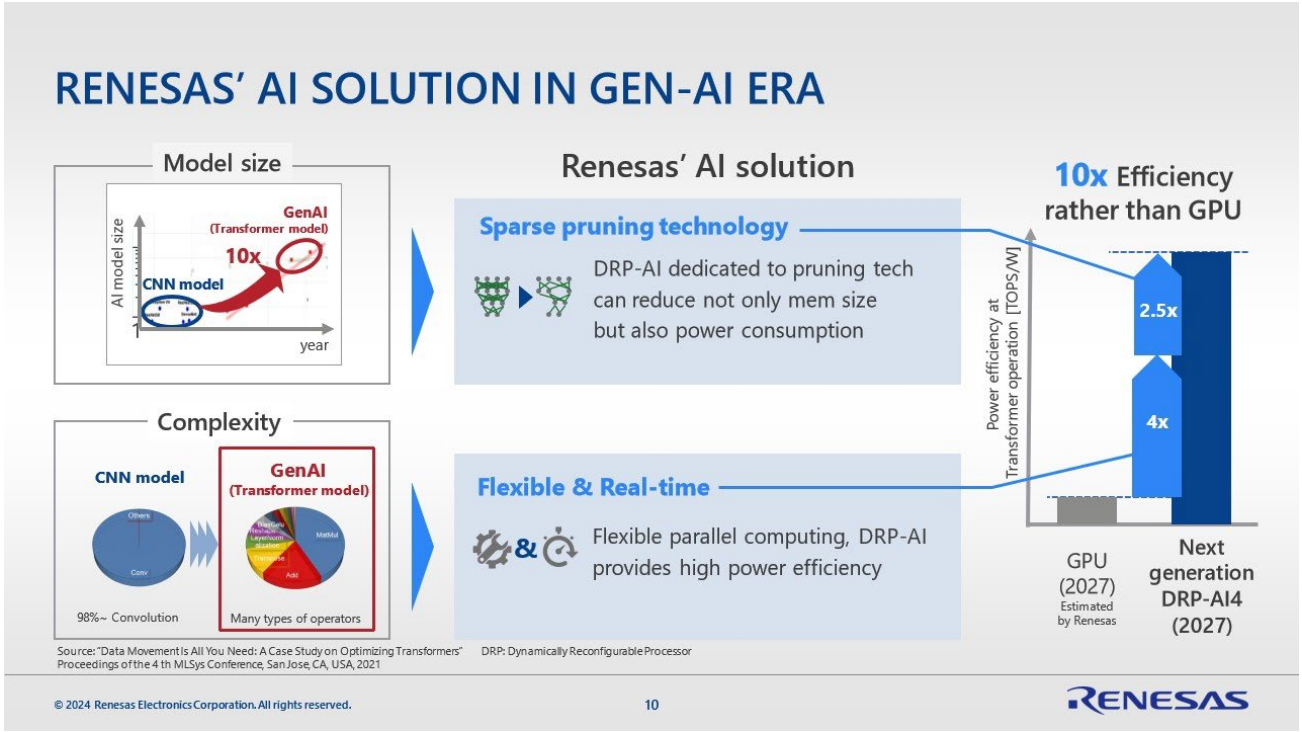
In addition, we have been working with Arduino since last year on various open source projects, and we are also working on the Zephyr OS, which is very popular these days, and we would like to install it on top of the current RA and RZ.

We utilize GitHub as a repository for our software, but the number of repositories is limited, partly because we have only been doing this for a short period of time. We would like to further expand and strengthen our efforts to provide an environment in which customers can obtain a variety of information from various sources when they want it.



Next is regarding AI. This has already been discussed here and there, so I will talk about it briefly. Right now, especially as generative AI becomes very popular, the load on data centers is becoming very large. One theory is that within a few years, the power and electricity consumption required by data centers will be almost equal to the total consumption in Japan.

So, we are not alone in this, but companies are beginning to consider whether they can bring this endpoint to the edge. We believe that the key is how well we can divide the labor between the cloud side and the server side to increase efficiency.



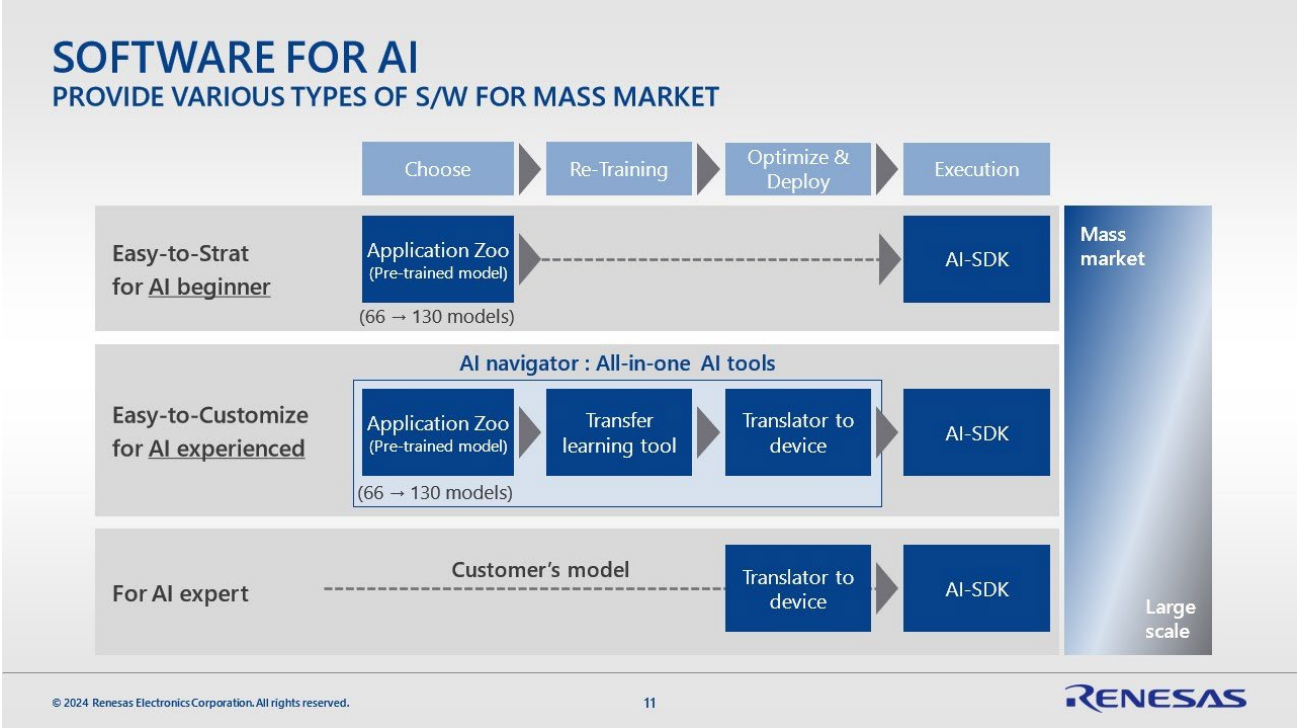
As a key to this, I would like to pick up and talk about DRP-AI among the AI solutions we have.

One of these is pruning. It is what we call pruning the branches, but in essence, it is the technology of selecting the necessary information, the core information. Then DRP, very collectible, can be configured.

In fact, as more generative AI develops, as it becomes more multitasking and parallel processing, we believe this is a very effective way to flexibly handle this while moving our core.

As a result, in terms of power efficiency, we believe that this technology will be able to do the same thing with about one-tenth the power of a conventional GPU. Of course, there are areas where we are not good at.

However, if we limit ourselves to endpoints and the edge, these power efficient proposals and solutions are very important. We believe that this will be a key technology in the realization of this kind of technology at the endpoints by increasing power efficiency, given the limited mounting area and limited cost of heat treatment.



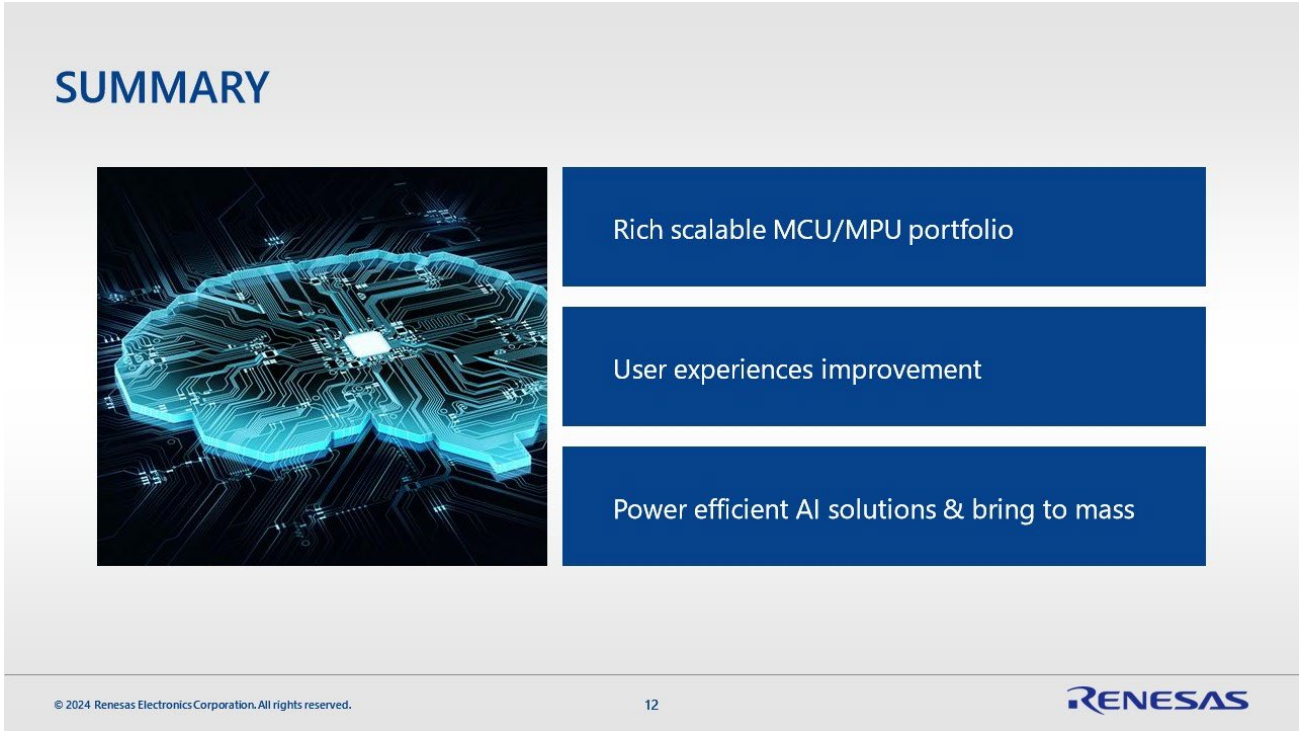
What is even more important is how to expand our AI technology to various customers. On the left side, we have divided the customers into three categories: beginners, those who have a little bit of experience, and those who are very proficient in the use of the system.

The middle one is a good example, so let me explain the middle one. First of all, we will provide customer with a learned model, which we call Application Zoo, along with various use cases. The customer would use this, plus relearn it in light of their own data. We will translate and implement the data and models that come out of the relearning process into our actual products with AI navigator, which is written here.

For those who don't actually have the data, and then for users who have never touched it before, as beginners, the easiest step would be to implement the pre-trained model itself that we provide. Naturally, as they gain a little more experience, they will want to incorporate their own data in the middle, and those who are actually proficient in the use of the system will just want to be able to implement it.

We believe that our strength lies in the fact that we can make seamless proposals within this single package to our customers, who may be beginners today, but will become experts in three years' time.

In this area, especially the Application Zoo product lineup, which is 66 right now, We would like to increase this to 130 within the end of this year, with many more use cases. We believe this will be the key to deploying AI in a wide range of markets in the future.



We have three points as summary.

We will strengthen our portfolio of scalable MCUs and MPUs, especially RZ and RA-centric, as I mentioned at the beginning, to fill in the gaps. Then, we will focus on extending performance first and promoting low power.

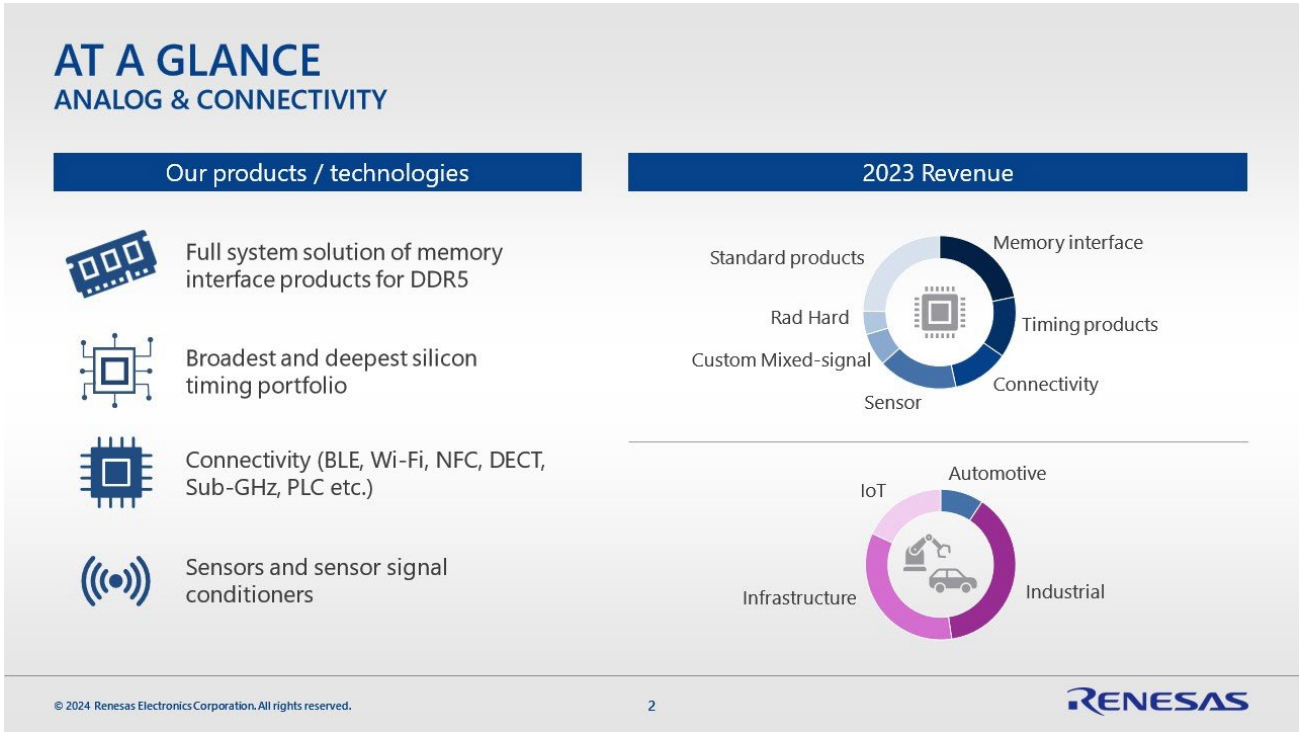
Then there is the user experience. Sales department, and then with digitalization. In particular, while making good use of the acquired assets of Altium, we will go one step further to create an environment that facilitates development for our customers and to support time to market, which I believe will be very important in enhancing our customers' competitiveness. We would like to strengthen this area so that we can achieve this together.

Finally, there is AI. AI, including various buzzwords, is of interest to many people, and in talking with customers now, some say they would like to try it out, although they are not sure how to actually utilize it. In response to this, we would like to provide tools, environments, and solutions that allow people to try out a wide range of applications, and to expand the use of AI to a wider range of people.

That concludes my presentation. Thank you very much.

Moderator: Next, we will hear from Davin Lee, Senior Vice President and General Manager of Analog & Connectivity. Davin, please.

Lee: Hello, everyone. My name is Davin Lee. I would like to give an overview of Analog & Connectivity.

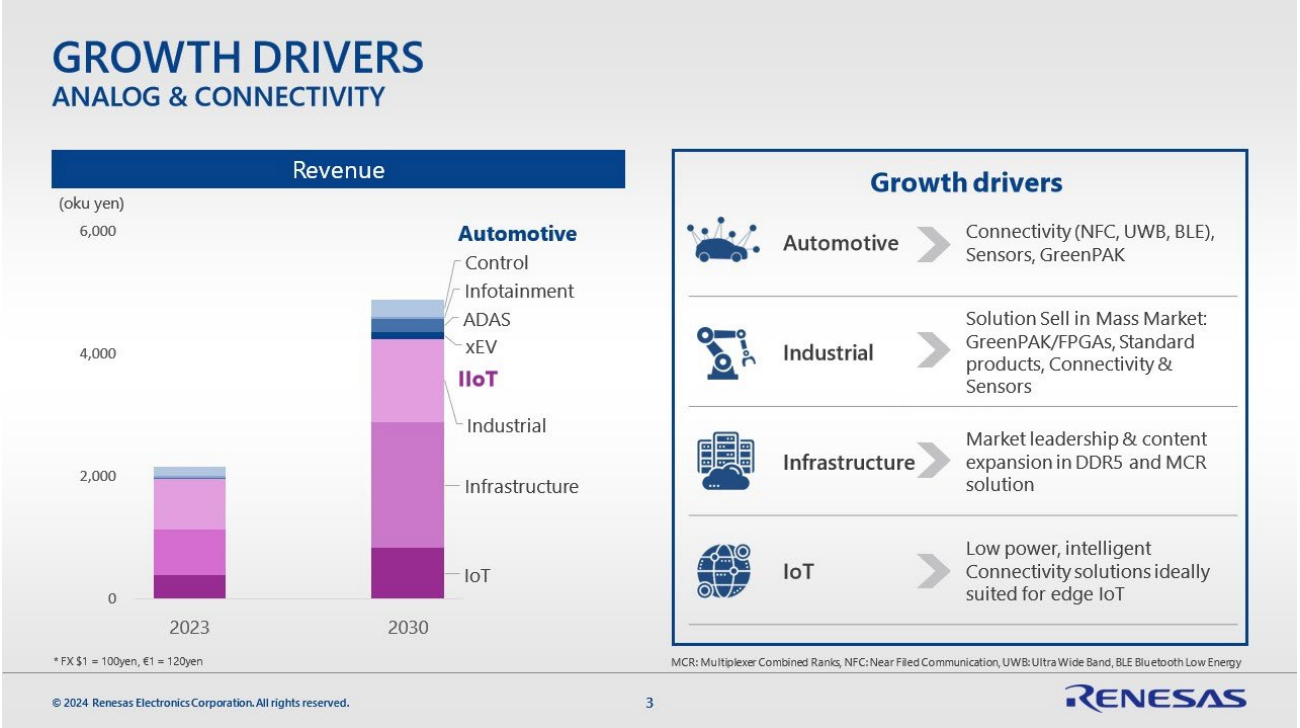


Analog & connectivity consists of several product lines. We offer memory interface products for DDR DIMM as full system solutions, including DDR5 and Multiplexer Combined Ranks, referred to as MCR. We have a broad and deep portfolio of silicon timing products.

For connectivity, we support several wireless technology protocols. This includes BLE, Wi-Fi, NFC, DECT, sub-gigahertz, etc. These technologies enable us to serve a wide range of applications and end markets. We also offer a wide range of sensing solutions. Examples include environmental, optical, position, and automotive sensors.

In the analog & connectivity portfolio, we also offer a Custom Mixed-signal solution, also known as GreenPAK, and Hi-Rel, or Radiation Hardened products, and our extensive standard product line. These include operational amplifiers, memories, voltage references, digital potentiometers, and interface products.

The breakdown of 2023 revenue by segment is shown in the two figures on the right.



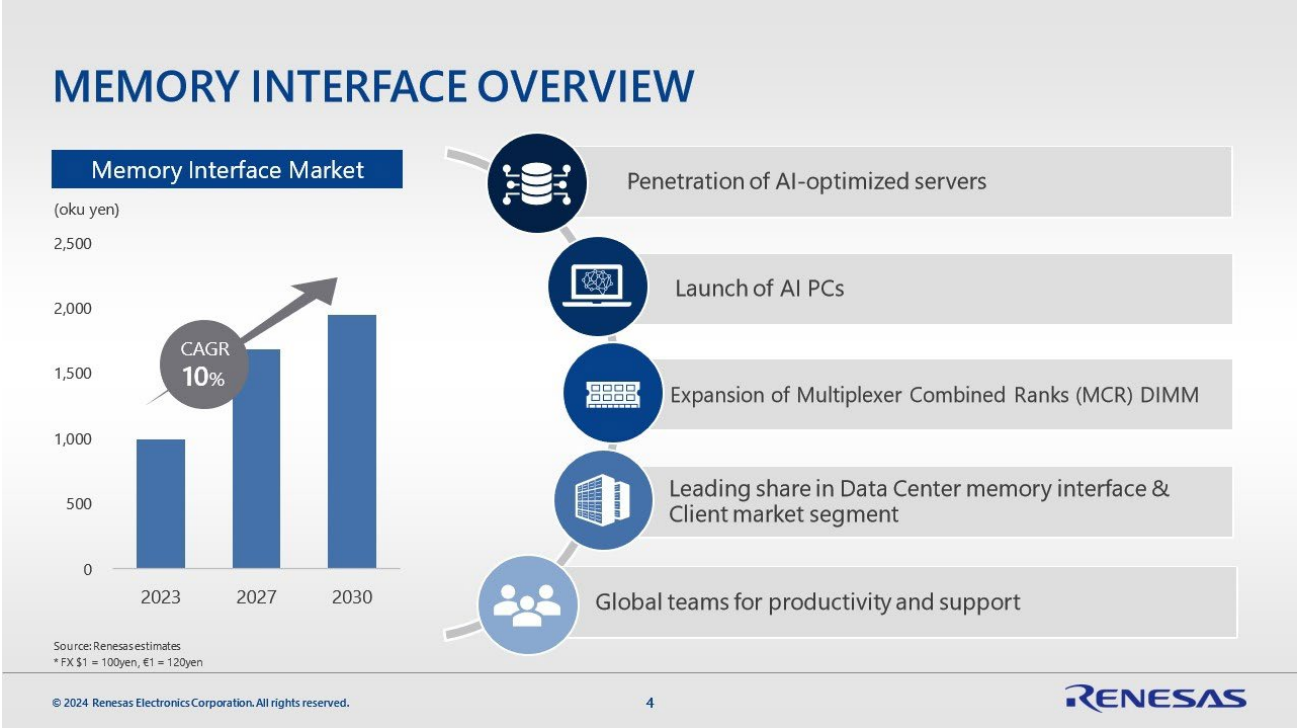
Several of the growth drivers listed here will drive revenue growth into 2030.

In automotive, connectivity solutions will enable more intelligent wireless communications with NFC, UWB, and BLE. Sensors also allow the collection of data needed for intelligent processing. GreenPAK products also simplify the design process by incorporating a variety of analog functions into the program platform, resulting in smaller size, lower power consumption, and lower cost.

For industrial applications, we provide several reference designs, which include products using our various technologies.We are also in a leadership position in MCUs, producing a variety of solutions, including processing in addition to products form GreenPAK family, standard products, and connectivity and sensors.

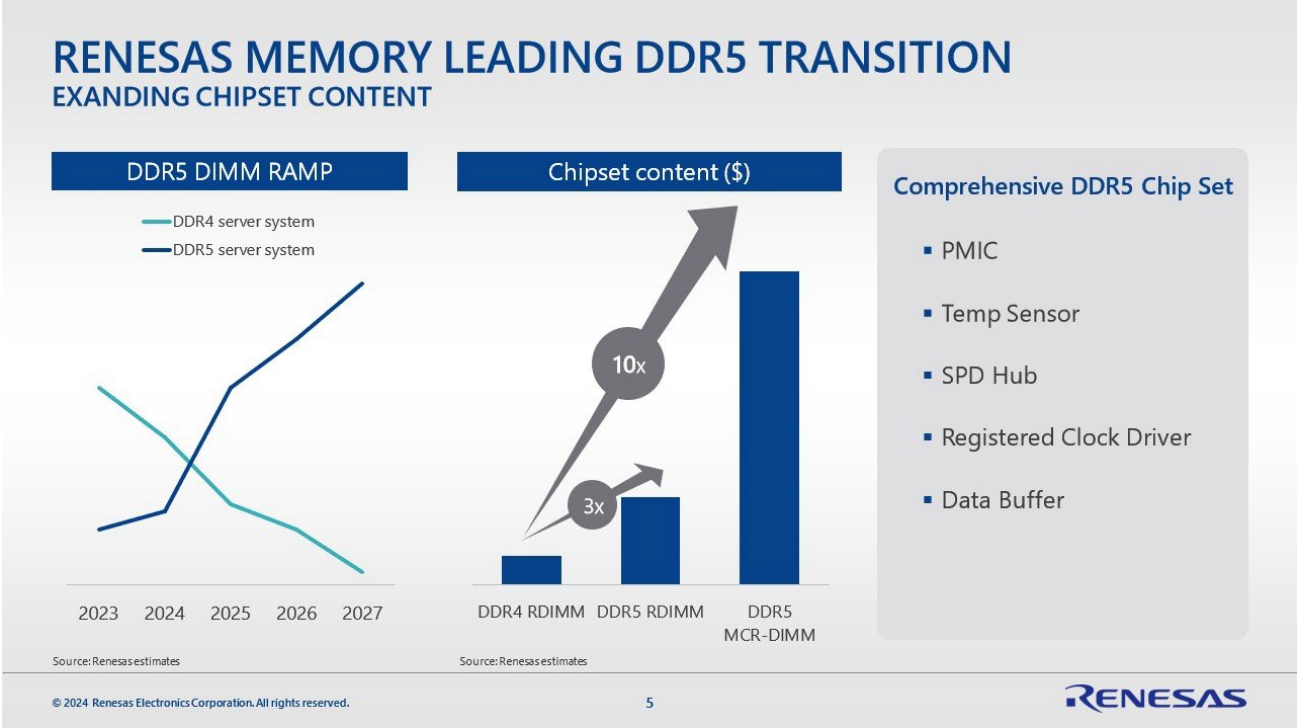
In terms of infrastructure, we are in a very leading position in terms of market share. In addition, DDR5 and MCR DIMMs are increasing in content, which will further accelerate growth in the future.

In IoT, we offer ultra-low power intelligent connectivity solutions, which we believe are ideal for edge IoT. We see the edge IoT market as a market that will grow significantly over the next few years.



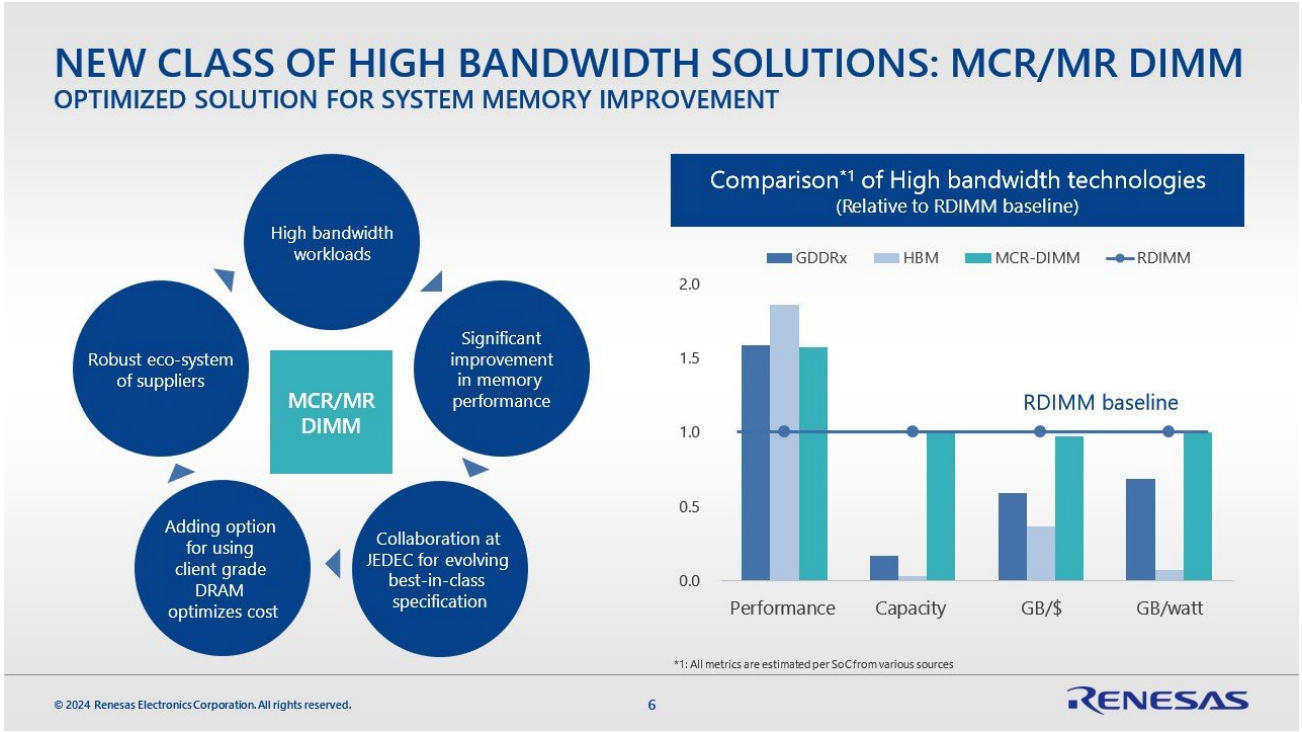
From here, I would like to describe the memory interface products in a little more detail.

We expect a growth rate of 10% from now to 2030. I think several factors will drive this. Renesas has a very large market share in AI-optimized servers. We also believe that we are in a position to grow further as AI PCs emerge in the future. We have a very leading position in DDR5, and in addition, we are a major supplier of MCR DIMMs, a segment as mentioned previously that is expected to grow significantly in the coming years. We believe this will allow us to maintain our leading market share in the data center and client memory segments. Our team works closely with our partners and customers to ensure that the right support is provided.



One major growth driver will be the expansion of DDR5 and MCR DIMM content. We expect DDR5 to surpass DDR4 consumption in H2 of 2024. In addition, a three-fold increase in content is expected for DDR5 compared to DDR4. So, we expect revenue growth to further accelerate along with this shift.

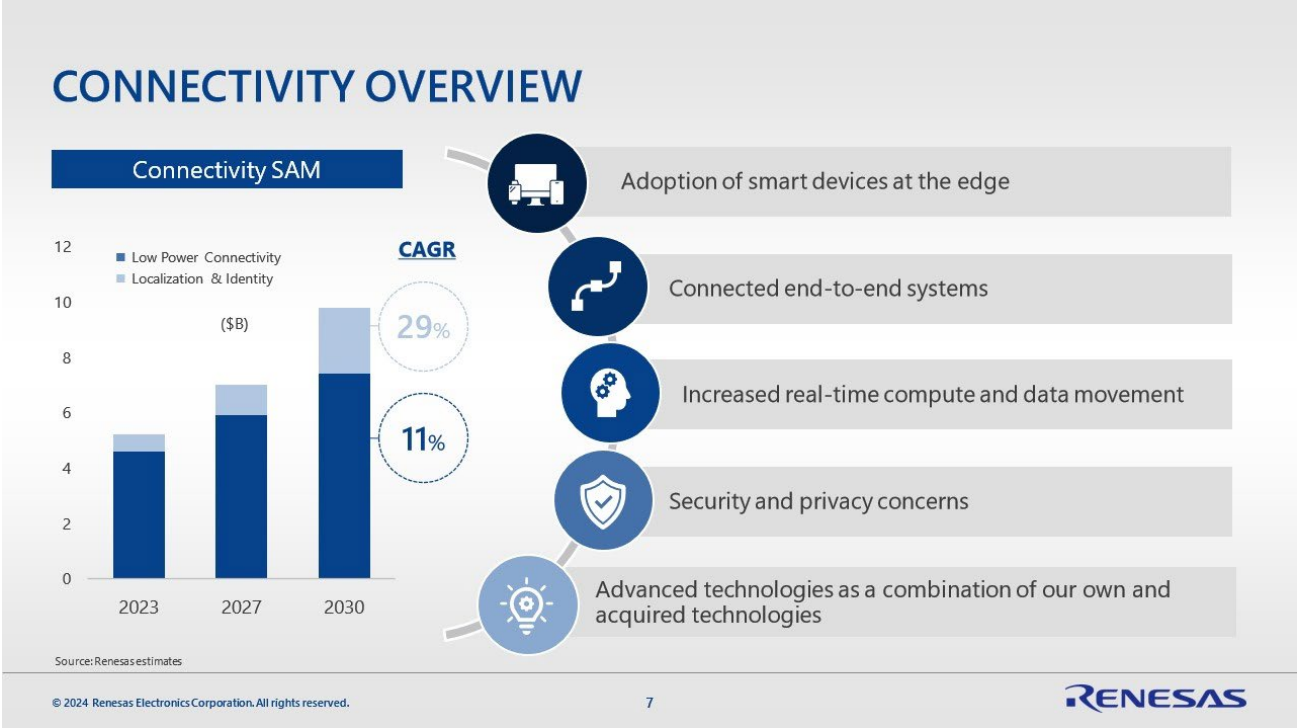
For DDR5, we offer a solution consisting of a PMIC, temperature sensor, SPD hub, RCD, and data buffer. We expect to see further acceleration as the volume of MCR DIMM increases, and as the content increases by a factor of 10.



MCR DIMM is a new class of high-bandwidth memory solution that we believe offers the best value. Of course, we have optimized for high performance, capacity, and power consumption per US dollar spent. You can see in the figure on the right that it outperforms other competing solutions.

MCR DIMM can provide and support high bandwidth workloads and this improves memory performance. It is currently being ratified by JEDEC and will be known as Multi-Ranked Buffered DIMM or MR DIMM. Once this becomes the industry standard, the robust ecosystem of suppliers will greatly increase both penetration and growth. This is because of the performance, capacity, and cost benefits, as well as the power consumption benefits.

We believe that Renesas stands to benefit greatly from this transition.

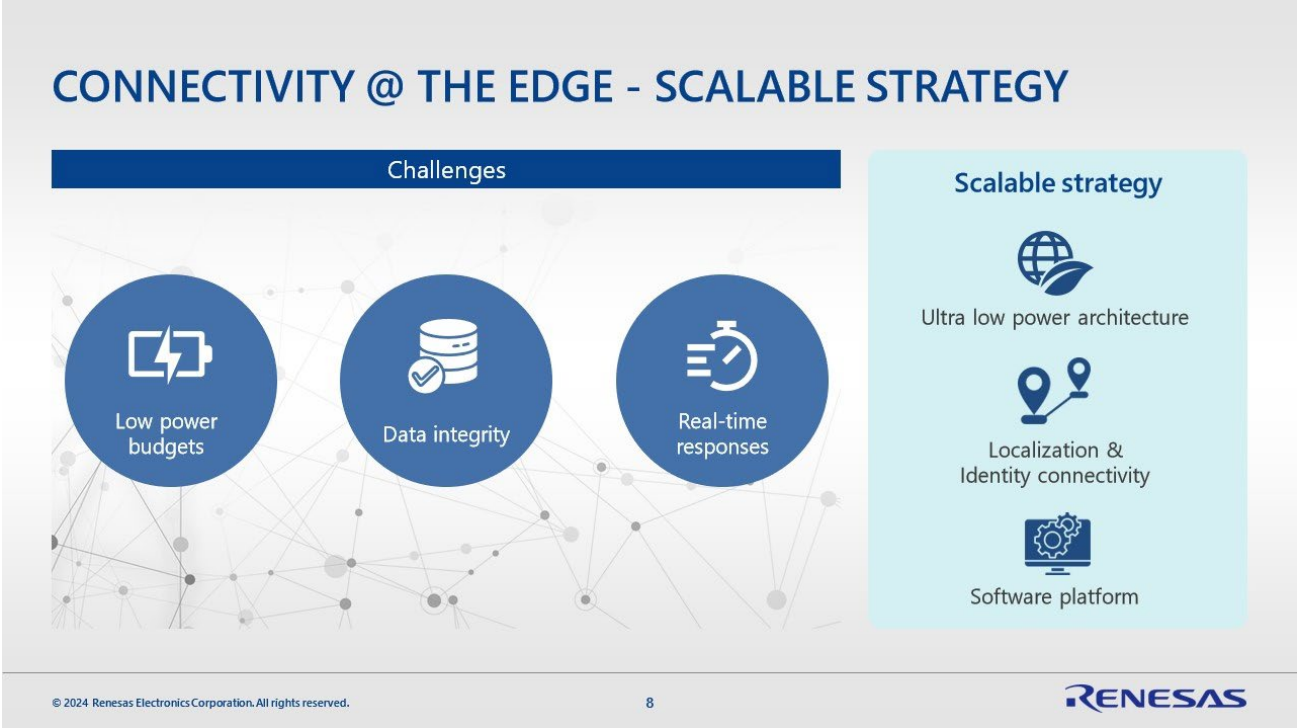


Next, I would like to move on to connectivity. We see a growing trend toward connectivity at the edge. Underpinning this is the need for low-power connectivity in addition to localization and identification.

Several factors are behind this trend. First, smart devices are growing at the edge. And most of each of them are powered by batteries. This is because it is untethered. The goal is to create a consistent, intelligent end-to-end connected system and to further enhance real-time compute and data movement.

Of course, this data integrity and robustness is necessary because of the increasing demand for compute and communication. Otherwise, security against privacy issues cannot be ensured.

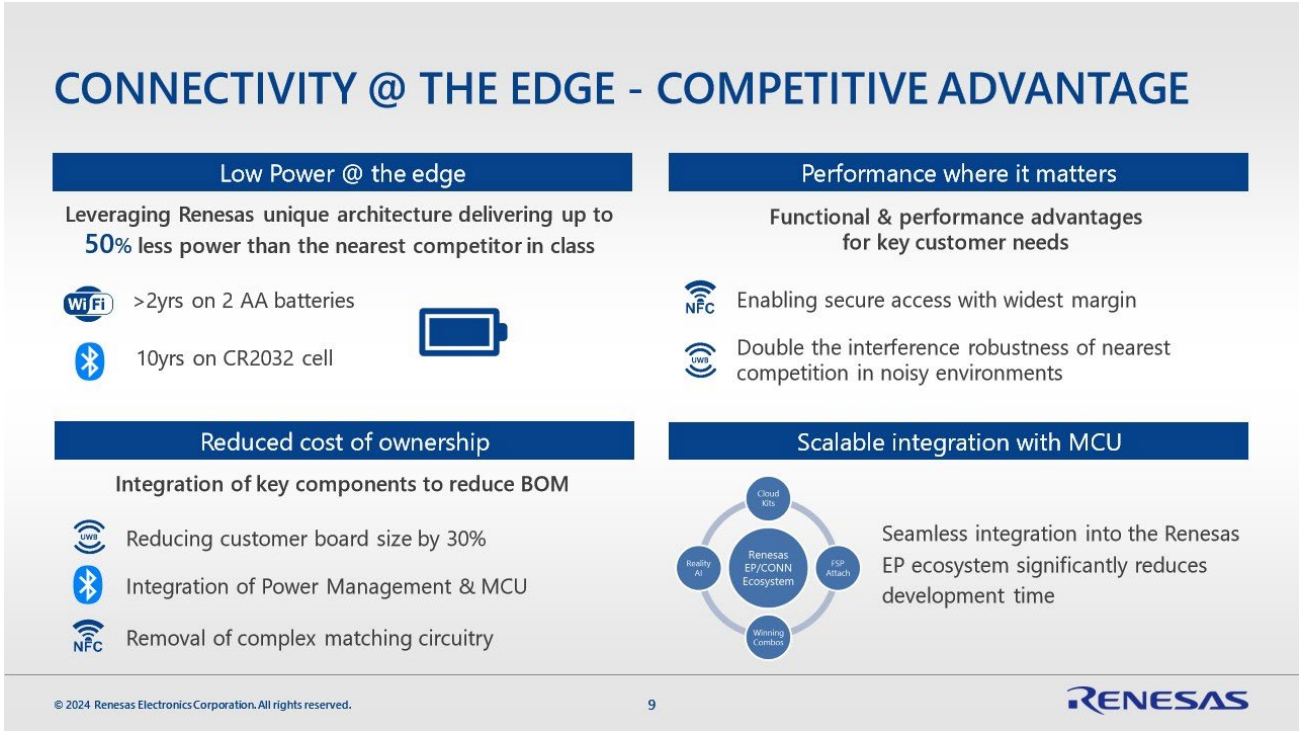
Successful implementation of this architecture requires advanced technology. We have acquired such technologies in the past both in-house and through acquisitions. With our advanced technology and by leveraging our knowledge base, we believe we are in a good position to further maximize the growth of this connectivity at the edge.



Continuing on from what I said earlier, I am talking here about a major issue that we need to address. Since edge devices are battery powered, maximum life cannot be achieved without power consumption control. Data communication will increase exponentially as more devices are connected. So there should be no data breaches. Of course, real-time response is a necessity for edge devices to optimize performance. This would mean that delays would have to be kept to a minimum.

Renesas has a scalable strategy, and I believe we are prepared to address these challenges. Our ultra-low power architecture is available in the connective solution, which significantly improves battery life. Our solution allows for efficient localization and identification, thereby increasing data integrity and robustness.

We also have a very powerful software platform that makes it easy for customers to implement connectivity devices, and we optimize their performance to meet their demands. This will allow us to overcome our challenges and achieve growth on schedule.



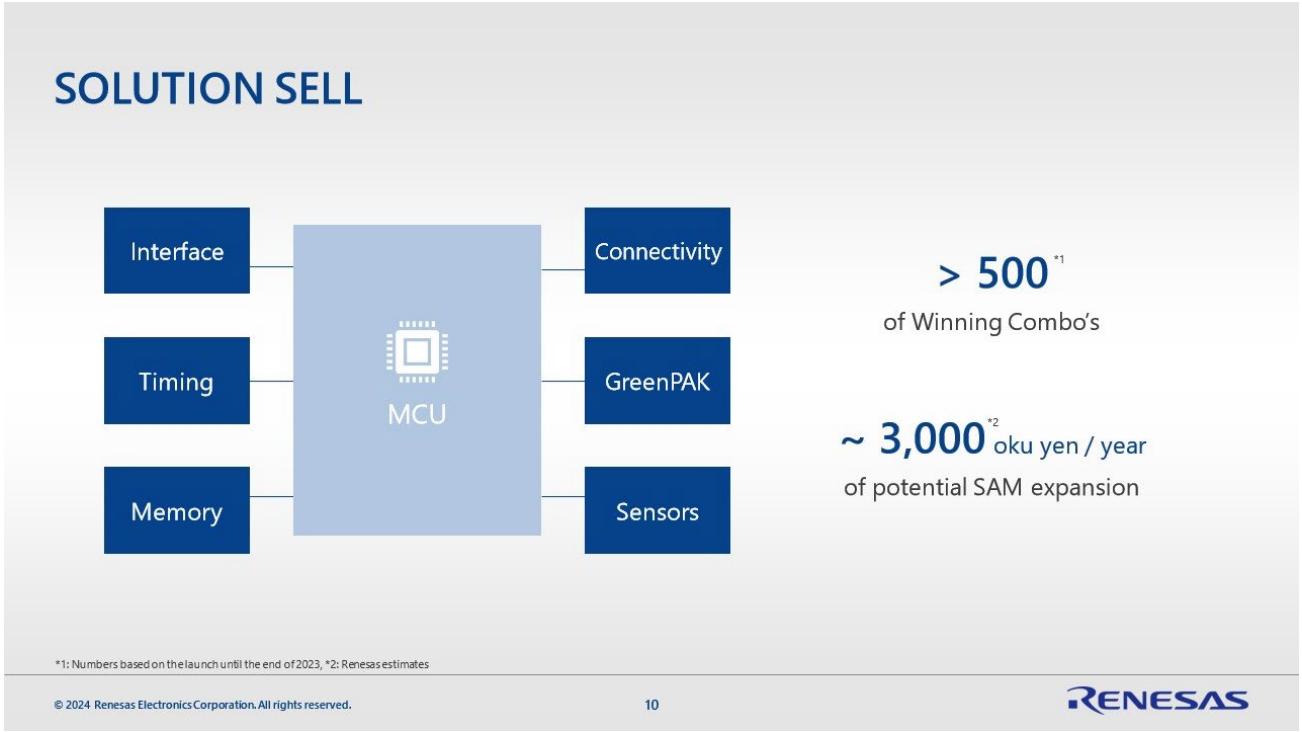
We believe that Renesas has a very competitive advantage in its connectivity product portfolio.

As I mentioned earlier, our ultra-low power architecture consumes up to 50% less power than the competition. Our Wi-Fi solution, for example, can run on AA batteries for more than two and a half years. BLE can operate for more than 10 years on CR2032 batteries. This will also reduce maintenance costs and meet sustainability goals. We believe this will be a very attractive value proposition for our clients.

We also have many performance advantages. With NFC, our solution achieves secure communication by a very large margin. It allows the customer to increase the communication range to and from the POS device. UWB offers twice the immunity to interference, allowing solutions to be deployed with a high degree of accuracy in very extreme conditions, even in noisy environments.

In addition, our connectivity products have a much higher adoption of integrated solutions, which reduce the overall size and Bill of Materials. With UWB, board size can be reduced by 30% or more. We have also included a power management function in the BLE, which will improve efficiency. This is also in the MCU, which allows for compute and control. For NFC, complex matching lines are no longer necessary. These integrated features enable customers to reduce solution size and cost.

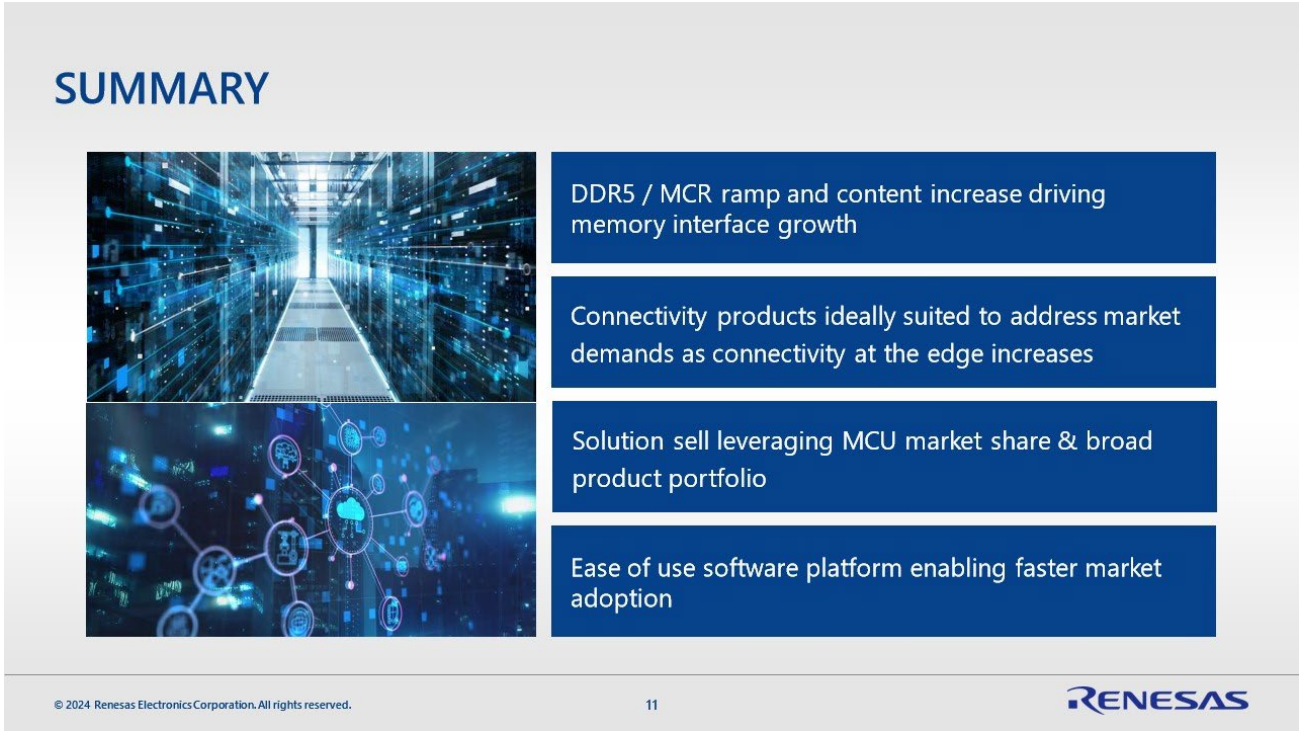
Our easy-to-use software platform enables rapid and scalable integration of MCUs and connectivity devices. This reduces overall development time and simplifies the implementation process.



We have a very broad analog & connectivity product line. In addition, we are in a very strong position in MCU. This allows us to offer our customers a solution, not a single product. We now have more than 500 of what we call Winning Combo, and this number is increasing very quickly.

The MCUs we sell can be bundled with any interface, timing, memory, connectivity, GreenPAK, or sensor product. Various combinations are possible, depending on the use and application. There are very significant advantages. This simplifies the development process for our customers and, at the same time, increases the content per application for Renesas.

We estimate that JPY300 billion per year of SAM expansion is possible with this approach.



In summary, in analog & connectivity, we are in a position to see very strong revenue growth into 2030. There are several factors behind this.

In memory interfaces, DDR5 and MCR ramp are expected to generate significant content growth in DIMM products, which should lead to fairly solid revenue growth.

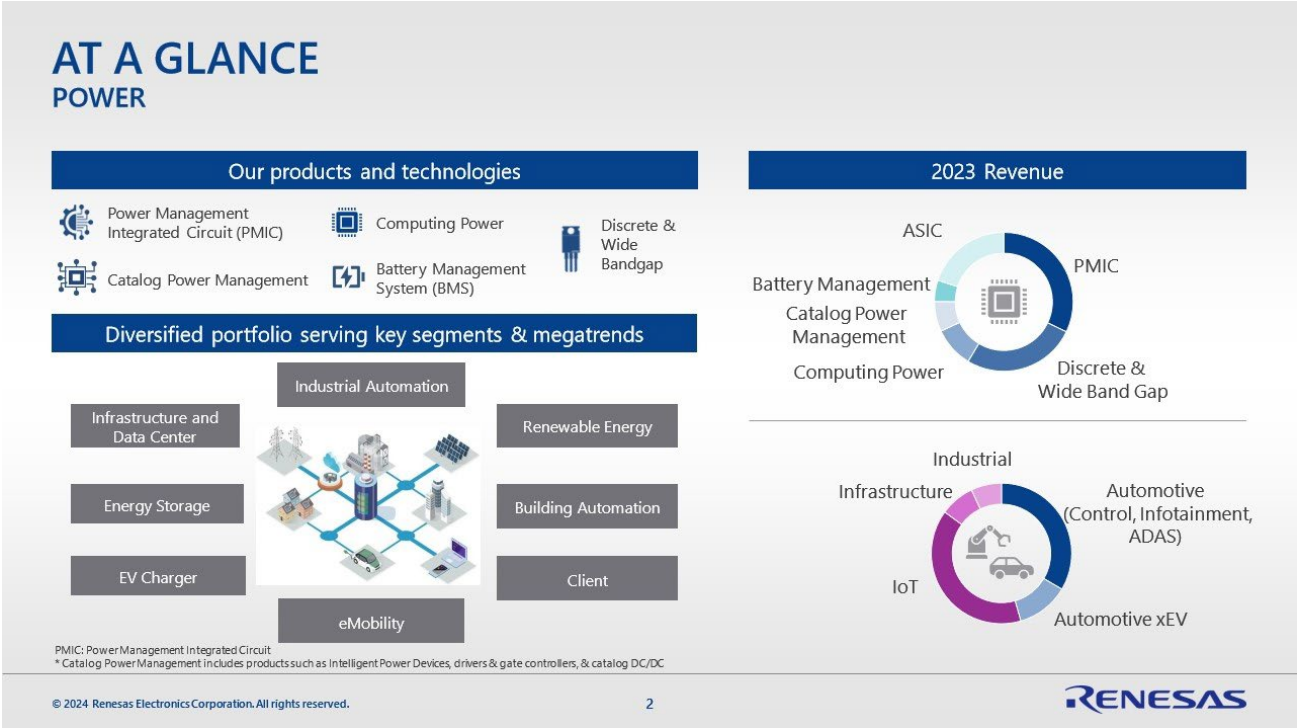
In the area of connectivity, we believe that product differentiation and competitive advantage will further boost earnings as connectivity at the edge becomes more prevalent in the future. Our solution has a scheme that can meet customers' needs. This will allow us to create our architecture, which will help us overcome these challenges.

As for solutions, with the Winning Combo, we are in a position to offer solutions rather than a single product by deploying our broad portfolio of MCU, connectivity, and analog products.

Finally, our easy-to-use and flexible software platform allows customers to quickly develop and optimize their products. And, as with the Winning Combo, this allows customers to reduce development costs and deploy products faster. As I said in this presentation, I believe that analog & connectivity are very well positioned for long-term growth. That is all. Thank you very much.

Moderator: Thank you very much. Chris Allexandre, Senior Vice President and General Manager of Power will continue the presentation. Chris, please.

Allexandre*: Hello everyone. My name is Chris Allexandre. I am General Manager of Power Products Group. I am very pleased to be here today to share with you not only our strategy, but also the growth journey we have ahead of us.



Since this is the first time we are presenting to you the power business, portfolio and market exposure, I want to start with a comprehensive summary of our business.

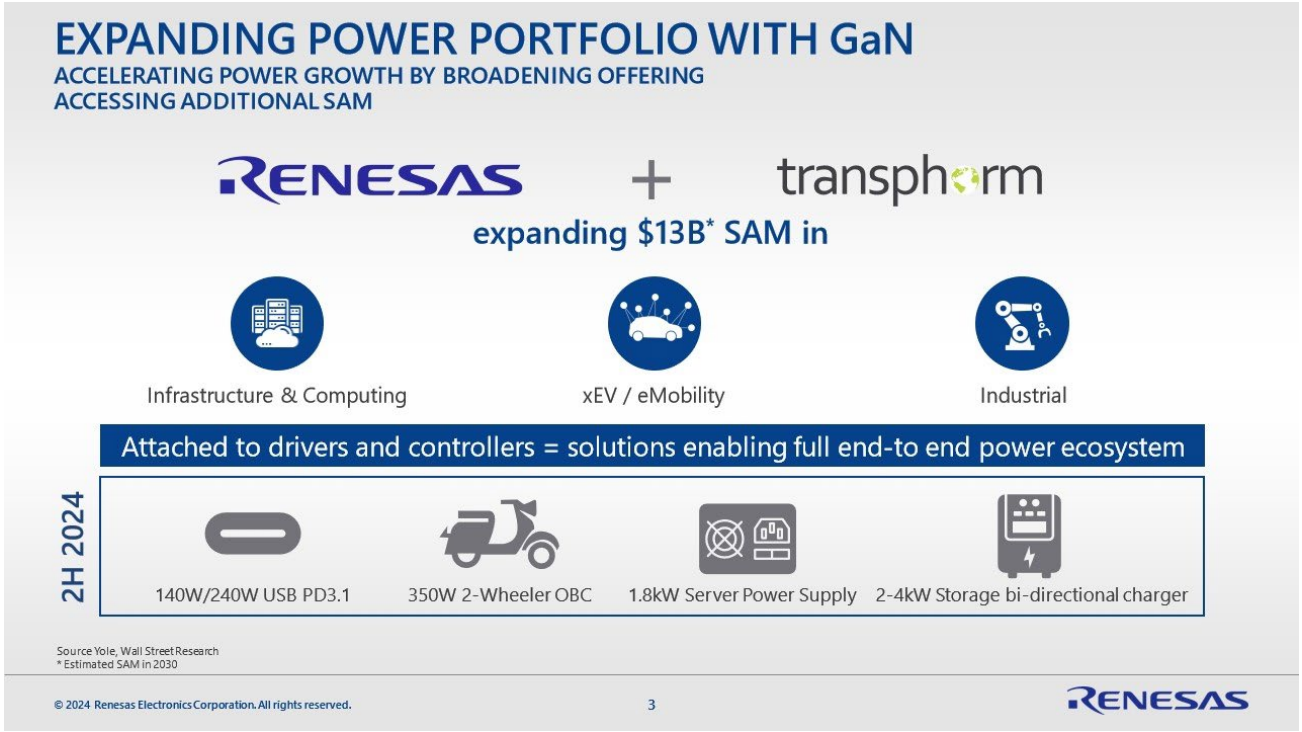
As you can see on the top left, we have a comprehensive portfolio coming from a variety of acquisitions of companies with very strong power heritage. This comes from engineering talents, technologies and IP that we've now combined under one roof on the power. We have not only combined them, we have actually have integrated them to much deeper level, creating scales and enabling our growth through innovation. But for expansion and solution and I will detail that in the next few slides.

The product portfolio includes integrated power management IC or PMIC, and computing power, which is digital controllers, power stages and other products that we use to power MPUs, SoCs, and GPUs. There is also Battery Management with Fuel Gage, BMIC, Charging and USB. Discrete and Wide Band Gap with MOSFET, IGBT and Silicon Carbide.

As well as last but not least a growing catalog portfolio made of controllers, drivers, DCDC, eFUSE and many other products that we sell in the mini market.

As you can see on the bottom left of that slide, the product portfolio is used across many of their equipment that are driving some extra growth today and in the future, enabled by the mega trend on data, electrification and energy efficiency.

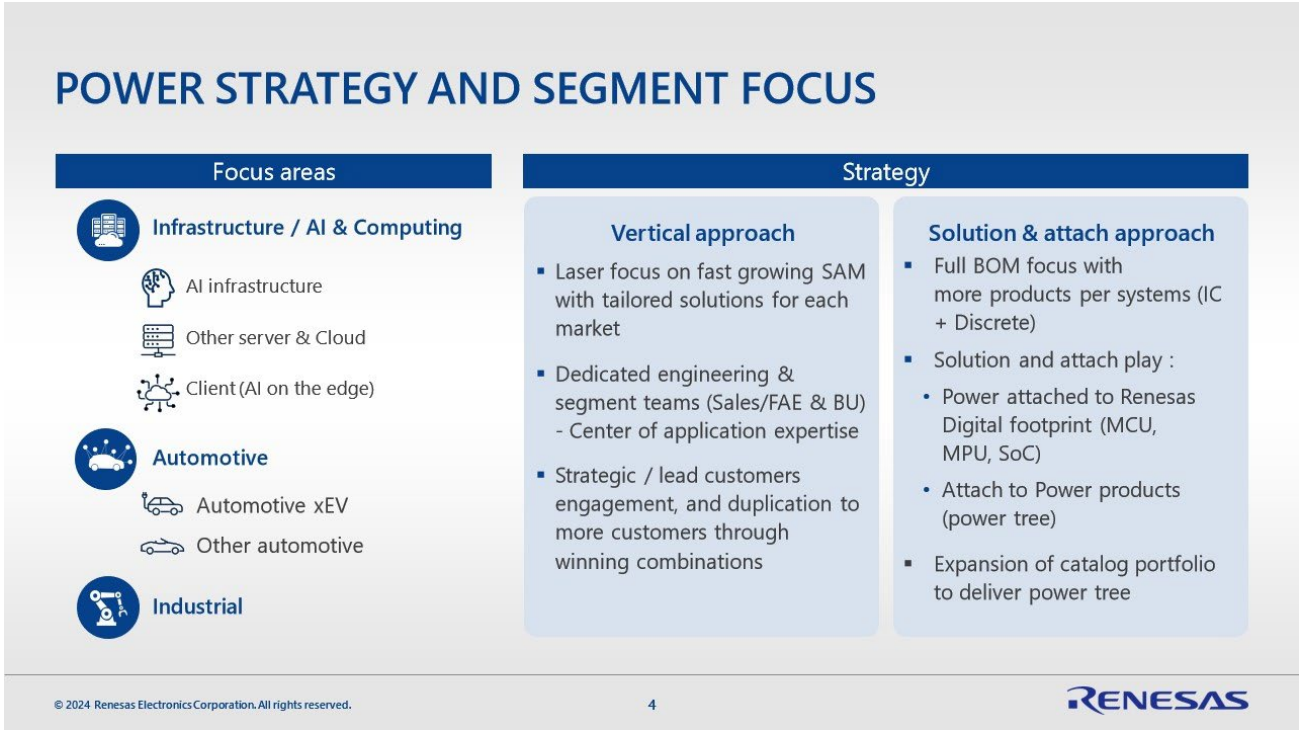
Our current revenue is reasonably diversified, We hope to further diversify our product and segment exposures in the future. For instance, you can see that the segments like infrastructure AI or EV or even industrial, all today a modest part of our revenue and that will drive a lot of growth in the future.



We have talked about portfolios so far. The strategy that we have is to continue to expand the portfolio to give customers more options to serve in all the markets. We believe that in our portfolio, various technologies will coexist in various applications, depending on the need for power.

Specifically, we are very committed to wide band gap as we believe is going to be very critical for power delivery in the next decade and we're committed to expand that portfolio. We actually announced as Shibata-san talked about the acquisition of transform, the GaN company a couple of months ago and we are expecting to close the transaction in coming months. This is a fundamental step in that strategy to continue to expand our wide bandgap portfolio. This is not only opening up a new SAM for us of $13 billion by 2030, which is untapped. It's enabling us to give customers options and expand a portfolio in all the different market that we serve.

This is also a great example of the solution strategy, where we combine more of these products together to deliver more value to our customers. on day one, we will have more than 15 winning combos, including 8 real boards implementations, combining the transform Gan FET with our controls and driver, which shows the power of providing full solution to our customers.



The strategy has three focus areas. The first is infrastructure, AI, and computing. The second is automotive, EV as well as any other application in automotive space like where we can increase our content. The third is industrial, including home, industrial automation, renewable energy, and many broader applications.

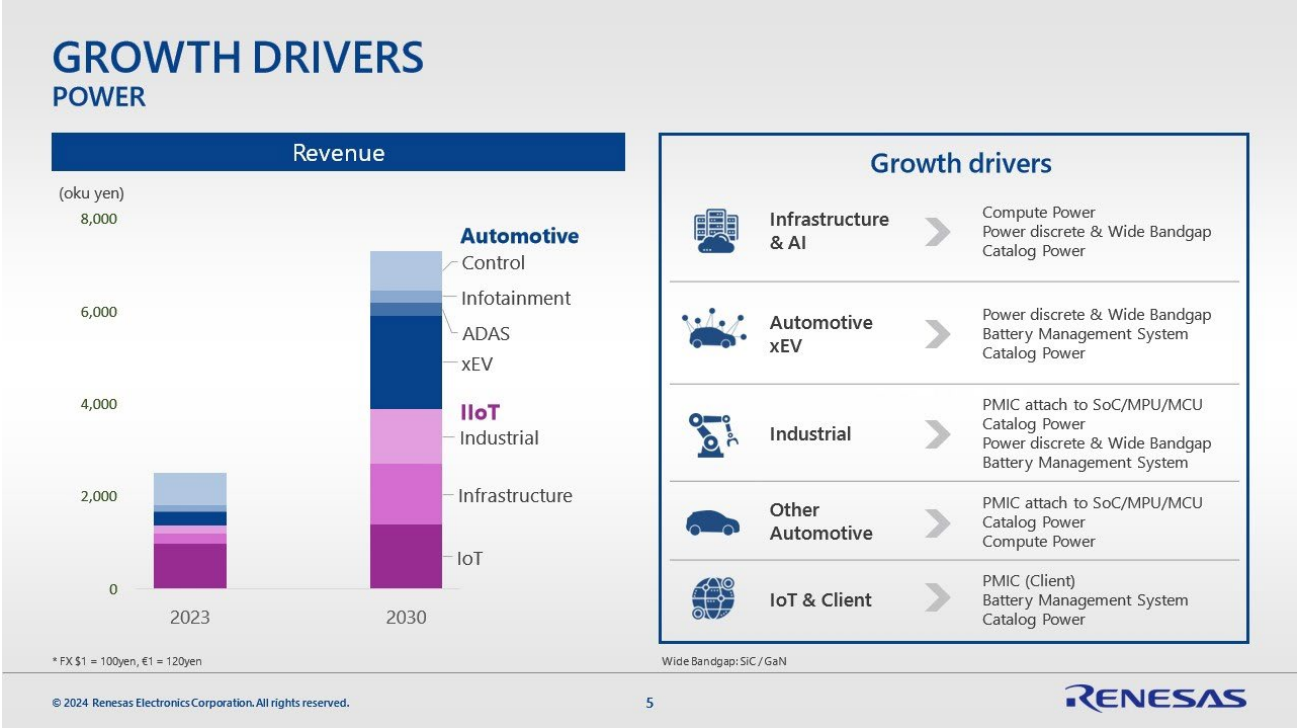
We have strategy with 2 strong axis. In the vertical approach, for example, laser focus on those fast growing SAM in particular in Infrastructure AI computing and automotive. we have dedicated engineering teams in design and application working with Bobby's sales and FAE, which are deployed by segment to provide customers who center of expertise, dedicated tailored solution that we satisfy their need and innovation. And we are working through the winning combo concept to take that to the customers.

The second axis is rather new. However, it fits very well with Renesas' current strategy. It is called the solution & attach approach. This will particularly leverage Renesas' assets and footprint to scale and offer customers full solution.

One is to make sure that power, any of the digital product that we've talked about from the MCU, MPU and SoC, as well as any power analog product, we have to make sure that we combine and provide more solutions to the customers.

As I said, we do it two ways, on the MCU MPU SoC, we are developing a variety of PIMCs as well as other catalog products that we combine very tailored solution going up to validation and design for the customers then they have easy way to implement the solution, as well as making sure across the board we provide reference design.

For our own product, the analog and power, we always look at expanding our category portfolio to make sure that we can provide Winning Combos to our customers. And again, just not expand ourselves, but help our customers to have easier life.



This strategy is aiming at more than tripling the power revenue by 2030.

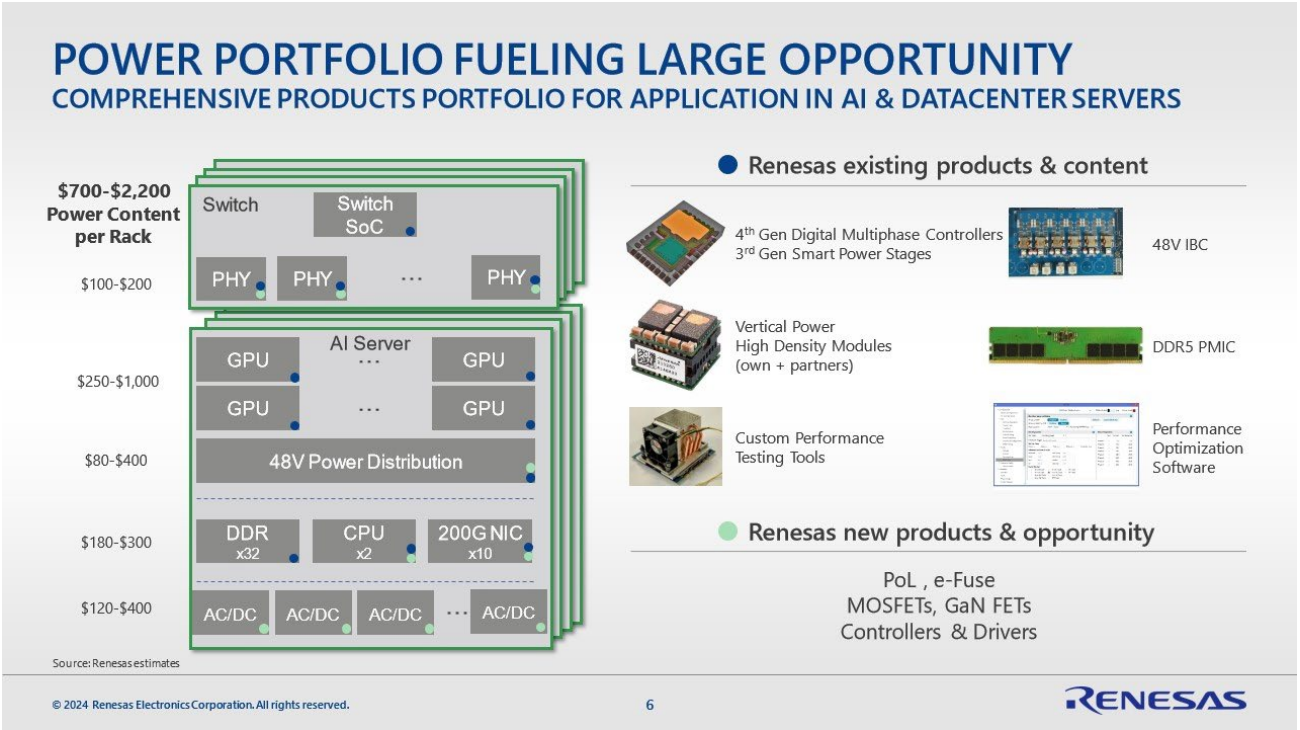
This will be driven by multiple segments, but as you can see the fast growth will come from Infrastructure & AI, EV and industrial, which will really drive this accelerated growth, on top of the other segment that will continue to grow consistently even more modestly.

The overall theme of our strategy to grow is diversification and consistency.

I have talked about the importance of this comprehensive portfolio, and you can see on the right side that this diversification come from selling more product into the same segment that can provide more vectors of growth into each of our segment.

For example, I talked about the opportunity that we have combining more product into around the GaN, but you can see as well that we're spending discrete will beyond automotive into industrial and infrastructure as well as expanding the catalog portfolio to serve all those markets. This will drive a significant change in term of product mix. I talked about the product mix at the beginning, this will basically change completely and drive and result into a much more resilient and consistent growth business.

In infrastructure & AI and EV, will have the highest figure nearly 2X overall growth for the power group, followed by industrial as well as IoT and other automotive that will be in the high single digit. Overall power balance between automotive and non-automotive will remain the same but the exposure to new markets like EV and infrastructure would be a lot bigger, following by industrial and IoT. Same on the product mix where we expect that discrete and compute portfolio to be a lot more significant to our revenue.

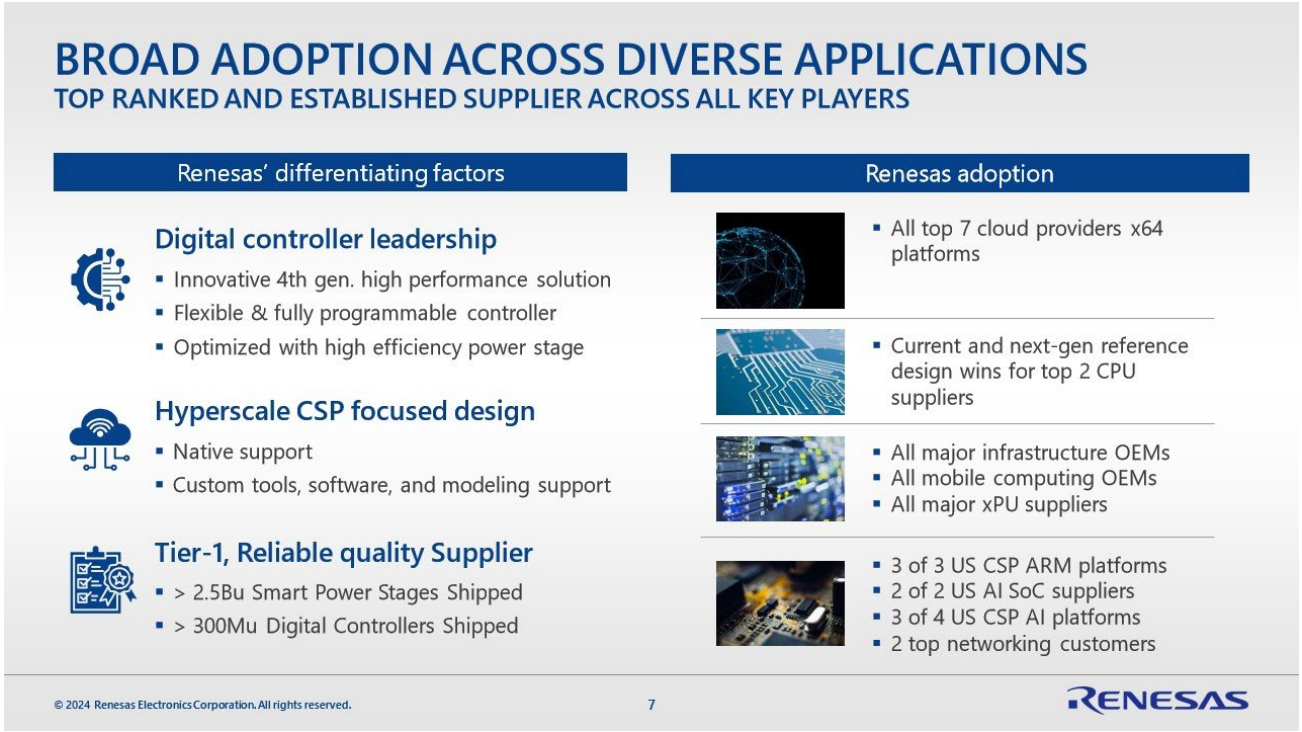


In infrastructure & AI, and data centers, we see a great opportunity for Renesas power solutions across multiple application, not only with our existing products, but also with new product that we are developing, as well as the changes and the evolution of that market.

For traditional high performance compute application, racks of equipment, such sa servers, switches, storage, range typically between 10 and 25 kilowatts. with our current product which we are addressing that business between the multiphase DC/DC controllers, postage, 48 Volt Power Distribution, vertical power and DDR PMICs. we can address up to 700 dollars per rack with those traditional systems.

AI is changing this, AI system demand significantly higher power and create a much larger SAM. Nvidia announced this share at the GTC 2024 that their new Blackwell based rack will be up to 1200 kilowatt, which is 5 to 10X bigger than any other system today.

And we see that trend to continue across any other GPU's and SoC, creating a much power needs and a much bigger opportunity for us. With the increased power content in the AI, the new product as well as the expansion of our portfolio, we think we can address up to $2200 per rack, which is a significant opportunity for us and you can see more and more product going in that market.



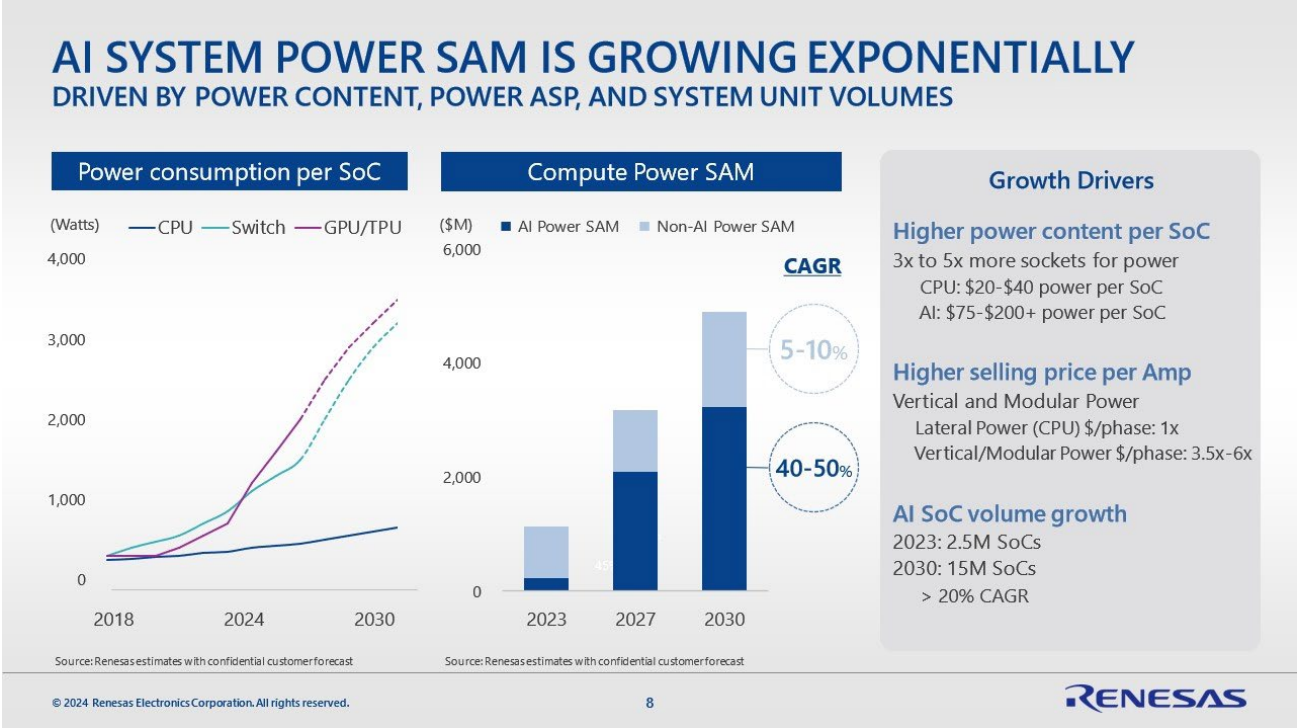
Of course, this kind of business is not new to us. Renesas is well established in the server enterprise and infrastructure space with data centers, and we continue to win for multiple reasons.

One is we have leadership in digital controllers, which we have been producing for over a decade. Customers valued innovation, our high performance, and the fact that we provide flexibility and programmability, which helps them get the best and increased their SoC performance. We are also valued because we provide full solution, optimizing our power stage with our controllers to deliver the best value.

Less known and less visible, but as more critical, our solution is designed and optimized for hyperscale CSPs, what this means is we provide extensive diagnostics, telemetry and other remote management capability to our customers, this helpful CSPs that are managing very complex large scales, deployment to basically manage the complexity, and this is create a lot of stickiness between our engagement.

We also one of the few companies that bring innovation, quality and scale, Renesas has shipped nearly 3 billion units of power management IC in high performance computing application, and we continue to be recognized for resilient quality as well as ability which brings resilience to our business.

The broad adoption of our portfolio today and in the future is clear evidence of that. As you can see on the right side, with pretty much work and on engaged with any customers in the AI and computing space as well as across multiple application from CPUs, GPUs, GPUs and ARM servers, and even going to all the Socs and cloud providers.



Now I would like to talk about AI. There was talk that AI is truly a distraction and a game changer. We see exponential growth for AI attached power and the Sam is going be significant impacted.

The reason is that AI SoC require much higher level of power and that will continue to increase at a faster rate than server CPU power in the future. As noted to the left, the current high-end CPUs range about 500 Watt per SoC, but today's AI GPUs are already 1.2 kilowatts and that will go 2 to 3X next generation.

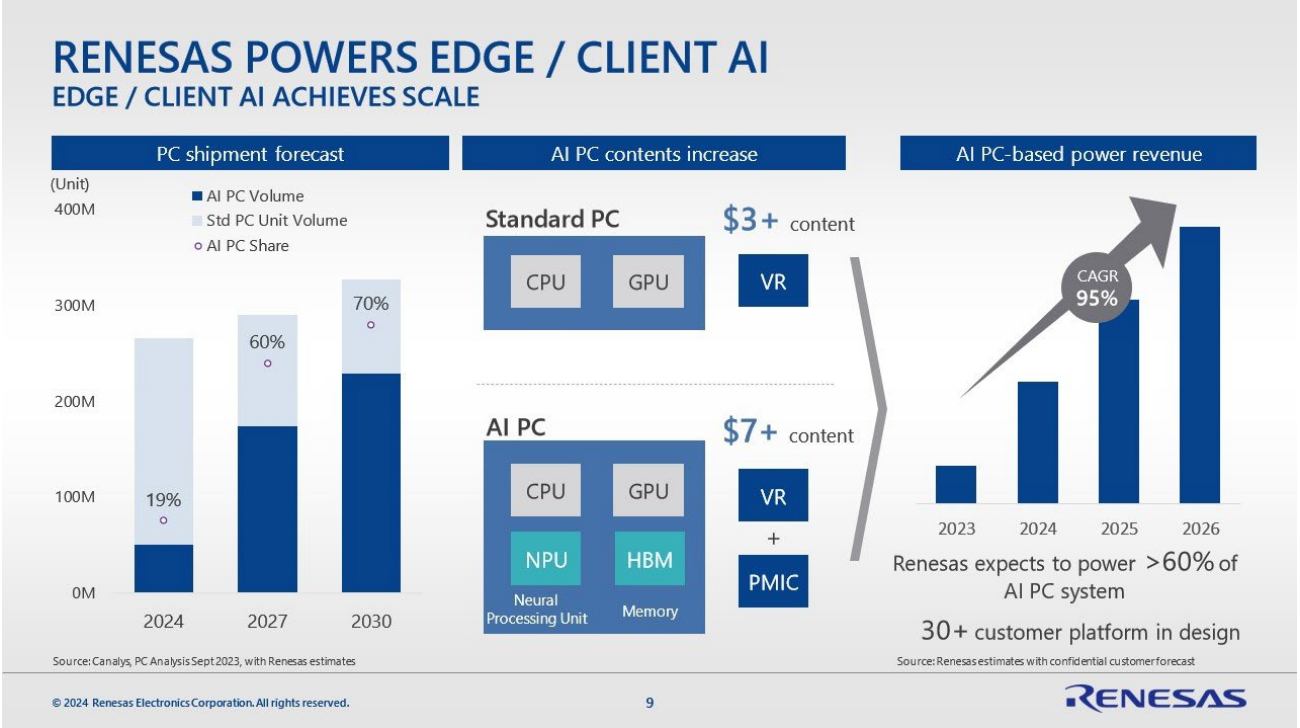
More power consumption leads to more power content and more power to SoCs. As noted on the right, CPU power is USD20 to USD40 per SoC this year, but with AI it is much higher, ranging from USD75 to USD200.

And AI is requiring a lot more integration and density which basically increase the ASP. We see 3x to 6x per amp increase in many of those AI system versus traditional infrastructure.

Last but not least, as you can see at the bottom right of the slide, we see the growth of AI SoC to continue throughout the next few years at 20% CAGR in the next 5 year.

So if you put higher power content, higher ASP and continuous growth, we see clearly exponential growth in the AI attached power computing, which is going change the dynamic of the business.

You can see that the overall SAM for compute power is going to grow about 20% CAGR for next few years, while the AI contribution will grow nearly 50%, being almost two third of the business in the next five years.

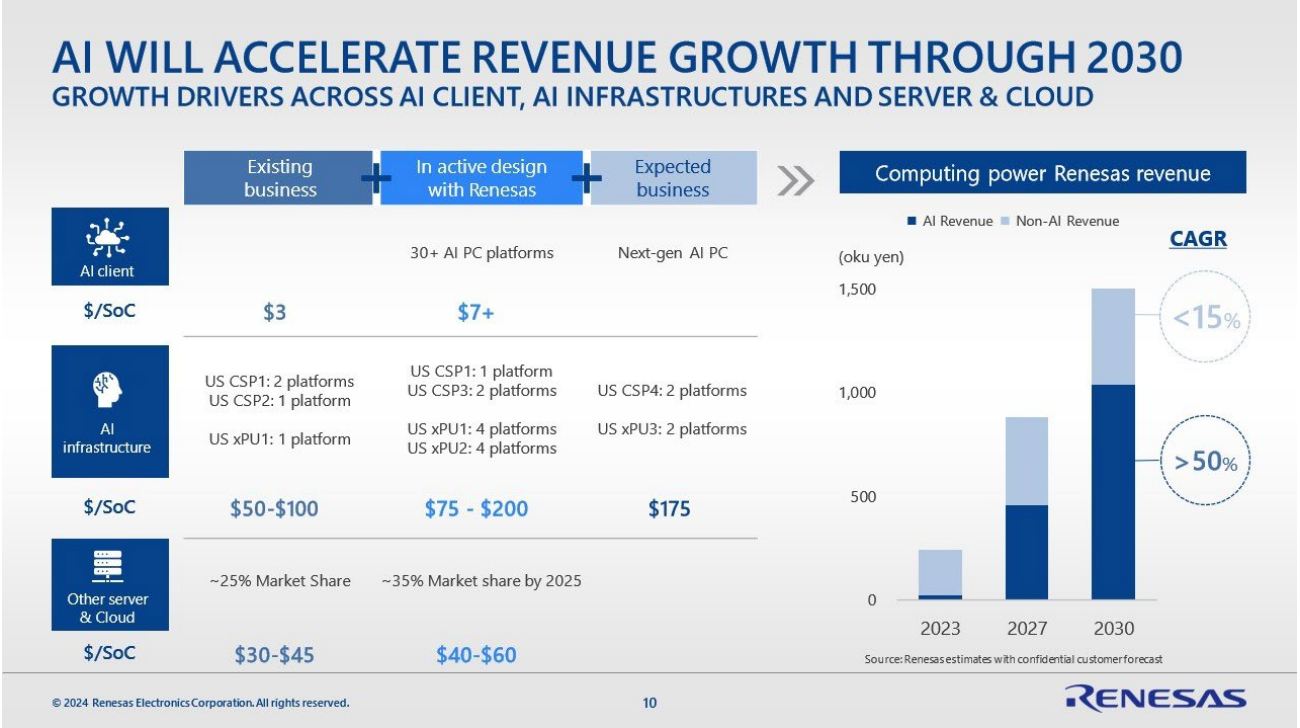


In addition to AI infrastructure, we foresee growth in AI, in mobile computing and client. The introduction of AI PC with local accelerated inferencing will bring about a major shift in personal computing. AI PC shipments are expected to grow to 70% of total shipments by 2030. This create disruption in the power architecture that's being used so far, which benefit Renesas. I talked about at the beginning how we combine all those different technologies to create scale, this is one of the great examples.

To increase the inference performance, the SoC also introduces a new computing engine. One is the NPU, Neural Processing Unit, and the other is HBM memory. A new CPU will be introduced this year will deliver with new MPU 4X inferencing performance versus previous generation. The power requirements have not changed, but the architecture of adding NPU and HBM is changing a lot and that we can benefit Renesas. This favors a new approach which is adding a PMIC on top of traditional VR.

Renesas is strong in PMIC, and that plays to our strength. We actually have developed a unique PMIC that will be embedded in many of the AI PCs that will be introduced this year. We see a very strong design-in engagement, and we have a very good partnership with one CPU vendor, and we see 30 customer platforms are being designed that will ramp at the second half of this year.

Our vision is this will continue in the future and favor suppliers having both PMIC and VR capabilities. Power content per platform will grow by over 2x versus traditional computing.



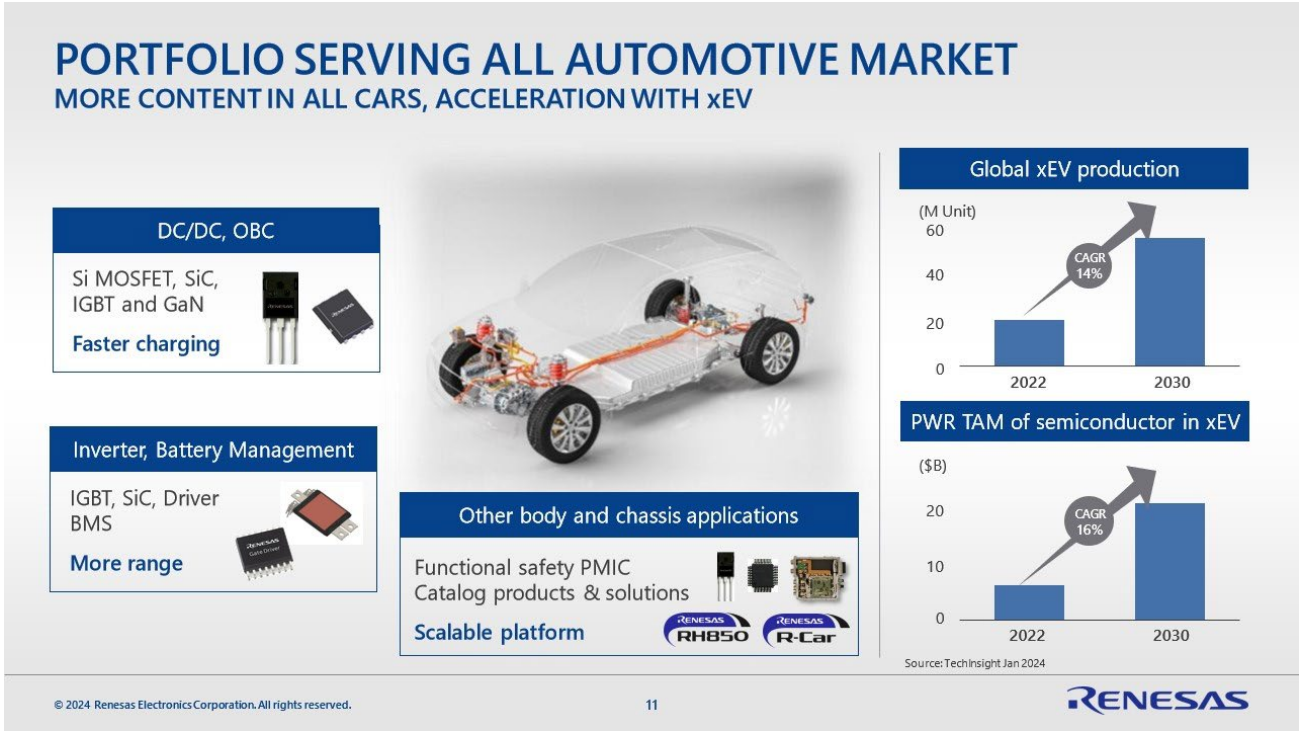
Now between the market. The application portfolio and the customer engaging dynamic that I mentioned, we are very excited and very enthusiastic about the growth potential that we have in the computing power as you can see on the right side.

This has 3 vectors to proof. One is the so-called foundation. As I mentioned earlier, we are currently in the process of engaging with many CSPs and enterprise server. This leads to a high single digit to low double digit growth, as well as the expansion of our market share, which is about 25% today, we expect it to be 35% in the next few years, coming from increasing content generation after generation and deeper customer engagement.

As for AI clients, as I mentioned earlier, we are starting this year with 30 AI PC platforms in design that will ramp in the second half of this year and drive growth in the next few years. And as I mentioned in the earlier slide, we expect to be adopted by 60% of the AI PC in the next 18 to 24 months.

Last but not least, the acceleration coming from the AI infrastructure, as I mentioned, higher content, higher ASP, faster unit volume growth will drive accelerated growth for us. We are already shipping to multiple CSPs and one of the major SoC providers, as well as a lot of active design ongoing. That will drive significant growth for the next few years.

That will basically help us to grow this sustained growth for the future, and you can see on the right side that will be able to drive up to 30% CAGR growth in the computing power business with this acceleration coming from the AI that will be nearly 50% CAGR.

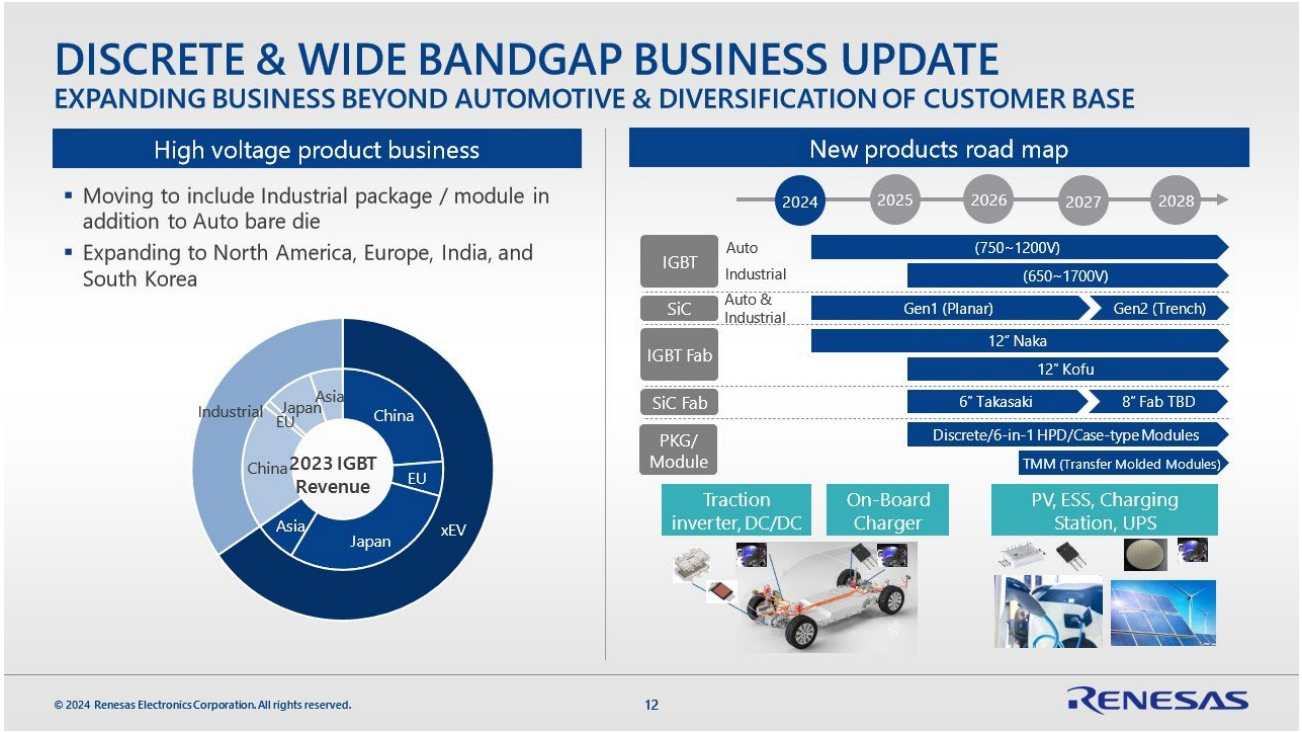


Now, switching gears a bit, let's talk about automotive.

In the automotive market, we have a comprehensive portfolio. Our solution offering is really giving us an excellent position. There are two paths to growth. One is to expand our solution and portfolio regardless of EV or not. As I mentioned earlier, we serve EV as well as other application in the automotive as long as we can continue to grow the content.

We are leveraging our strong presence and market share in MCU and SoC, by pulling thru Catalog product as well as up to functional safety PIMC, providing full solution to our customers and continue to expand for scalable platform. We're also expanding our Discrete, Wide Band Gap, Battery management and IGBT to further expand our business in EVs.

There is no doubt about the future growth of EVs. Although the current growth rate is slightly below the expected rate, we are certain that it will grow significantly over the next 5 to 10 years, and we would like to capture that growth. We provide products such as OBC, DCDC as well as inverters and battery management. We are ready to support the customers innovation through the next few years.

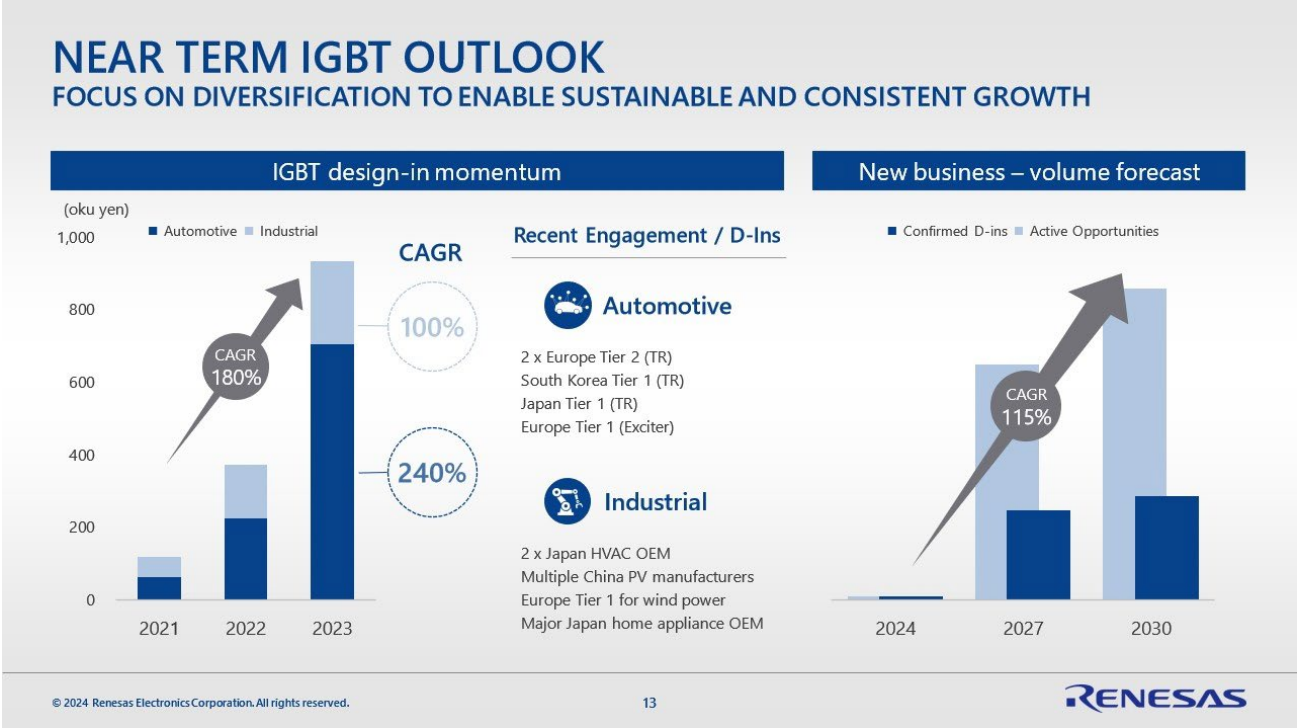


The overall scheme and theme with respect to Discrete & Wide Band Gap is portfolio expansion, portfolio diversification, and build scale in a calibrated and consistent way to support our growth.

First one is diversification. Renesas' power discrete business has been focused on automotive until now, but we are now diversifying this business into industrial. As you can see on this slide, we are increasing the number of applications in the industrial side. We will also continue to diversify geographically. New customers will be acquired in, for example, North America, Europe, India, and South Korea.

EV growth is also important here. There are two points. As for SiC, we are building an offering to be a significant player. I will talk about it on the next slide. We are currently in design-in phase for both automotive and industrial. Mass production of the first generation of devices using Planar technology will begin in mid-2025 using 6-inch in Takasaki. And the second-generation Trench base, which will target more advanced application, will also be expanded after 2027.

Now EV has a lot of cost pressure and IGBT remains key to serving that market, which require performance and best cost. We've made the decision to transition IGBT to a 12-inch facility in Kofu, which we have made inauguration last month and plan ramp in 2025. We also just ramped IGBT in Naka, well-formed 12-inch facility to basically sustain the demand of our customers and mow getting POs and shipment this quarter, to serve those customers to continue to expand that business for the next 10 years.

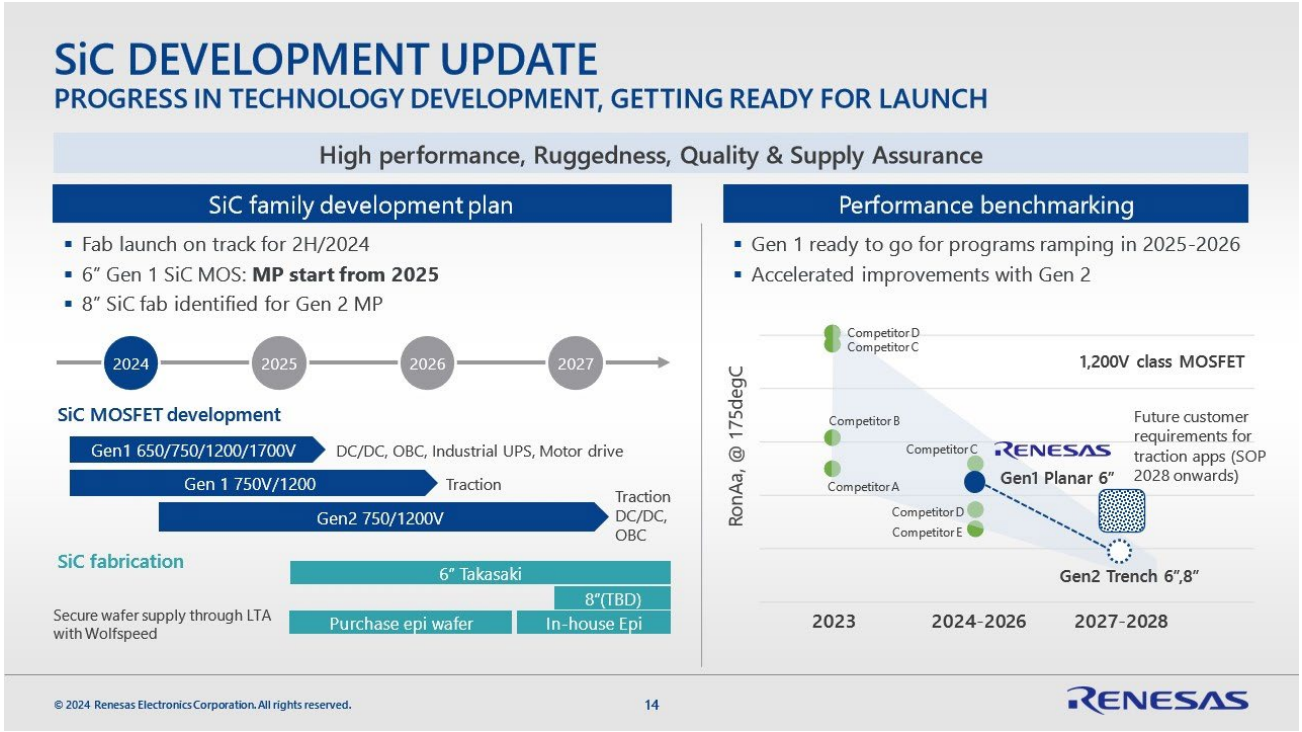


We have seen an acceleration in IGBT design-ins over the past few years, and even more accelerated in the last 12 to 18 months. We get very good feedback from customers both in performance and cost.

And you can see on the left side the acceleration of this design-in as well as the diversification to industrial.

In the middle, you can see the diversification for customers and different application. we are expanding in automotive to new customers and new application and new geography. In Industrial, we are expanding into new segment like renewable energy, HVAC, and home appliances.

On the right side you can see this new design-in how they will contribute to our revenue and shipment over the next few years. The momentum is real, especially starting next year with the coming in line of Kofu. We are very confident we're going to continue to expand our IGBT business for the next 5 to 10 years.

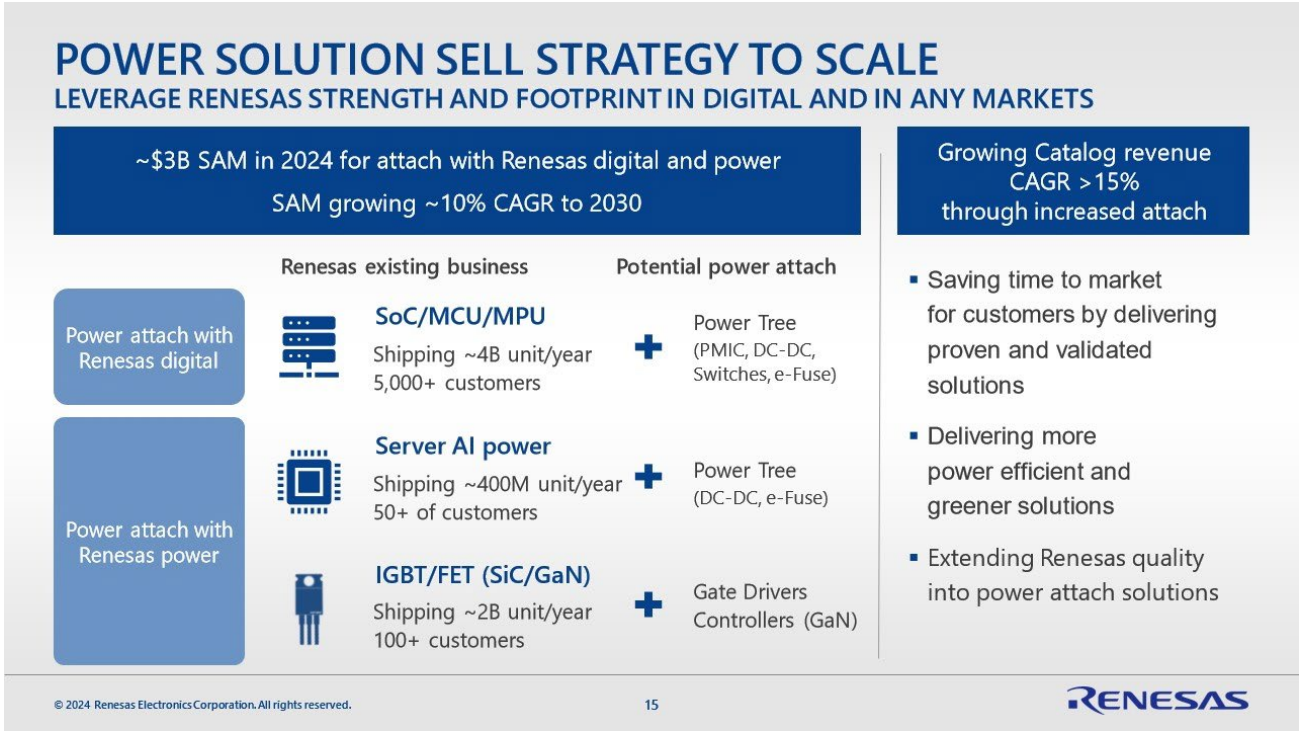


Last year, we announced our plan to introduce silicon carbide at Capital Market Day. And great progress has been made in the past 12 months.

First, the 6-inch Takasaki fab is being retrofitted to SiC and will be completed next quarter. Samples and demo tools and solutions from Takasaki are performing at Perspex and delivery to customers will begin in the coming months. Like IGBT, SiC is to serve multiple market segments to make sure that we build a very diversified portfolio and diversified business that will grow for the next few years.

And to support this growth, we have signed a USD2 billion contract in order to secure epi wafer supply. We have received positive feedback on the delivery of the first generation Planar SiC MOSFET to our customers. Particularly appreciated is the low RDSon over temperature. This is coming from the expertise in high quality manufacturing process for Renesas and engineering talents that we've pulled in that business. We will continue to develop, for the next generation, we expect to reduce RDSon by 40% in the next few years.

We are very confident that we'll build the right step in a very calibrated balance and structured way for long term success and to support and to enable the EV infection that we have seen starting 2027 and 2028.



I mentioned the importance of solutions and the axis of solutions and attachments. I wanted to spend some time on this before I conclude.

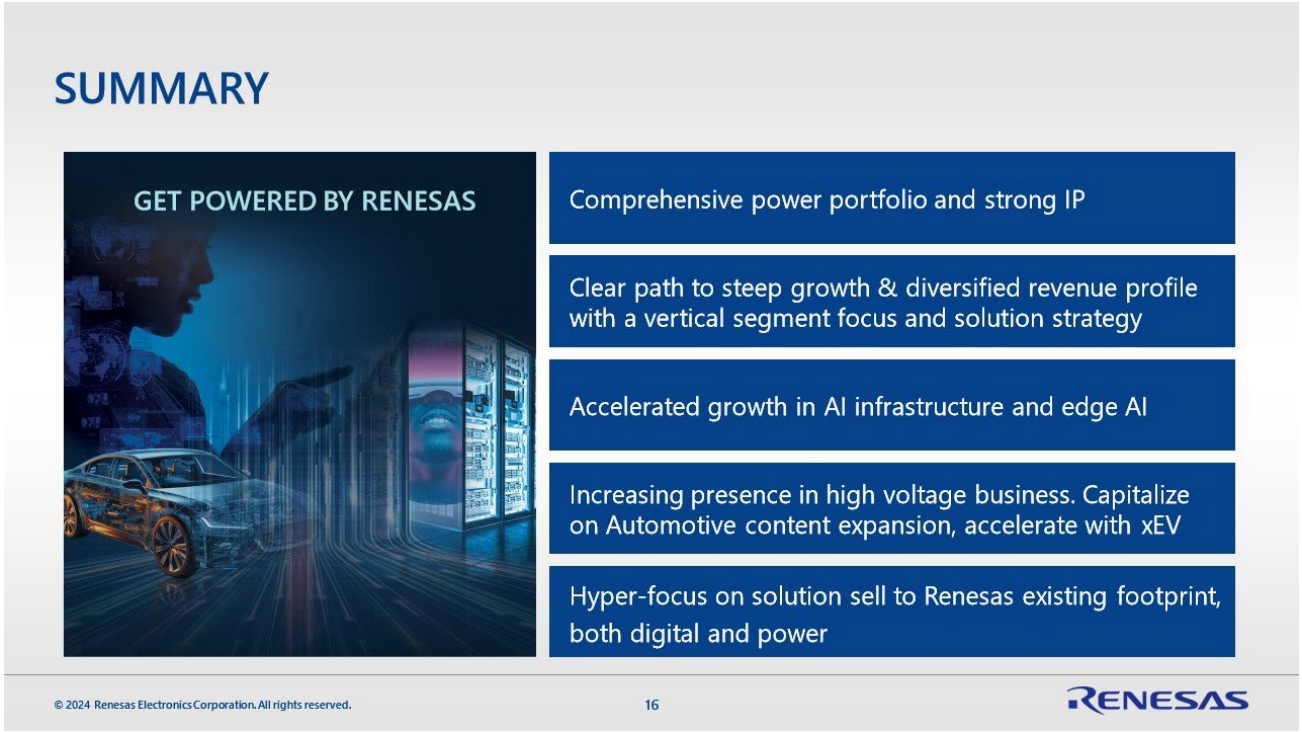
The first approach is to leverage the strengths we have already established in MCU, MPU, and SoC. This applies to both automotive and non-automotive as Seki-san talked about. Renesas ships 4 billion units of those digital SoC, MPU and MCU per year, it's an amazing opportunity for us to attach our power devices.

First, for very complex devices, we're developing dedicated, tailored, validated PMICs, including functional safety that we provide in a chipset solution way to the customers. reducing any of the burden for customers to implement SOC's and MPU's.

For less complex MCU and MPU, we offer a more catalog portfolio, reference design and winning combos. Customers will be able to easily make selections and choose their power devices.

The same is true for other markets. As I mentioned diversification, coming from using more of our product and developing more product to serve all the key market where we have pulled. Refer to the opportunity in AI infrastructure, where we have a significant position, a great opportunity to expand through our access to the customers. We've seen that already by being able to design in the catalog 48 Volt IBC into one of the largest SoC vendors and I'm very excited about the opportunity to take our discrete business into infrastructure in the future.

We believe that what we offer as Renesas is important to be able to attach analog and power. Again, it's important that every time we sell one product, we enable solution for customers. This is not just about expanding our SAM; it's really making life of customers easier.



This is my conclusion. As I mentioned, we have a comprehensive product portfolio, coming from strong IP and very successful engineering team through various acquisition. We're really scaling it and taking it to the next level.

I gave the example of AI PC, where we combine those two technologies. More products diversify engagement across multiple segments. I talked about the steep growth with focus on diversification, there are 2 key focus of growth. 2 vertical segments, both AI and xEV, will drive acceleration growth with dedicated solutions. Another one is the solution and attach pay. The acceleration in AI, which is real, which is today starting this year very strong momentum on both into the client as well as infrastructure. In high voltage we continue to build more balance and growing portfolio to win in auto as well as to build our accelerated lane EV.

It's a balance calibrated step-by-step business with more product, more application that we believe will deliver long term success.

And last but not least, as my colleague said, solution in Renesas is not an aftermath. Renesas is developing solution and everything we do is about how we deliver more to our customers and combine more product together to make the life of our customers easier.

Thank you very much.

Moderator: Thank you very much.

Question & Answer

[Questioner 6]

Q: The first question is for Mr. Seki. I understood that this business would benefit most from Altium. I have the impression that Altium is characterized by a very broad customer base or a very cloud-dependent sales channel. Now, Mr. Seki, please tell us how you are looking forward to the possibility of expanding your customer base, even if it is only with passion.

My second question is for Davin-san and Chris-san. Is the key to gaining market share in the data center market quality, price, delivery, or capacity? The customer is a hyper scaler, a very difficult customer in many respects, and the range of growth in scale is so large that it is difficult to commit through capacity. I would like to ask you to explain the best way to continuously increase market share in the two areas of memory and PMIC.

M: Seki will answer first, followed by Davin and Chris. Now, let's start with you, Mr. Seki.

A: The simple answer is that we are very excited about it. First, I am a little embarrassed to say that our variety on their platform was actually limited to begin with. When we started leveraging Altium, we did a very basic thing last year by putting all of our products and varieties on their platform.

Perhaps after the acquisition is completed, we will make a more specific approach from us to the customers they are now reaching. I expect that reaching customers we have not been able to reach before will be a major driver for our mass market strategy, as I discussed in my session, to explosively increase the number of customers.

M: Next, Davin will answer about our growth in the cloud data center, first from a memory perspective.

A: Growth in infrastructure for memory is not just about capacity. Of course, as you all know, we expect AI to continue to grow, and our growth there will be driven by the increase in content and the growth of the market itself. Of course, we will grow not only by benefiting from the growth of AI, but also by adding more products and selling to these segments. This includes both the server side and the client side.

In addition, AI will be even more demanding. As new memory technologies are realized in the future, and as we move from DDR4 to DDR5, we will now also see MCR. So, our content will continue to grow and will increase over time. In terms of capacity, we are working with long-term partners to ensure capacity. So, of course, we will increase it based on our internal growth prospects.

A: In addition to that, as I said before, we are not new here. We are a very large power, PMIC, in the memory supplier to infrastructure, CSP, cloud service providers, and servers. And we have a 25% market share with very strong product and quality. and a very strong product line. We expect to continue to increase that market share to continue support of those customers that are very satisfied with our quality innovation.

Also, as Davin said, we will not just support our customers, we will also innovate. Speed will also be increased. This distraction is giving us an opportunities with more content per system and more speedy executions, what I call the AI gold Rush, which happening now for the next few years.

[Questioner 7]

Q: Let me ask you about SiC. I think the business environment has changed quite a bit over the past year or so, and prices and supply and demand have changed as well. In this context, please tell us again about your company's approach and what kind of edge you have. You mentioned ON resistance earlier, but what else can you tell us about it? Also, please tell us if your investment recovery assumptions have changed from the past. For example, can you share your assumptions on the timing of the turnaround?

M: Chris will answer your current question.

A: First of all, regarding the EV business environment, the EV business environment has really changed over the past year. This has certainly been a positive contribution for us. And as I mentioned, we are very deliberate in building step by step in the very calibrated way for our technology and the capacity that we support that technology. So the slower outlook for EV growth is actually an opportunity for us. and it will impact more on our competitors who are upfront investing in huge production capacity.

We measure success from customer engagement, feedback on our technology as well as design in. And as I mentioned, we are today delivering our first generation, getting good feedback and the next 12 months we expect to see the start of design-in more in some applications and building on that. So we expect to build that business over the next few years.

A: SiC and silicon IGBT have similar themes. As Chris just mentioned, we originally did not plan to capture half or 30% of the world market share with this product. So, our capacity is small and our stance is to do it step by step. Therefore, even if the market slows down a little, we do not think it will have a significant impact on our capacity utilization or return on investment.

Of course, I think we need to be careful about price points. Similarly, at least for SiC, a significant portion of the cost is accounted for by the substrates. So, we believe that if this market environment improves, we will be able to make sense of the overall financials without changing that much. In this area, as Chris said, I think our cautious approach can be considered rather tailwind by the modulation of the market.

Q: Let me confirm one thing. The timing of the shift to 8 inches will be later than other companies, due to the late entry into the market. On the other hand, contrary to that, do you have any advantage in procurement from Wolfspeed Inc., for example? Of course, I understand that the scale is small and that you will proceed step by step. Which of these areas would you consider to be hedges in terms of cost relative to the competition?

M: Chris will answer.

A: First, as I mentioned earlier, I think we were able to take advantage of the existing fab retrofit of the 6 inches Takasaki. That helps us to enter in that business without a significant upfront cost. We are looking obviously for the next generation at 8 inch, we have not finalized our decision yet, which will more around the CY2027, CY2028 timeframe in terms of volume production.

So we actually believe that this is a wise strategy as Sebastian talked about, which is to build consistently that business ahead.

A: Of course the future will change, but at the moment, using 8 inches substrates does not reduce costs much. I think we will not see a cost advantage until the maturity of 8 inches substrates and 8 inches device production increases in the future. At this point, our view is that the time horizon we are envisioning will not be a significant disadvantage.

[Questioner 8]

Q: Let me ask you two questions. The first, which overlaps with the current question, is about power products. You indicated that the design-in progress for 2023 is very good. The design-in progress, especially for IGBT, in 2023 is shown on page 13. Could you please explain in more detail what applications, uses, and regions are growing?

The second is about sales and marketing. Regarding the change in market share at the beginning of the discussion, your earlier discussion suggested that the drop in market share may have been due to some not-so-good marketing. I would like to know what particular changes you are currently making in your marketing to increase your market share.

M: Is your second question focused on microcontrollers?

Q: Yes. This story focuses specifically on microcontrollers in automotive. I am asking if there have been any changes in the system with respect to that.

A: I understand. Just to clarify, I did not say that the marketing was not good, but rather that the product definition and specking was a bit too fast. Bobby will respond in terms of what he is changing and how he is changing it from a sales and marketing perspective.

Chris will first answer whether there are any segments, areas, or characteristics that are doing well, especially with regard to IGBT design-ins that are doing well. Next, Bobby will talk about recovering market share for microcontrollers, especially in automotive. Now, Chris, please.

A: Regarding IGBT, as I mentioned earlier in my presentation, there are two factors to the growth of the design-in. One is industrial diversification. Now, this is a pretty big part of the design-in. Applications as I mentioned are HVAC, home appliances, and renewable energy. For automotive side. It's not new application because we've been serving a lot of the classic application. We're really taking it to new geography, and we have really success in Europe in South Korea as well as India and the rest of the world.

We see a very strong momentum in Europe. as well as a matter of fact, we just close the significant design-in with one of the Tier1 in Europe in the exciter application.

M: Bobby, let's go.

A: I would like to say something about the market share of MCU. As Mr. Shibata mentioned earlier, it is more about introducing the right product at the right time rather than marketing. A few years ago, there were not that right products. As a result, we lost market share for several years.

On the other hand, there has been significant momentum for the past two to three years regarding MCU design-ins. And with this, we believe we can recover market share significantly over the next three to five years.

Q: What approach did you take in sales marketing, in other words, to increase this design-in?

A: First is the release of new products that better fit what customers need. We have also deepened our engagement with customers. We are increasing engagement with Tier 1 and offering dedicated support for OEMs globally. As a result, we were able to influence Tier 1 decision through OEMs.

So, We are taking two approaches: engaging with Tier 1, influencing decision-making, and engaging with OEMs globally.

A: As Bobby just answered, I think the big change from when we lost the market share we are talking about is that the direct dialogue with the OEMs is much wider and deeper than before, especially after 2021 and 2022.

At the time, we were defining a product that was a fairly large bet on the mega Tier 1 platform. We continue to have that perspective, but we have broadened our view to include how the OEMs are going to adapt beyond that. Therefore, I feel that we are now able to design products with much lower risk, or rather, lower volatility, than in the past.

[Questioner 9]

Q: In terms of the point on the AI gold rush, can you just talk about where you feel you have market leadership in terms of GPU, CPU and IoT markets?

M: Chris, please.

A: I think it's a bit too early as the market just really started to declare market leadership. What I can see is on the client side we are clearly the innovator. we're the first one to capitalize on this option with the AI PC, combining PMIC and VR.

On the SoC side, we are engaged with the leading CSP as well as SoC, so we are clearly among the top in terms of engagement from the AI eye perspective.

[Questioner 10]

Q: This question may be related to the share of automotive microcontrollers mentioned earlier. I think the phenomenon has occurred in the past three years or so, where the progress of E/E architecture has been a bit slower than expected, and instead the number of light MCUs has increased. At that time, the number of MCUs did not grow much, but suddenly started to grow, and the shortage happened about three to four years ago. I remember hearing at this meeting three or four years ago that the number of microcontrollers will grow considerably in the future.

I understood that the slow progress of the E/E architecture in relation to the increase in functionality is causing the number of microcontrollers to increase. On the other hand, I am a little concerned that the number of microcontrollers will be reduced again when the E/E architecture moves ahead. What do you think will be the pace of functionality upgrades and architecture changes in the market from here on out?

M: Vivek will answer this. As the E/E architecture evolves more and more, what are the implications of the number of microcontrollers relative to demand? What are the implications of this for our automotive compute business? Vivek, please.

A: Thank you for your question. As I said in my presentation, there is a lot going on in E/E architecture right now. For example, in the architecture of a domain up to now, OEMs are adding a zone component to that domain. And whether or not it will eventually be brought to the complete zone and how much content will go into the MCU will vary from architecture to architecture.

From Renesas' perspective, our product portfolio allows us to offer a variety of hybrid combinations, full zone, some zone plus domain or pure domain. So we are well positioned to service the different needs from an E/E architecture perspective.

As zones become more prominent and hybrids become more prominent, there is more integration of content happening within the MCU. We are seeing that as an exciting change as more functions get added to automotives and the zonal architecture controls it, there is opportunity to have more content size from a pure MCU perspective.

I thought the question on total number of MCU's, from the data we have seen, we don't expect that to significantly change or grow. It will grow at a reasonable pace, but not significant pace. But what will change is the type of MCU that are used and the type of IP and innovation that gets integrated into those products.

A: I would like to add a little to Vivek's answer from my perspective. What happened with our microcontrollers is not that the E/E architecture, say, domains or zones, did not advance that much. We thought the concept of cross-domain would take off more, especially in introducing 28 nano microcontrollers.

In other words, we decided that if we had one microcontroller that was a bit richer, it would be used in many applications, and together with the mega Tier 1 I mentioned earlier, we decided to introduce it. However, when we actually tried it, the reality was that another microcontroller continued to be used for the function due to cost and other considerations.

Therefore, rather than the demand for the number of microcontrollers being different from what was originally envisioned, something like an architectural integration did not go that far. As a result, the demand for microcomputers has shifted toward the demand for heterogeneous microcomputers from our point of view.

So, we do not currently expect that the demand for the number of microcomputers will suddenly decrease as compute becomes centralized. Our view, which has not changed over the past few years, is that demand for microcontrollers will remain strong.

Q: Thank you very much. Second, regarding the power supply for the servers, you mentioned power content per rack, and I understand that it will be very content-intensive. On the other hand, companies that are strong in power are naturally targeting this area. In this situation, your company has explained to us in the past that your portfolio will increase with silicon and Wide Band Gap. Are there any other missing parts in the power yet? Do you have a complete solution now? Quite a lot is happening on the back side of the rack. Could you please provide some more comments regarding the completeness of the portfolio?

M: I think you are asking to what extent our portfolio is sufficient, and what might be missing in the future. Chris will answer. Chris, please.

A: I think there is absolutely no such thing as perfection. That is my straightforward answer first. I talked about the expansion of the portfolio with new product. I also talked about the redirecting some of the product we have.

Now, of course, there are many products. Various solutions can already be provided to meet customers' needs. We also talked about how much we could expand our portfolio with new products. For instance, we never addressed with our FETs and discrete historically the infrastructure business. We are doing that now and using the engagement we have with those big CSPs, and vendors and suppliers are to be able to drive more content. As you pointed out, GANs will also expand into the infrastructure space.

So I would say we never complete enough, but I think we have this vision of using all the technologies, all the IP's we have, and close the gap when we have a gap like GaN, to be able to serve that business for the next 5 to 10 years.

[Questioner 11]

Q: I would like to ask President Shibata. Today, we have heard about the acquisition of Altium. In the past, you have also done quite a few large-scale M&As. I would like to have a summary of how you are monetizing them and what issues you are facing at this point.

A: We have been updating this consistently until now. We have been telling you what progress we are making, mainly in terms of cost synergies and revenue-driven synergies. Things are well progressing as originally envisioned, and since it will be the same update, we are omitting the report from this time.

In conclusion, it is so far so good, and I think we are generally making the progress we expected. The contents are uneven. For example, infrastructure power, which originally came from the acquisition of Intersil, has grown quite significantly, but there are some areas where it has not grown much.

Overall, we believe that the results have been generally as expected or better than expected. In terms of figures, or based on objective facts, it comes down to what I just said. But of course, what is most important to us through acquisitions is people at all layers.

Of the very six people you see on the screen right now, including myself, three have joined Renesas through acquisition. That's half of us. I personally believe that the biggest achievement is that these people are working together to create new solutions by combining the technologies and products developed by individual companies with Renesas' technologies and products. This has also worked well so far. We hope to continue to deliver the same results to the world in the future, especially through the evolution of culture and solutions centered on people.

Q: Thank you very much. I would like to ask one additional question. You mentioned earlier that you will be making about acquisitions of the scale of USD 1 billion to USD2 billion in the future and that you will not be doing anything too big. In this context, for example, do you want to actively pursue M&A for domestic and foreign startups? Or would you prefer to focus on companies with a more established track record in manufacturing, etc.? Please let us know your current thoughts.

A: We will continue to be as active in acquiring so-called small pack-in or bolt-on companies as we have been in the past. This has not changed. Just recently Transphorm may be a case in point, and on a slightly smaller scale, the Company acquired an Austrian NFC company called Panthronics last year. We intend to continue these efforts.

Also, the JPY1 billion to USD 2 billion is just an idea that I gave you, and I can't promise that we won't necessarily do USD 2.5 billion. What I wanted to say is that I do not envision that we will continue to do acquisitions of USD 6 billion, USD 7 billion, or USD 10 billion scale. Please do not misunderstand me, as my purpose is that I think our growth can be accelerated if we do a few more affordable sized acquisitions.

[Questioner 12]

Q: Let me ask you two questions. The first point is about the memory of the MCR. My understanding is that HBM seems to account for almost all of the AI accelerators. I would appreciate a definition of what kind of applications are the target market for MCR and whether they are not general servers. Along with this, Computer Express Link (CXL) functions will also come in. I would like to know what functions are highlighted as the role of the MCR and how it will be adopted.

The second point is about ADAS of Vivek-san. I myself think that this market forecast is very difficult. Is the number of clients increasing or decreasing? For example, it is said that Apple has stopped automatic driving, and then with custom ASICs, is it like Tesla developing its own, is the number of customers increasing?

Of course, in addition to customers developing their own products, there are also companies that only design custom ASICs these days. So, is the number of competitors increasing or decreasing? I would appreciate your explanation regarding the competitive environment.

M: First, Davin will answer about MCR, or MR memory, and what role and needs it has, especially in comparison to CXL and HBM. Next, Vivek will answer about the market for ADAS and the competitive situation. Davin, please.

A: Whenever a new innovative technology comes out, the early adopters are always the high end of the market. In this case, the AI optimized server market is the early adopter. MCR actually coexists with HBM. By doing so, performance is maximized. So, the early adopters will be AI-optimized servers.

However, once it becomes an industry standard after it gets ratified by JEDEC, we also see that technology proliferating potentially into general servers too, right. So just like any innovative technology, you start with the high-end applications and over time it moves down to more of the generic applications. That's how we see the trend for MCR.

A: Thank you. I will answer your questions about ADAS. In the ADAS market, OEMs are continuously evolving their solutions. They upgraded it from level 2 to level 2 plus and level 3. So the amount of technology that is being integrated in ADAS compute, specifically central compute as well as MCU continues to grow and that provides opportunity for supplies like Renesas who not only provide the technology, but also have a very significant and strong history with safety and reliability, which is important for ADAS.

Regarding the second point, competition, there are certainly competitors in the market. However, from Renesas' point of view, we provide full-complete solutions for ADAS. What we refer to as a full solution includes compute from the highest premium segment to the lower segment to the beginning segment. We have a very flexible and scalable portfolio that allows our customers to produce ADAS solutions for their respective markets.

In addition, as I mentioned earlier, we are not only a SoC manufacturer, but also an MCU manufacturer, which is a very unique characteristic of our company. We will, of course, be able to provide a software framework that can be applied to MCU as well as SoC. So that OEMs that are looking to upgrade have options for scalability, reusability and flexibility for ADAS solutions.

In addition to that, there is the chiplet concept. Renesas provides the central computer, but it can be combined with an accelerator, or OEMs can thereby combine our solution with their own IP and technology.

The open platform and then the capability to offer a very similar infrastructure for SOC's, crossover MCU's that Mr. Shibata mentioned to the MCU's at the lower end are all reasons why OEMs and market has interest in Renaissance products.

M: Thank you very much. Now that the scheduled time has arrived, we will conclude the Q&A session.

Presentation

Moderator: Finally, Mr. Shibata would like to make a few concluding remarks for today. Mr. Shibata, could you please?

Shibata: Thank you all for staying with us for a little longer today. It was long but well attended, so some of it may be insufficient for some of you. I hope you will take this as a sign of our desire to expand our interactions with you and to have this kind of event on a regular basis.

As for business, I purposely did not use the word diversity in my session. However, in many ways our business has been diversifying so far, as we have used several times in the past. As a result, we believe that peak and trough drops have been kept to a reasonable level. As a result, as I mentioned in the latter half of the session, I think you could see that we have several vectors for our growth, not just one AI.

That said, the exposure to growth vectors is lined up to be not so large as a percentage of the Company's overall sales, so there is no near-term prospect of any exponential growth. But I suspect that our growth will be supported by multiple growth vectors that are relatively strong. Therefore, we believe that our strategy has been effective to date. Furthermore, I hope that by adding this digitalization angle, we can achieve more stable growth in our business. We hope you will look forward to seeing future developments.

Finally, on top of that, thank you so much for your time today. Thank you for your continued support.

Moderator: With that, we will conclude the Renesas Electronics 2024 Capital Market Day. Today's material and video are available on the IR site of the Company's website. The video will be posted later this evening, Japan time. Thank you very much for your long participation today.

[END]