Schaeffler – Capital Markets Day

20 September 2018, Berlin

Schaeffler Group

Klaus Rosenfeld: Ladies and gentlemen, good morning and welcome to Berlin! Welcome to our third Capital Markets Day. We are here – that is the title of my presentation – to share with you how we deliver, how we execute our strategy. I want to use the first part of our programme to frame this.

Let me start by saying, ladies and gentlemen, strategy is about making choices, choices about the direction we want to go, choices about the portfolio we handle, about our core competencies and it is clearly about defining a framework. I want to use the first part of my presentation to remind you of the choices we have made in 2015 and 2016 when we set out our strategy called “Mobility for tomorrow“.

The second part of my presentation is about execution. Executing a strategy is very much about setting targets and achieving those targets. Targets can be short-term, targets can be mid-term; targets can be realistic, targets can be stretched. I learned yesterday that there is a lot of semantic whether it is a target or an ambition or an aspiration, whatsoever. I will stay with my presentation as it is, but I can promise that we will revisit the way we deal with targets in the future.

Having said this, a target is always based on an assumption, it is about understanding the environment and also making an assumption how the environment will develop. Today, we are clearly working in an environment that is complex, tangled and in some areas very difficult to read. Navigating through such an environment needs a compass and a good team. I am very proud today that we have enlarged the team that is presenting at this Capital Markets Day. It is not only the faces you know already. We have brought some of our best sailors with us whom you will see later on stage. We think that in particular in these situations where the environment is rough, it is all about teamwork, but also very much about navigation. I am very happy that the “Chief Navigating Officer” is sitting behind me. He will hopefully intervene if I point into the wrong direction.

Having said this, let me go to my introductory page. I think you saw this yesterday. We shared the reasoning for that press release yesterday with you: The group guidance for 2018 is confirmed. But given the environment, we have chosen to adjust our divisional guidance. For me the most important message here is: It already shows you that the choice we made to be an automotive and industrial supplier paid off in this situation. There you see how cruising through an environment and strategic choices work together.

Let me go to the next page. This is the roadmap, our framework that we have set ourselves when we started to tap the capital markets in 2015 and 2016. We have constantly worked on improving this framework. It is clearly there to position Schaeffler for the key future trends. My colleagues will talk about this. There is a programme that we call “Agenda 4 plus One“ behind it; that includes 20 initiatives. The

main purpose of this programme is to make Schaeffler a better and more attractive company. We have chosen to change the way we run this company and also the way how we report about the company with the three divisions. I am very happy that Michael is there with Robert Felger because we all need to do more work to educate you about what the aftermarket does and why it is so important for us.

The three divisions are also about transparency. Let me say that also loud and clear – I mentioned the targets –: It is also about accountability, so that people know what they need to contribute and bring to the table.

That is my last point here. We are clearly committed to execute in a sense that we want to achieve our financial ambitions or targets or you can call it mid-term objectives. The semantics is one thing. What is more important from my point of view is that we are rigorous in terms of executing what we promise.

This is the framework, our eight strategic pillars. I am not going to read this to you, but the three most important ones are highlighted: Automotive and industrial supplier, components and systems – the colleagues will talk about this –, and then the key future opportunities: e-mobility, Industry 4.0 and digitalization.

Let me go a little bit into detail here and put that into perspective. Automotive and industrial supplier is all about a balanced portfolio. When you approach this from the sales side only, you clearly see that we are predominantly, in terms of the sales split, with 64 percent of our business an automotive supplier with our Automotive OEM business. You see 13 percent in the aftermarket area and you see 23 percent in the Industrial division.

If you break down the 64 percent – you have this little box there –, 20 percent is engine, 30 percent is the traditional transmission business, 3 percent already is from e-mobility. It is clearly the fastest-growing area and Jochen will talk about this. I would like to remind you that there is also a decent chassis business. Dirk is going to talk about this later on. It is a very important part of the portfolio and you all remember the … acquisition we have done. That clearly points into that direction.

So, yes, 50 percent of our business is a traditional powertrain business. But we have chosen to go into a race where we try to serve on the one hand the traditional powertrain customers, on the other hand build the solutions for the future.

If you look at the margin profile behind it, you already see that the two smaller businesses are more attractive from a margin perspective. It is, I think, a great achievement of Stefan's team that we are already close to the target we have set ourselves going back to 11 percent to 13 percent in the Industrial division. You also see how attractive the Aftermarket business is in terms of margin. So let's not forget to look at the profitability split as well.

Then, I chose to share with you also the value split because that shows on top how important the aftermarket business is. This is for illustration purposes; we don't report this number in that detail. If you want to define and calculate SVAs on a divisional level, you have to make some allocations and choices because there is capital that is shared between divisions and you need to think about goodwill and these kinds of

things. So, this is for illustration purposes. It doesn't matter whether it is 40 percent or 38 percent; the direction is important.

Here you see that the aftermarket business is a very significant part of our value map and of our way we want to create value. I just want to leave that with you. So Schaeffler is an automotive and industrial supplier with a very important, value creative aftermarket business.

Second thought: components and systems. I think the colleagues will talk about this. This is also here to frame this. It is also there to show you that there is a common theme that covers all the divisions. That is components and systems. We are masters and have a long-standing experience in developing and manufacturing best-in-class components from a mechanical point of view. That is where we earn our money. That is where we have long-standing reputation with our key customers. But over the years – that is nothing that started in 2015 or 2016; that is an experience over the last decades – we have built systems understanding that enables us to integrate components into powerful mechatronic or mechanical systems.

The pyramid you see here works or both divisions; it works for the Automotive division and it works for the Industrial division. And it also includes the Aftermarket business because at the end of the day, we want to be an aftermarket player that is also able to sell a spare part or a spare system.

I think the ability to combine this systems know-how across all the three divisions into new, innovative products and service offerings is a key to success going forward and we will hopefully give you some convincing examples how all of that will work.

The next strategic pillar is e-mobility, Industry 4.0 and digitalization. This is there to put some focus on the future opportunities we want to share with you. There will be a lot of conversation about e-mobility and Industry 4.0. So let me shed a little bit of light on the digitalization thing.

Digitalization is something everybody talks about. It is a broad term. It is something that people get emotional about. They see it as a trend that is going to change the complete world. We see it as an opportunity. We see it as an opportunity on the customer side. You could say that the whole e-mobility and electrification strategy is a function of digital competencies. But I think that the digitalization offers a significant opportunity for us if you look at the internal efficiency gains that are possible by using these digital technologies.

So our main focus is: How can we use digitalization as a large manufacturing company to optimize our internal efficiency, both in the manufacturing processes and in the indirect processes? Ladies and gentlemen, I can say, there is ample opportunity here if we get that right to make the company more efficient, more profitable and also more attractive for the younger generation.

That is the reason why we have put a separate programme, which we call "Digital Agenda", within our programme "Agenda 4 plus One". It would certainly take too much time to go through all the details here. But I just want to remind you: This excellence programme that you see on this page is a very serious programme about setting the right priorities. The 20 initiatives here – again, we cannot explain them all

during one Capital Markets Day – have been there now for nearly three years. We are following the execution of this programme more or less every Board meeting. This is a long-term programme. Some of these initiatives are closed to be finalized. Some of them are at the beginning. You see e.g. that we have just started the global supply chain initiative. That is a key initiative if we want to achieve our targets and want to get to our financial ambitions.

In any case, it is a comprehensive programme that is based on profitability improvement targets. I can confirm we want to achieve a 300 million increase in the profitability from this programme, starting from the year 2017. You saw the numbers here in the last presentations, once again here on this page. Once again, the overall theme of this programme is to make Schaeffler a better company.

Designing this programme, we have chosen initiatives that have more a qualitative element, but also a quantitative element. Let me talk about these efficiency initiatives. Meanwhile, we have started and also shared with you six initiatives. The first four are efficiency initiatives. Dietmar is going to give you more detail. The only thought I would like to leave you with is: When we started we had no real track record on how we execute initiatives. CORE I was started in October 2015 and had a clear cost efficiency target. It had a headcount reduction target. We booked restructuring cost, the full impact should come in by the end of this year. The programme is more or less completed.

There was CORE II. There is the Shared Services programme. As we saw last year that we are cruising in a more difficult environment and need to do more, we put up the BCT initiative. We want to release nearly 1,000 people and save 60 million of cost.

The message I want to leave you here is: We are clearly committed to execute these initiatives one by one, step by step in digestible formats and digestible sizes. That is not only the cost side which plays a role. It is also the free cash flow that is important. The working capital initiative – Dietmar is going to mention this – has been put in place in April 2016. It has not fully achieved the financial impact. We have, as I just said, as a Board decided to put in another supply chain initiative.

This is just here to introduce Dietmar’s presentation how we do this.

In terms of the mid-term targets, if you look at this bridge, clearly we have to say: The bridge is intact, but the environment is different from what we planned for. So we need to see what we need to do here to put additional initiatives in place. We think the 12 to 13 percent are achievable. But it is a function of the environment and the success of implementation here. In any case, I would like to share our commitment again that we will not stand still to make sure that we create value for you.

That is my next page: How do we want to do that in the long term? There are basically four main building blocks. Three of them point to the divisions. The general idea and theme for Automotive OEM is that we want to grow consistently above market at a good margin. With that, there is opportunity to create value. Michael is going to talk about the Automotive Aftermarket business. It is a high-margin business. It is a resilient business that, in particular in days where people refrain from buying cars, offers significant opportunities.

In Industrial you see, we are on our way to achieve our margin objective with 11 to 13 percent. Here, it is difficult to outgrow the market. But that it is why it is so important to make sure that we achieve or even over-achieve our margin target.

At the end of the day, valuation is about cash flow. That is also the main target that we are incentivised by. So I want to add to the three building blocks the fourth building block that talks about operating cash flow generation and how we utilize the capital that we have.

That is the next page. You know this formula. You know our set of priorities. We have agreed and also communicated to you that our first priority is to pay a decent dividend. It is defined as 30 to 40 percent of net income. I think we will also for the coming year be able to increase our dividends step by step.

We have a logic that we want to finance our internal growth from operating cash flow and external growth primarily by debt. Smaller acquisitions can clearly be financed out of the operating cash flow, but if it is larger, we will take on some debt. The acquisition we have just done, Paravan, will be executed in terms of closing it in the fourth quarter. So you will see some outflow of cash flow there. It will be financed by debt that we will take on. That will also clearly impact our financing headroom. But, as you just saw, a third investment grade rating gives us good assurance that we have ample manoeuvre room also for future acquisitions. The balance sheet is sound and we think that there are some very attractive opportunities.

Before I come to that, let me also here go to the page with the free cash flow bridge 2017 to 2020. We have put out 900 million, clearly under different circumstances, but we are committed to go into this direction. If you look at the 2017 numbers, the reported free cash flow was 488 million. It includes a little bit of M&A and includes some non-recurring items that we are working through. If we further generate free cash flow from our growth plans, if we improve our working capital efficiency and if we put in place some on-top initiatives, the target is certainly stretched, but still achievable.

Let me talk for a moment about the on-top initiatives. The on-top initiatives are very much about capital deployment discipline. We have intensively debated also with our new CEO (?): What can we do to strengthen our capital allocation approach? That is all about making sure that we use the capital we have wisely. I am happy to say here that our intention is to bring back the capex-to-sales ratio perspectively into the 6-to-8-percent range that we had in the past. Yes, because of the “Agenda 4 plus One“ programme, we are spending a little bit more at the moment, also for some of the legacy things that we have to deal with, but, Dietmar, perspectively 6 to 8 percent should be a good basis. If we cruise somewhere around the mid point by just being more careful with the capital we have, I think, that is a tough, but a good target.

The same holds true with tighter working capital management. We are not happy with certain things in our supply chain. There is too much capital allocated there at the moment. We know – the colleagues will talk about this – that we also have to do better there because some of our customers would like to see a more on-time delivery. All of this is clearly framed by the objective to secure an investment grade rating and further optimize our financing structure. Dietmar will talk about this. We are on the

way here to also see how we can work on the net income side to improve our EPS profile.

M&A strategy is one of my last pages. The strategy has been articulated. It is all around seven search fields as we shared with you. The focus here clearly is technology, innovation and smaller add-on acquisitions. We are not going to entertain anything that is transformational. We have put a frame around it in terms of the deal sizes: 100 to 500 million is what we are saying. Would that exclude something that is 600? No, it wouldn't. It is an orientation to share with you that, again, mega acquisitions are not part of the plan.

What from my point of view is very important is the strategic fit, the cultural fit, the ability to integrate things properly and to get to the value that we want to achieve. These are the most important acquisition criteria. It doesn't make any sense to just acquire for the sake of acquisition without being able to integrate things properly.

We have made three acquisitions so far: Compact Dynamics in 12/2016, a first very important step in the directions of e-motor manufacturing competence. That clearly pays off. It is very good to see that also on the Industrial side people start to work with the Compact Dynamics colleagues. We have made a little acquisition, small but interesting: autinity systems. That will just be renamed Schaeffler Digital Services. That is very much pointing into the direction of our operations, but also will do some external work. Then last, but not least, the one in the summer. I think it is clearly a strategic acquisition because it opens up completely new opportunities in the world of chassis and will give us a little bit of a leapfrog going forward; Dirk is going to talk about this. Also here we think, yes, step by step we will build a track record of good and solid execution.

Let me sum it up. We are clearly committed to deliver on the targets you see here. Again, targets are about the environment. The environment is difficult. But we are willing and clearly committed to stay the course. We will only win if we set the sails right. As the Chinese proverb says, you can't change the wind, but you can set your sails right. We are good sailors and we invite you to join us on this journey. For that it is important that you understand the business, that you understand what we are doing and why we are looking optimistically into the future.

Here my key messages: A fast changing environment requires a continued transformation of the group and clearly proactive management. We have put this together in an excellence programme that we are executing; eight strategic pillars give us the framework. We continue to believe that above-market growth in Automotive is possible with our offering. We think that the resilience in our Automotive Aftermarket business gives us a very good basis. We are proud that the Industrial division comes back with a strong margin improvement that hopefully continues also in a less buoyant environment maybe next year.

We have strengthened the capital allocation framework. We are very much focused on working capital and need to put in place more capital deployment discipline. The M&A strategy is clear. We are showing first good signs of execution and we confirmed our group guidance for 2018 yesterday. It is clearly an ambitious situation with all the changing environment, but we will do the utmost possible to achieve what we

said yesterday. Our financial mid-term targets will be reiterated. We are committed to deliver value and that is why we are here with you.

Now I hand over to Matthias. We chose to have Q&As after his presentation, so that all the good questions on e-mobility that you are all interested in, don’t come to me, but to him. – Thank you very much.

Overview – Automotive OEM

Matthias Zink: Good morning! A very warm welcome to all of you on behalf of Schaeffler Automotive! My name is Matthias Zink and I am the responsible CEO Automotive, heading Automotive OEM since January 2017 together with my esteemed colleague Professor Peter Pleus.

Thank you, Klaus, for delegating the e-mobility stuff; that's a great achievement. But, honestly: What is expecting you today? I guess we have three items. First of all, we have a status on the actual business situation, where we are, what the circumstances are. I guess we had good discussions last night. Secondly, I will talk briefly about e-mobility; a deep dive will be given by Jochen later on, including all this rationale hybrids versus e-mobility versus ICE. Thirdly – that is what Klaus already indicated –, Dirk Kesselgruber will report about this latest M&A, the JV with Paravan where we enter the market for even autonomous driving mechatronics in chassis. So, I guess, three very interesting and important items being discussed today.

Talking about the actual situation, I would like to refer to the H1 results. They have been published on 7 August by Klaus, by Renata and by Dietmar. You see we had stated a 4.8 percent growth, so we have been very close to our commitment to outperform the market. I guess, the numbers given yesterday as an indication, Klaus, reiterate that. So there we said, the year could end 4.5 to 5 percent because we have as well certain headwind there; I come to that in a minute.

We have growth in every division shown in Q1. We had as well a good global distribution of that growth.

Talking about the business circumstances, again, there we had some discussions last night. We have to cluster them in some short-term and mid-term and some mid and long-term topics or challenges. The short term we can cluster in the homologation topic, the WLTP. All these releases have been given to the OEMs for this new driving cycle. Secondly, for sure we have all these tariff discussions and the trade environment. Thirdly, we see some slowdown in China, at least for the moment. The other side, the mid and long-term challenges are yet well anticipated by our strategies. We have the electrification topic. I would not say, that cools down, but that is more on a rational level right now with all these hybrids in-between, the pure e-drives. Secondly, we see even a quick increase in all this autonomous driving on these different levels. Dirk will elaborate on that in detail. For sure, but ever since we are as well anticipating or faced with some price pressure. But, again, this is somewhat not unusual in the automotive industry.

Having said that and focusing a bit more on the short term – this is more or less public –: This WLTP topic reaches us a little bit. So I would not say, this is a heavy impact on the business, but I would say, it is some volatility. Some OEMs have an issue and within those OEMs, we have some changes in their programmes, leading from some cancellations up to special freights in other programmes. It is not a bigger issue, but it is a kind of impact here in the automotive industry. I expect – that is as well included in our statement – that Q4 would recover some of those topics in Q3. On Q3, Renata, we will report on 7 November, I guess.

Secondly, this trade topic is a topic, US versus China and the other way round. On the other side, with our regional set-up and footprint, we are well settled there. Yes, China is currently in a discussion about Q3 and Q4 and the number of vehicles sold. The buying behaviour of the end customers there is something we look into. We have a strong footprint in China. We have a very balanced one with the local Chinese, with the global one. So we have no single dependencies. All in all, we think we can balance that. All over the globe, we have a good sales footprint. By that, we can compensate at least part of that.

The long term: You will hear the deep-dive sessions later on. Jochen will report on the e-mobility, as I already said. Dirk will give an outlook on autonomous driving and what the rationale in this Paravan topic is. Thirdly, there is this price pressure. As I said, we ever since have been prepared, we want to strengthen even – that is what Klaus has been showing – this operational excellence, we want to strengthen the short-term reaction with performance programmes and all that. I guess we have plenty of opportunities because we have an own strong footprint and a high level of value add. So the potential to react on that is pretty high.

The global footprint, just to reiterate that: We are very local in many regions. So we are very local with Automotive in the U.S. We are very local as well with our purchasing volume in China and we are as well local with our R&D centres. Concerning all these challenges, even the long-term ones – whether this is e-mobility, whether this is autonomous driving –, we can say: We are in the market for those markets with our engineers and, again, we are there with our factories and our purchasing volume.

Getting back to our product portfolio, that is what most of you know. We have later on an exhibition here during lunch time on the sixth floor showing that again. We have a very vital enveloping portfolio for powertrain and chassis. We are on the run to transfer that from a mechanical structure to a mechatronic structure. So it is not new to us, neither e-mobility nor autonomous driving. Jochen will show that in detail. For many years, we have been in mechatronics, in smart actuators. We deal with control units, we deal with low-voltage electro motors. Maybe stating it a little bit simple, it is nothing else than just reiterating now what we ever did, this transformation.

If you look back into our history, Schaeffler started 72 years ago as a bearings supplier. Ever since that, with that philosophy of system understanding, of system engineering, of system competency, we developed ourselves to the next level. Having been a bearings supplier, we went into transmission. Having been a transmission components supplier, we went into the engine. We went into the valve train. Having been a components supplier, we went into the full variable valve train in automation of transmission. Now we are on the hybrid modules, on the chassis side, Dirk, we are in the role stabilizers, we are in active actuators. All these developments are now transferred to the next level with the system perspective here, to autonomous driving respectively, to hybrids and e-mobility.

Now, looking at first into powertrain, in this transfer on engine and transmission. This scenario should be familiar to most of you. We called it for the year 2030 the 30-40-30 scenario. So we are saying, 30 percent of those drive lines in 2030 will have a pure ICE combustion drive line, 40 percent will have a hybrid – different kind of, we come to that – and 30 percent will have a pure e-drive. This scenario was published

by Schaeffler beginning of last year, Klaus, I guess, when we defined our strategy. We had plenty of discussions within Schaeffler and as well within the public whether this is right, whether it is too conservative or whether it is too aggressive. But I would say, this scenario somehow becomes more and more the new normal in the automotive industry. We really talk to the CTOs of our OEMs. We have house fairs, we have symposia. And in all those talks, it is more or less confirmed that this will be the scenario to go for, plus/minus 5, that doesn't matter. But the cluster as such is well perceived and accepted in the industry meanwhile.

What makes maybe the strategy for us a little bit easier to be derived from is that we say, 70 percent of those drive lines have an e-motor on board and 70 percent have a pure combustion technology on board. That is exactly where we said, well, then it is more than worthwhile to as well go into electro motors. Jochen, I guess, you will disclose something later on that. It is very clear that you will see Schaeffler electro motors on the market pretty soon.

But it is not the case that only the e-mobility is important for Schaeffler. You see that in our product pyramid as well having been shown by Klaus. We came from components, we are in mechanical modules and systems. We grew them now to mechatronic systems. We do all that with our vehicle powertrain, system understanding and engineering to again define new products, new modules and new components. Which is probably a little bit exclusive for Schaeffler: I guess there is no other supplier probably who can supply components to the market, even to competitors, but who is at the same time able to deliver whole future powertrains with electro motors and transmissions. I guess that is pretty unique.

By that we can more or less easily form this transition from the mechanical drive lines via the hybrids to the e-mobility.

As Jochen will focus on the pure e-mobility part, I would focus on the lower 70 percent. If you look at the pyramid, I would briefly give you two examples from combustion engine and transmission for the lower 70 percent.

WLTP is currently stressed very much in the industry. But that is nothing else than just a new driving cycle. The real problem the automotive industry has is the real driving emission. It is no matter whether we homologate a car according to NEFZ or whether we homologate that car according to WLTP.

The message which his there and what the end customer will expect is less CO_2, less emissions, less fuel consumption. That means that we have to adapt and to develop the engine in the whole engine map.

We call that the real driving cycles and the technologies for that. That means that e.g. fully variable valve trains, automated transmission, thermo management, all the technologies you see around that indicated engine here, will be of the essence for the future.

Maybe in contrary to what we discussed two years ago where everybody said, well, there will be a ban on combustion, there will be immediately e-mobility: We simply don't believe that. Even more, we clearly believe – we see that, Peter, in the automotive industry – that there will be new combustion engines, there will be even discussions on variable compression ratios. Programmes which have been cancelled two

years ago are now restarted. All these programmes need as well a lot of Schaeffler technology.

Just to give you a glimpse on a P0 combustion engine, this offers for us 25 percent more sales potential than a conventional or as-is technology engine.

Very much the same, if not more aggressive, on the transmission side. So far, we have about a 50:50 percentage between manual transmission and automatic transmission globally. All these efficient engines have to have an automated transmission to make best use of the engine operation point. All these cruise-control, automated driving preparation levels need an automated transmission and no manual transmission anymore. That is exactly what we see in the numbers currently. So there is nearly a kind of free fall from the manual transmission to the automated transmission, at least in Europe. It ever since has been in the U.S. It is as well accelerating in China. So the technology for automated transmission is significantly speeding up. That as well offers, depending on the scope of supply, up to even 90 percent more scope of supply or market size here for Schaeffler technology, may that be double clutch, may that be torque converter, the bearings set or double clutch transmission technology.

On top of that – I know that's in Jochen's part, but maybe a comment from my side –, we are no longer only a transmission components supplier, we are as well a transmission maker meanwhile. So we just launched, Jochen, on Tuesday with Audi the e-tron transmission. So we are, as I said, in our pyramid not only in components or modules, we even supply whole transmissions meanwhile to the automotive industry.

So far about powertrain. Again, about the lower 70 percent; Jochen will talk about the other ones. He will give you a clear rationale why we are that sure that the hybrid phase will be at least more than a decade and what kind of technologies we are going to feed in there.

I just want to briefly touch on the chassis part. Different to the past, we do no longer only talk 30-40-30. We as well discuss a similar scenario now here on the autonomous driving. This is a mix of IHS data, of some wise consultants; it is a reasonable mix, fine-tuned with our own opinion what kind of autonomous driving levels we are going to see in the mid-term future.

On the right side, you see as well, again, our envelope on the chassis side with mechanical and mechatronic products there and what kind of products we are going to further develop for this autonomous driving.

There is a kind of seamless, gradual transition as well to this autonomous driving. The first level is Adaptive Cruise Control, traffic jam assist, automated parking. Those may be technologies you already are familiar with, LIDAR systems, cameras, all these public discussions currently. Those are the first indicators for this kind of next years' upcoming different levels of autonomous driving.

What all is common here on that side – I said it –: First, by that, we open a market for these mechatronic actuators. In particular, we open the market here for the by-wire technology. That is exactly leading to the rationale we come to in a couple of minutes for this M&A with Paravan. Dirk will exactly go into that steer-by-wire technology where we laid the foundation by that.

We can cluster our chassis products in the same way. Again, we have those components. We have the mechatronic actuators. We have the mechanical system. All those we develop with the system understanding up to the people mover, up to the vehicle level here for this kind of autonomous driving.

So far as a teaser for my new team mates here who will lead you through that. Let me close with one slide here regarding the order book. I guess it was a very positive message in H1 that we had a 8.3 billion order book which led to a book-to-bill ratio of 1.8. Since then, time was not standing still. So you see on the right three new examples. Why am I showing that? All the three are examples for this continuing as-is business. Damper systems is clear. We stressed thermal management. Thermal management is a product for combustion engines, for hybrids. We even, Peter, have projects for electric vehicles and fuel cell vehicles meanwhile. So that is exactly where we have a very good access to those new technologies.

The first one is maybe worth mentioning because it is the planetary gear set for the most successful hybrid transmission maker. It is a Japanese brand; I can't mention the name. But those guys build a million of those transmissions a year. That is a nice proof or evidence that we are able to supply more than clutches, dampers and bearings. Here we are really a kind of transmission module supplier. We are the selected source for the European market. We don't do the e-motors there. But we do more or less the complete mechanical stuff, the mechanical intelligence. This is the power split transmission part of this very famous hybrid transmission. We are nominated as the supplier; that is exactly what you see here on the order intake.

Again, that is about the proof that we can supply different levels. We are unique on our portfolio. The order book is intact. We have some volatilities; I would not even call it headwind, but some issues with China and WLTP. But we had a valid forecast for the year yesterday.

Thank you for the moment. With that, I would hand over to Jochen to take you through the e-mobility deep-dive.

Deep-dive E-Mobility

Dr. Jochen Schröder: Thanks, Matthias, for your kind introduction. – Good morning, ladies and gentlemen! My name is Jochen Schröder; I am the Head of the new E-Mobility Division at Schaeffler. I am quite new at Schaeffler. I joined the company on 1 April this year. Before that, I have been working for 15 years for BMW in the area of drivetrain and most of the time in electrification. So I know electrification also from the OEM perspective. After that, I have been the CTO of Valeo-Siemens for two years, so also knowing the supplier side right now before I joined Schaeffler.

Why is there a new division E-Mobility at Schaeffler now? I want to pick up, again, the 30-40-30 scenario Matthias already explained. You see in 2017 4 percent electrified drivetrains. This explodes now to 70 percent electrification within the next twelve years. That is exactly the reason why Schaeffler decided to build up this new division to put the right power behind this market that is developing right now.

I will explain our product portfolio that we put behind it, the strategy that we put behind it to perfectly answer this market evolution here. But before I come to our strategy and our products, I want to deep-dive a little bit more into the 30-40-30 scenario. In particular, I want to explain, as Matthias already teased: What is the rationale behind this? Why are we sure that there will be a lot of hybrids in the foreseeable future? So we see, of course, a lot of EVs with the 30 percent, but we also see a sustainable amount of hybrids there. Why is this? Why are we sure that this will be what we see in the market?

To explain this, I want to use a model. I will use a scale, a balance here to explain what is happening. On the left side of this balance, you have high CO_2 emissions and on the right side, you have low emissions, down to 0 g per kilometre of a car, of a vehicle fleet. The centre of this balance is the legislative target that we have in different markets or the legislation that comes in place. Now we put weights on this balance. The size of these weights represents the fleet that an OEM has, so the amount of cars that he sells in an actual year. In this example here, we have an OEM who has most of his fleet in ICE cars, giving you a big weight at 120 g in this example. He also has some EVs at 0 g, but a smaller fleet size of EVs he sells in the respective year.

That is our model. Let’s apply it now first to the situation today, 2017, so the 4 percent we have just seen in our 30-40-30 scenario. The legislative target is at 130 g. We have an average of 121 g for ICE, Diesel a little bit lower, 118 g. There are more SUVs there; that is why the gap is not as big as you might expect. In 2017, everything is fine. The weights are on the right side of the balance. The balance tips to the right, meaning that legislation is fulfilled – no issue in the fleet.

But let’s fast-forward now to 2021. There, the situation changes dramatically. What happens? The target is now 95 g. That means, the centre point of the balance moves to the right. Furthermore, penalties are also introduced in Europe. What is the consequence of this? First of all, even though improvements in the ICE are still something that OEMs do, you see that the combustion engines are on the wrong side of this balance, giving you a heavy weight making the balance tip to the left.

Even 48V technology that you introduce in P0 systems – this will definitely happen to put at least the combustion engines a little bit more to the centre – still leads to a situation where you have a lot of weight on the left side of the balance.

So the only thing you can do to rebalance this and to come back into the balance is putting strong hybrids, full hybrids, plug-in hybrids or EVs on this balance here. Obviously, the EVs, the pure battery electric cars have the strongest lever. So why not putting everything there and we are fine? Well, we all know that there are lots of limitations for people to actually buy EVs. The size of the weight is not that an OEM offers EVs; it is what people buy, so the real fleet size in the market. We all know that range limitations, recharging times, charging infrastructure, concerns about battery lifetime or value of the car are still in the head of many customers. So, for 2021 and also for the years after that until 2030 we cannot expect that the OEM easily can push the EV number to the number he would like. With every EV that you do not sell as an OEM, you will need three hybrids on your roads to balance again this scale here. I will come to that in a few seconds.

Also economically, battery electric vehicles might not be the perfect choice for this CO_2 balance. I will show that in a couple of minutes. So we are absolutely sure from this that hybrids will be needed.

This is showing the penalties. If the balance tips to the left, you need to pay penalties. You all know the value: 95 euro per gram per car. We should have this value in mind when we think about the different technology options an OEM has. I will show you later that to invest into technology, into hybrids and into EV, is the better choice than paying penalties.

Now we fast-forward to 2025. We all expect in Europe that there will be an even more ambitious CO_2 target. Why that? Clearly, the Paris climate contract is in place; think of global warming. The discussion is in the area between 68 and 78 g. This will move further to the right, making it even more difficult because then the leverage of the still existing ICE mix, the weight on the left, is even much heavier. So you need a lot of more hybrids or battery electric vehicles. There is, of course, a big uncertainty of how many EVs the OEM can really put on the road. 2025 is not that far away for a charging infrastructure and a lot of the questions I have just raised.

I used the European legislation for this explanation. We all know that this is different in the different markets and the different regions. The legislation in China puts more flavour on EV. The U.S. Americans prefer hybrids. Only Silicon Valley loves EVs very much, but this is not all America. In China, we see different solutions to have this balance. Also the different OEMs have different strategies in place, depending on their car portfolio, depending on their strategy, depending on their market position. There are solutions to this balance putting more emphasis on hybrids. There are others putting more emphasis on EVs. OEMs also need a kind of flexibility because volumes are hard to predict, law needs to be fulfilled – at least most of them want them to be fulfilled. So they need all these technologies in their portfolio.

The 30-40-30 scenario is the overall summary of everything we discussed – this was mentioned before by Matthias and by Klaus Rosenfeld – with our customers, with the different regions. It is the overall picture that we see.

What we see from this is: We need a lot of weight on the right side. This means very good CO_2 values in powertrains, more 0 or maybe 30, 40, 50 g rather than bigger than 70 or bigger than 95 g, to have something on the right side.

Now let's look at this – what does that mean from a technological perspective? –, giving an insight also into what we at Schaeffler focus on. Of course, there are very small or simple electrification solutions that we show on the left, like a 12V Micro hybrid or a 48V system that you put into the belt, giving you a CO_2 benefit somewhere around 4 to 7 percent. But as I explained, this will not be enough. You need more sophisticated systems, you need more CO_2 effect.

Going more to the right, we have the 48V systems in P2 technology or architecture, meaning we put the 48V system as a hybrid module between combustion engine and transmission. This brings a lot more effect, more than 10 percent definitely. You can put a 48V system to the electric rear axle creating an all-wheel drive car, giving you more efficiency also here, around 20 percent. You can go to high voltage and to plug-in hybrids with these P2 modules or with an electrified rear axle. Of course, you can go to a pure EV on the very right side, with an electric rear axle or also in the far future maybe an e-wheel.

The green box there shows: The technologies that we at Schaeffler decided to focus on are those that have a strong CO_2 leverage. Coming from the model I have just explained, we know that mid and long-term these will be the systems that the OEMs need. They need those systems with strong CO_2 leverage.

Now – this is the upper part of the picture – let's have a look at what it means economically for the OEM in terms of euro per gram. The red line is the penalty. The first thing here is: All those technologies we are talking about are better than paying penalties. Actually, this was the way the penalty was designed by the law; it is no coincidence that this is the case. This is to force the OEMs to invest into technologies in the car rather than to accept penalties here.

So technology is better. This includes battery, whole system cost and integration. So it is not just our part; this is the overall cost of those systems. So you see that there are options to choose and all of them are economically better and it will move to the right side of the balance that I just explained.

The only tricky thing is the EV. Why is EV in some points here exceeding this limit? An EV has 0 g and whatever battery size you put, it still has 0 g. But customers, of course, want powerful cars. They want long e-range also in their cars. This forces OEMs to put a lot of battery, even more battery than from a CO_2 euro per gram perspective would be good in terms of these 95 euro per gram. But otherwise, you cannot sell your EV, if you do not offer those features.

So EVs are kind of tricky, they are not always below this threshold. This is another reason why we are sure that hybrids are a good option for an OEM because, in the end, in your fleet this is even economically a rational and cheaper solution than just putting everything into EV.

This is one part of our strategy: We say, we focus on the systems with a strong CO_2 leverage. The other part – this was already explained by Matthias and also by

Klaus – is our pyramid that we are fully flexible in the vertical integration and where we approach our customer. This is really a strength that we have here in this area. We know that a lot of OEMs want to do their electrification solutions in-house. But then we can still – this was just shown here also in hardware – offer the components to them, on the component level.

We are working with OEMs on mechanical subsystems like shown here or for a triple clutch as an evolution of the double clutch that you will need for electrification, or offering the e-motor; I will show that later. From all of our learning phase of the last years, we are now in a position that we can also offer complete systems. We managed the way to become a system supplier here. So we are now able to offer the whole mechatronic system, including also the power electronics and the vehicle integration, especially in hybrids where you need a lot of drivetrain know-how also in terms of damping, in terms of acoustics etc. It is not so easy for someone who is not long years in drivetrain to make the good combination of what the combustion engine is doing and what the electric engine is doing in a hybrid. It is kind of tricky technically and only few out there, including Schaeffler, really have the competence to actually do that technically on a good level.

This is the product roadmap behind it. The first thing you see here – this is a fact that we said that we do not want to put it in a different way – is: We entered the e-mobility market end of last year. We know that most of our competitors started much earlier. However, you see the market starts to develop now. We are not so unhappy that we missed the low-volume times because we are a high-volume producer. We are an industrial company specialised in high volumes, not in prototypes. That is why we feel that our timing is quite good.

We made it. We came with the first hybrid module, which is the dark green that you see here in this picture, at the end of 2017. There will be more hybrid modules to follow. I will deep-dive on this a little bit later. On the way forward, we integrate now the e-motor into it. We integrate the power electronics. This leads in the sector of hybrids also to dedicated hybrid transmission where you have a good alternative to a P2 system also for hybrids that we are working on for the further future.

We also focus a lot, of course, on the EVs. For the EVs, the solution is for the moment the electrical axle. We launched our first e-axle transmission, 1-speed and 2-speed transmission, end of last year. As Matthias just explained, for the new Audi e-tron programme – that has just been announced – Schaeffler is the supplier for all e-axles that will be in that portfolio of the e-tron with the transmission for the electric axle.

We continue this path also with e-motor integration that we will do at Schaeffler, coming to a complete system and perspectively maybe going also to the e-wheel in the further future.

One more strength that I want to highlight now is: We are a very innovative company. The products that we develop have a high level of innovation and technology inside, at the same time being prepared for mass production and also good from a cost and price level to our customers.

I will give you now three examples where I want to deep-dive a little bit more into the technology that we have prepared and the technologies that we are now launching in the market.

I will start with the e-axle for EV and also for P4 architecture hybrids. Yes, we had a learning phase. There were some early studies of prototype e-axles that we published in 2011, 2014. But please do me a favour: Do not use the data from that time in your reports because this is not the technology that we actually bring to the market. What we bring to the market now, in 2018, this is the reference you should use. Our transmission in the Audi e-tron, I can say, is the benchmark in terms of power density. This is the most lightweight and smallest and most compact transmission that you find on the market. We have a torque density of 230 Nm/kg, coming from a lightweight differential, coming from our planetary gear set, similar to what Matthias has just shown there, so high technology at a very competitive cost level. This is really an innovation that enables our customers to build very lightweight and very compact e-axles in the e-tron. Also based on this technology, we are providing for the future our own e-axle with the e-motor included. I will show the e-motor in a few moments.

The second example I want to show now is the P2 hybrid module. As I said, to put something between combustion engine and the transmission is not that easy; it has a high level of complexity. We managed to launch this product end of last year in China and we are launching in the U.S. this year with one of the big three OEMs of the U.S. This will be a hybrid module with Schaeffler torque converter included.

Again, this is a very good example of our technological innovation capabilities because, in the existing architectures of the car, there is no room between combustion engine and transmission. So the biggest challenge is to bring in your system in-between there. All of our competitors only manage to do this by sacrificing the torque converter. So they put out the torque converter to put the motor instead because the room is very limited. Not so in our concept because the U.S. market does not really accept that. U.S. customers want this torque converter for comfort reasons and also for some functions like boat-towing etc., all those things that the big SUV trucks in the U.S. do. So you need that torque converter and we are now the first ones having all this integrated in one module, fitting into the very narrow space between combustion engine and the transmission.

The story continues. We also here will include the power electronics. This is also our basis now for the next step which would be a dedicated hybrid transmission that we are working on now for our future portfolio.

The last example I want to give is on e-motor. Matthias mentioned it already: We will build e-motors at Schaeffler. We are ready to do so. Are we an e-motor supplier today? Yes, we are producing in my business division this year about one million e-motors. Few people know that. But it is 12V; I have to be fair here, but we are producing e-motors.

But, of course, what I am talking about now is high-voltage traction e-motors. To be realistic and fair, this is a little bit different. But still, what we analysed here, showed in the upper part of this sheet, is: What processes do you need to build an e-motor? You see from the picture already – I also have some exhibits that I will show right

now –: The motor is the mechanical part. So you need mechanical processes. Indeed, if you analyse this a little bit in a deep-dive, all the processes that you need to build an e-motor, like stamping, wire-forming, glueing, balancing, all of these processes that you actually need, we have at Schaeffler today, in 2017/18, with millions of products we produce because these are mechanical production processes.

So the only thing we have to do – all the green processes up there show that – is: We need to take what we have at Schaeffler, bring it to one place and produce the e-motor. We have proven with all our mechanical production today that we are very good from a cost side, also very profitable. So we will be able also to make a very profitable high-volume e-motor here, and this at a very high technology standard. What we will introduce is the wave-winding technology.

The wave-winding you can refer to in the way we do it at Schaeffler as the next step of the hairpin winding that you might have heard from some of our competitors or OEMs that go into the direction of hairpin. The wave-winding is the next step, bringing more efficiency and more power density because, again, here our ambition is to be benchmark in what we do in terms of efficiency, power density and cost.

I do not want to show you only PowerPoint today. To prove a little bit more what I have just said, I actually brought our e-motors here. This is the wave-winding motor that I have just explained. You see, this is real life. This is our hardware here. These are the first high-voltage e-motors that we produce at Schaeffler and will bring to the market now.

The second proof that I have is: I made a small movie in our factory because we are here in Berlin. I have no production plant here. So I brought the camera to the production plant. I filmed all those processes that I have just shown and where I said that we have this at high volume. So, please enjoy the movie.

(Movie)

Very nice movie, I think, showing a real-life factory and a development site that we have, giving you an insight also into what we ware doing. With that, I want to finish my part and I will hand over to Dirk now for our chassis innovation.

Deep-dive Chassis

Dr. Dirk Kesselgruber: Thank you very much, Jochen. – I would like to introduce myself as well. I am the second new kid on the block here for Schaeffler. I have been serving Schaeffler for eleven months now, so I am not that new, but still new enough that you guys don't know me yet. Before Schaeffler, I served TRW Automotive in several roles, in brake control system and steering development and was the recent CTO for five years of TRW Steering Systems. So there is already a little bit in my history on what I will talk about today.

Before we go to the future, it is a little bit important to talk about the legacy and the past because this is the foundation of what we will do. That is also one of the reasons why I finally showed up here in this company.

On the chassis side, Schaeffler is mainly recognised as a wheel-bearing supplier. Why is that? The reason is, because a wheel bearing is actually the only real product we are supplying to the OEM directly. What is not so known is that Schaeffler is one of the key contributors in electric power steering development and launches over the last years because we were a key contributor in bringing electric power steering to high-weight vehicles through our ball nut assemblies for steering racks.

At that time, there was the collaboration with many of today's steering suppliers. But there was clarity already in the past that the progression of chassis goes into an entirely different direction. Chassis was going to be a story of advanced driver assist as well as for autonomous driving. So Schaeffler had to take a decision how to capture value from this trend. For sure, a wheel bearing or a tier-2 business is not the one that will take advantage of this.

So, the group decided to go into mechatronic products and selected a technology where you have an acceptable hurdle of entrance and acceptance at the customer. So you would traditionally pick the one that is a mainstream and the mandatory product, so go into steering or braking; that is the natural reflex. But you see huge competition there and you see competitors which are far ahead in acceptance and also in the technology basis.

So Schaeffler decided to go into active roll control, which in an isolated business decision is something of which you would say: Why is somebody going into a niche market? The reason is, because there is a longer outlook. The active roll control is an enabler where Schaeffler took the challenge to go into one of the most demanding chassis technologies and bring this into production with now multiple OEMs. We are still launching through the next years.

The important thing is that this is a product which has such a force and such a dynamics of control and it is on 48V. So it brought us to a technology level that was stretching us to the limit. And we finally delivered. The end target for us – where do we want to play in chassis? – is for sure: We want to be a comprehensive system supplier. So the rationale of being here where we are and the target picture where we want to be is about a story: What are the appropriate bridge products to get there? Now, it is getting a little bit difficult because all the bridge products that allow you to scale are going into the mandatory technologies braking and steering.

We were a little bit lucky that with the autonomous driving a new window was opened. The window is called steer-by-wire. Why is that? Because steer-by-wire is a technology that had very, very little justification in the past due to very, very limited value for the end customer, but very high complexity in technology. So it was always somewhere, but it was never really accelerated.

But now, if we look onto the market for autonomous driving, you by a sudden see a direct value in money if you apply a steer-by-wire system. Why is that? Today – Matthias said that already – we are talking about driver assist. It is great comfort features, you have distance controls, you have lane keeping, you have all of this in place. But the problem is that the driver always has to be at least mentally in the loop of driving. Even if you don't touch the steering wheel or don't operate the pedals, you are always in the loop.

So what do you do? You look on the road, sometimes illegally you possibly look onto your smartphone and see what is incoming. But effectively, you are always part of the control loop. We call that level 2. But now – you see that already in the current Audi A8 and multiple other cars being launched – we are moving to the next level of automation that allows the driver to be entirely decoupled from the driving condition. The only requirement to the driver is that you need to be in a wake condition that in a failure that can occur you need to be able to take control over the vehicle in ten seconds. But at the time you are now able to do something else in the vehicle. You can type on your smartphone, you can watch Netflix or whatever on your front screens. So the imperative of changing the interior to this condition that people can utilize the time has an entirely different value than in the past. So, this is the time when steer-by-wire systems will first enter the market because you can put a price tag to it.

The interesting piece is on the technology that steer-by-wire has very little to do with current steering systems. So it is opening an opportunity for a very mechanically focused company like us, but with an already pretty well developed mechatronics competence, to step into a mandatory mass production market that is opening up in front of us.

You can easily recognise, if you look at fitment rates in the market, that highly automated vehicles will have the share based on an optional business. So I pick an interior set-up or an infotainment programme or whatever and this is coming along with a steer-by-wire technology. If you think further and you go into robot cars which we call level 5 which is actually autonomous driving and the car has very similar capabilities a human driver has – some people think, even more –, then steer-by-wire is mandatory. There is no other chance to steer the car or keep it in lane.

To explain why steer-by-wire is slightly different from what we know today: The current steering systems are all focused on that a human being can take control of the steering at any time. Effectively, in the level 2 it is being touching the steering wheel all the time. The entire safety aspects always go through a sequence where the driver takes control and steers the vehicle – which is good; so it has just the function of assisting, so making the steering intervention affordable for the driver, allowing small people to steer an F-150 kind of car with ease.

If we go to the level 3 automation and you recognize that the driver is still awake enough that he can take over the steering within the ten seconds, you can still count on the driver being connected mechanically to the steering. The only thing you need to make sure is that the electronic, the software and the motor and the sensors have sufficient redundancy that allows you this ten-second handover. This is something that you can still extrapolate from current steering technology: You are putting in some more microcontrollers, dual-winding motors etc. Then you get a pretty good set-up for level 3.

Once you take the steering wheel out of it, out of your environment, it is a different story because at this point you are cutting off all the fallback solutions and you need to connect the driver only through a wire. From this point, also the fallback solution and the safety aspects of the entire steering mechanics change because there is no more need that the driver is over-steering and takes control. The system has to be reliable enough. It is not allowed to fail at all. And in the improbable case of a failure, the system still needs to go into a condition that other control systems like brake systems, rear-wheel steer, whatever, can take over and take the car home or to the site.

In 2023, where the first functionalities with steer-by-wire will see the market, this is opening a window where we can revolutionize the technology.

As Schaeffler, what do we need? First of all, if you are focusing on a window that is opening for a few years in five years, you need to have the right start and launch speed, V0, as the pilots say. Secondly, we need to fill some of the competency gaps that we don't have yet. That means the steering mechatronics experience. We have to put that in place and accelerate ourselves that we can be in the front row because, for sure, every steering supplier today in the market is focusing on entering this one.

There is a huge market in front of us. Based on the market studies, we talk about a size of around 9 billion euros in 2035. That's attractive enough that everybody is approaching this piece.

This is under the condition that steer-by-wire only comes with the autonomous functions. If there is a trigger point where the volume of this technology is big enough that the price point is going into a mainstream swap, then this could be a generic market size of 30 or 40 billion at that time. So it is really attractive. Everybody is in the starting point and wants to go there.

For us, the only chance to position ourselves in the front row, as not being a steering supplier, is a technology acquisition. The interesting thing is that when we were scanning the market, we found a company which is called Paravan. Paravan had an entirely different motivation to work on this technology. Paravan was initially a company that was preparing vehicles to lift handicapped or disabled people into the car. At some point, they figured out: How can we make sure that we allow handicapped people to actually drive the car? We are talking about people who are disabled from the neck down, so they have only little motorization of their fingers. Paravan decided, we are going to develop a technology that allows these people to drive 200 kph on the German autobahn and to do a nice countryside walk without destroying other cars or bringing people into big trouble.

The problem was then: How can we make sure that this works? How can we make sure that it is being homologated, that I can get this car legally on the road? They developed a technology which is called Space Drive, which is basically a drive-by-wire technology. That is formally passed through the German TÜV, through the European legislation that this is a system that formally never fails. They brought it into production, they fitted thousands of vehicles over the last years and now cumulatively have 500 million kilometres without any accident, at a complexity that they can steer and brake the car just based on this electronics platform.

So, combining this unique position gives us a starting speed that we have in the first place the electronic architecture, the entire software set-up and library as well as the field experience in hand, so that we can combine it with our base mechatronic set-up and our steering history.

To keep not only the patents and the documents in place, we decided to form a joint venture because we also want to have the people on board that made this. It is a very deep knowledge, a long experienced development. So we created a joint venture with Paravan and moved the steer-by-wire technology into this joint venture. The mission of this joint venture is to drive forward this technology for mass production for cars, being compatible and compliant with all future autonomous driving requirements and to deliver this into our Schaeffler AG as a technology basis for mass production steering systems of the future.

This was the rationale of taking over Paravan: Because we were behind and this one is now accelerating us three to four years in advance, and to be in the headline of by-wire driving. For sure, this doesn't mean that we are thinking anything about entering the EPS market. This is something which is no longer very attractive. So we are looking forward to going to the autonomous only because we believe – and we have a strong belief – that this market will be exploding over the next years.

That is the chassis story. For the time, it is a teaser. I hope that through the next sessions you learn more about where we are and where we are going to.

I would like to hand back to Matthias in this regard.

Matthias Zink: Thank you, Dirk. – Ladies and gentlemen, I guess this was a nice excursion to the chassis topics. Let me briefly conclude: I am sure you detected similarities between both approaches. We have a very clear chassis strategy as well, even including these by-wire systems. We could see together the progress on the powertrain side. You see that both business fields are really on a solid and sound basis, from these mechanical systems in the transition to mechatronics. At the very tip of this pyramid – that is as well a key enabler for us – is the system know-how – Dirk, in your case including even the robo-taxis, the new mobility on the powertrain side, the real powertrain know-how and even the vehicle know-how.

The interesting part there is that even one business field is even somehow stimulating the other one, as I said in the beginning. All this autonomous driving will definitely need automated drivelines or even electric drivelines. I guess, by that we have two very favourable business fields there.

We don’t do that for us. We do that finally for our customers. We had a nice talk on the balcony last night when one of you approached me and asked: Couldn’t you have invited us to that? I said: Well, Klaus said the same. Apologies for that. We had two of our symposia. Those symposia take place every four years. We had one in Baden-Baden in Germany recently, in April. We had it two weeks ago. I guess you guys were very successful in Detroit, one with 500 customers, the other one with close to 300 customers. Now we will go to Asia, we will go to Tokyo, we will go to Shanghai. Some of us will be there and I would like to warmly invite whoever is on the fly to step by and to look into it. It is exactly the proof that we are very close to the customer and have a good proximity and exactly show, including the people mover, our latest technologies there. So, again, the customer is the first priority.

I want to briefly conclude: I guess we had a good insight with my new team mates here on hybridization, on the further optimization of the conventional powertrain and as well we see significant potential on the chassis side in terms of autonomous driving. I stressed the pyramid. We have the system understanding, one of our key enablers. We are on a sound mechanical basis, which even favours us in terms of e-motors. That’s valid for both, for e-mobility and the by-wire discussion.

Once again, that’s our promise, the promise of my team, of our teams: robust profitability. I know these are difficult times currently. But in the mid term, we have solid plans as well, including all these performance and operational excellence topics to lead the Automotive OEM into the future. – Thank you very much for your attention.

Q&A

Renata Casaro: Thank you very much, Mr. Zink, Mr. Schröder, Mr. Kesselgruber. – I invite on stage Mr. Rosenfeld. We can open now a quite comprehensive Q&A session to conclude the morning on the topics you have listened to during the four presentations. – Sascha.

Sascha Gommel (Credit Suisse): My first question is on the powertrain business. In Europe, the Parliament seems to push for a much stricter regulatory environment in 2025 and 2030, even stricter than the Commission has suggested. What does that mean for your e-mobility scenarios? Is there any change? What would it mean if the Parliament levels were actually to be implemented?

The second question is on the e-motor business. A lot of the 2019/2020/2021 platforms have already been kind of assigned to suppliers. When is that business really going to ramp up? Do you expect then to be in the second generation of e-cars of the OEMs?

Matthias Zink: First of all, Peter Pleus and I are members of CLEPA. So we are as well discussing at the European level exactly those topics. We had even our Professor Gutzmer talking in the European Parliament about how to achieve those thresholds or limits. For sure, a Parliament can define something. But there is more behind. There is a renewable energy structure behind, there is charging infrastructure behind, there is some rationale behind to be realized. We can define now 50 g and we can sell batteries and e-cars with a wrong energy structure. There is still a discussion ongoing. We try to be part of that. That is maybe as well a privilege that Schaeffler enjoys, what previously the OEMs said: We have the privilege to be listened to. We discuss those limits.

If a most stringent limit were there, honestly, I guess it wouldn't change anything on the balance scale of Jochen. It is what it is. In Germany, we have 44 million cars on the road. Should we scrap them all? Should we just feed in every year 3 or 4 million with 10 g less in the requirements? If we overdo it there, that is no solution. To answer it precisely for us: It doesn't change anything. We stay the path there.

We have a very high priority on this e-mobility. We go into e-motors, we talk power electronics, we partner there. We do our proper launches. That's about it. Again, we can't overdo it in this automotive industry. The targets are very tough. But we must not forget: Globally, we have 1.4 billion cars on the road. The problem is a bit bigger than only a new legislation in Europe.

Dr. Jochen Schröder: To your second question regarding e-motor: We are not the first in the market with e-mobility; that is simply a fact. We are starting now. We took our time also with the technologies I have just shown. We didn't want just to redo things that are already there. We think that the real e-motor for electrification is still to be invented in terms of power density. This is not a traditional e-motor coming from

industry. There are a lot of new things. The wave-winding is not an industry technology. This is basically also something we took from our Compact Dynamics acquisition. There is more coming from that direction. The power density you need, the cooling requirements in a car are very specific, the cost requirement, mass production requirement. That is why we enter now. We are not too late in that respect.

Yes, there was a wave of nominations in the past, already long before. If you look into the Japanese market, the Toyota Prius was out in 1997. So we know that there are a lot of e-motors already produced. But with the concepts that we brought to you here, we go the next step into that direction, bringing this really also into mass production and into the right degree of profitability. This is why we will participate now in the wave that is coming.

Sascha Gommel (Credit Suisse): What is a realistic timeframe to have an SOP e.g.?

Dr. Jochen Schröder: I said on the slide: We are ready for 2020. I think, maybe 2020, 2021 is realistic that we will come with an own e-motor.

Henning Cosman (HSBC): Also on that point: I am struggling a little bit to reconcile, Mr. Zink, what you said about acceleration and more interest on part of your customers in a lot of those technologies that you do. But still we haven't really seen up until now the acceleration in actual revenue. So can you reconcile that a little bit for us? When do you see that pick up?

I think that is maybe partly related. You didn't show the slides now, but at a previous Capital Market Day, you had these slides with the weighted content per vehicle and how your content increases in the respective powertrain technologies. I think, in summary that had worked out to about 6 percent content increase, which was also then reconciled to your outperformance potential. If you could talk about that a little bit.

Matthias Zink: What I said with acceleration as well last night was what Jochen has shown with this balance. I just said, the discussion on these 40 percent is very much accelerating.

Unfortunately, we cannot disclose currently finally the order book. What we discuss is even including a complete hybrid transmission currently internally. Thinking one or two years back, there was as well in that group the assumption that we go all of a sudden from the ICE to the BEV. This was the first wave what Jochen stressed currently.

What we now see is stagnation on this field of BEVs. There is the first launch and all the advertisement. But there is as well plenty of discussing, accelerated discussing on the hybrid because every OEM has this scale problem. Everyone sees, okay, I did

bet on the BEV, but it is damned expensive. People don't buy it. The infrastructure is not there, the energy discussion is still ongoing. We need something on top, not instead, but on top. That is what I said with acceleration. We cannot yet show that in revenues. We do not show it yet in firm orders. But since long we have not been in those in-depth discussions on those orders, on RFQs, on even outsourcing of complete transmissions to Schaeffler. That's it. This is this acceleration part.

The other topic: By purpose I did not stress "too much content per car" and "this variant versus that". There I would conclude, we confirm what we said in 2017. That's about it. The rest is to be seen.

Henning Cosman (HSBC): On your point that it is difficult to sell these BEVs to customers because they are very expensive: I appreciate that the technologies that you have shown are all cheaper than paying fines. But it is still an incremental compliance cost. How do you incorporate that into your assumptions? To the OEM it is obviously an extra cost. As it looks today, the customer isn't really prepared to pay extra for these hybridization technologies. How do you take that into account, especially when it goes into volume? If it is like a big-size SUV, maybe the incremental cost doesn't matter so much. But as we go into the Golf segment, it matters a lot more.

Dr. Jochen Schröder: The CO_2 regulation is nothing that Schaeffler invented. The 95 euro per gram is given by law. This is basically the money that the OEMs will have to pay, be it with or without us being there.

Our rationale is: The technology is cheaper than paying penalties. So the option is: penalties 95 euro per gram or do a plug-in hybrid with our technology at 60 or 70 euro per gram. That drives the OEM into that. Of course, this is also a reason why they struggle so much. It was obvious that they need EVs, so there were some decision processes quite fast to launch some EV programmes now.

Now they see the CO_2 coming to them. They see the 95 euro per gram approaching, if I stay in Europe. Other markets are similar. Now they see, it is difficult to sell the EVs in the numbers they would like to do – or maybe even not like to do –, but they need hybrids. Now they are in the discussion of what hybrids they do and how they do that. Of course, those decisions are difficult, but they are more difficult on the OEM side than they are on our side. We need to provide the right technologies, we need to do that with a competence that it really works for the OEMs, limiting their investments. This is actually what we focus on.

Matthias Zink: But, Henning, the question is still fair: Who pays for it? Finally, some day the end customer has to pay. For sure, we can delegate the problem to them. It is a problem who pays for that technology. The more perceivable electric driving is, the more add-on functionality you can give to it – electric parking or creeping, some other functionality –, people will gradually pay for it. Do they pay the whole bill? I don't believe so. But this is why we discuss the same thing: Coming into volume applications, coming into reasonable cost structures.

I give you one example, Volkswagen. They advertised the GTI Golf, GTD Golf and GTE to sell it the same way, that is valuable cars with the same power level etc. The GTE, the hybrid, has a weaker combustion engine. They save money on that. They add on the hybrid and they advertise it with valuable cars. Then they try to get it down to the cheaper car levels, to the AD level. That is the way. But yes, somebody has to pay for it. That's all of us, the end customers out there.

Henning Cosman (HSBC): In those discussions that you are having with your customers, it doesn't really feature that maybe the consumer is not prepared to pay for the extra cost, the OEM is not prepared to make lower or negative margins. So maybe there are actually fewer cars to be sold. That is not really a scenario that you are looking at currently, with people just subsidising that by e.g. Uber trips and not really wanting to own a car anymore?

Matthias Zink: No. It would be too early to conclude that even a kind of consequence of that would be stimulating having less cars out there. I don't think so. Automated transmissions have been introduced in the 70s, now they are in the Polo. I guess it is a matter of getting into the volume, getting used to some new functionalities and gradually paying for it.

I don't think that this will shrink somehow the available volume or fleet, not yet. That is more topic of new mobility, but not this on-cost hybrid and all that.

Edoardo Spino (Exane): I wanted to follow up on the relationship with your customers. Last time, you showed us a chart showing a projection of insourcing revenue versus outsourcing with regards to e-mobility. Can you update us on that? After one year, did you see a change in these assumptions? Do you think there is more business or less?

Dr. Jochen Schröder: As we said with this pyramid, we can meet all levels of what the OEM wants. If I look at the pure electrification – not on the whole car, but just on the pure powertrain, the electrification part – we have an addressable market of between 15 and 20 billion euro in 2023. This is more or less what we see. This covers, from the bearing to the e-axle system, all this bandwidth.

Victoria Greer (Morgan Stanley): I have a couple of targets questions, first of all, please. Could you talk about the elements of the auto input into 2020 growth? I assume that you see the current H2 weakness as just temporary. Last year, you talked about seeing outperformance, 400 basis points ahead of production. That is on a different basis, but broadly is that about the pace that we should think about?

Secondly, onto the 2018 auto margin only: The full-year guidance yesterday, you took down by 100 basis points. That's probably more than the leverage on the 100 basis points lower margin. Could you talk about some of the drivers there?

Last thing, more longer term: On electric motors, could you talk structurally about how you see margins on that sort of product? Do you see it as being in line with the existing Auto division? How is that changing?

Matthias Zink: Victoria, I guess that in the growth commitment we stay the course with these plus 4 on top of the vehicles built or sold; that should even come through this year. That depends on how China develops in the last quarter and the IHS data come true or do not come true. But to these plus 4 percent outperforming, we would commit as well till 2020 plus. If you look at our mid-term strategy plans, we will be on those 6, assuming 2 will be the market growth.

Secondly, the guidance: Yes, we corrected that. What are the influencing factors? The main factor is definitely our outlook on China. That is a profitable market. That is a market which was assumed with a good growth rate this year. We take that back a little, depending on the vehicle sales there, but still very much outperform the market there. Even if it were a minus growth on vehicle side, we would have 4, 5, 6 percent in China to be discussed.

But there we are and there we are profitable, plus: we stay the course in all these topics those guys are doing. So we don't take back any R&D. We stay that course on the strategy and we swallow those impacts from the market currently. That leads to this correction in Automotive OEM. So we don't want to hop quarterly back and forth through the strategy. I guess it is very clear what we have to do and this is the reason for it.

Klaus Rosenfeld: Maybe I can add, Victoria, to this last point. You are asking about the operating leverage. The operating leverage is a good concept to look at. But at the moment, with this environment, it is all about visibility and how forcefully you are able to adjust your operations.

I think the colleagues said something about localization and how we try to understand the signals from the market. Again, that is more an art than a calculation. I think we saw the first signs of weakness already in July. We said that we need to wait for August. August, I think, confirmed that it will be a more difficult second quarter.

Now it is all about how this second half, the fourth quarter is going to develop and whether our plans to adjust production volumes and take out some of the cost will materialize.

But I would confirm what he said: We are not going to jeopardize our mid-term strategy just because, from our point of view, a temporary weakness in one of our key markets needs to be dealt with.

We are here today to show you examples how this strategy will be executed. I think the e-motor example, to lead over to your third question, is a very good example that

you can close a core competency gap also with vertical integration and in-house capabilities.

There was always this discussion about “Schaeffler has no e-motor, so its e-mobility strategy is going to fail”. That’s wrong. The simple idea to look at processes and how they are done and the mechanical elements that we use elsewhere is a very good example that you can close core competency gaps in-house.

On the other hand, with this chassis example, we would never be able to close a competency gap there because we have no real steer-by-wire technology available. It is more or less impossible to build this on your own or it will take much too long. So this little acquisition we have done there is a another perfect example of how you can steer this into the future by screening the market wisely and then executing something.

Dr. Jochen Schröder: I don’t want to leave the question about margin unanswered. I think, Klaus Rosenfeld already explained that in a very good way. We have to see – and that is why we do that –: If we use the vertical integration that we used to do in other products for the e-motor – this is what we are about to do –, then we will reach a similar level of margin that we have in the other products as well.

But talking about e-mobility in general – I want to add that –, a lot of OEMs also want us to integrate a system. So then we are more a system integrator on top of those things that we do in vertical integration. So we have more also purchased parts that we integrate and we are delivering this kind of integration service.

Of course, for those parts that we buy and integrate like e.g. electronics – you know that we are not an electronics manufacturer –, of course, we don’t have vertical integration and we don’t have on that part of purchased parts such margins. But on all those parts where we have the vertical integration, the margins are on the level that you know.

Klaus Rosenfeld: Just to add one more sentence to this: We are very margin-focused in this group. But the interesting feature about the e-motor is: We don’t have to build a completely new factory for doing this. We can use existing technology we have, we can use existing facilities we have. This is not a completely new thing. That is the core. The core is: How much capital is needed to bring it into this direction, to do it in a robust manner? There we feel very good. With the things we have we can achieve our objectives and that will also contribute to value creation.

Julian: Just two questions from my side, one for Dr. Schröder, one for Mr. Rosenfeld.

The first one is on e-mobility. I thought the chart with the CO_2 reduction cost was really interesting, specifically because about half a year ago or nine months ago, one of your OEM customers said in an investor call that they actually think BEV will be the lowest cost option to reduce CO_2 and PHEV will be by far the highest once we have

2020, 2021 and the upfront cost for e-mobility platforms and the first EV models will have been made.

That kind of makes sense once battery costs fall another 10 or 15 percent and a full electric powertrain won't be more expensive than a small electric powertrain and a combustion engine powertrain in one car. So, if you could just explain again why in your view BEV will be the highest cost alternative to reduce CO_2.

Then, Mr. Rosenfeld, the second question is regarding what you just said about the 2020 targets. You just said that the guidance downgrade for this year for Automotive OE, that is a temporary thing basically: China, European slowdown etc. At the same time, if I look at the EBIT bridge that you gave us on slide 12 of your presentation – maybe you said something about; I came late, I apologize again for that –, that bridge looks different than the same bridge half a year ago at the full-year 2017 results. A bigger chunk of that bridge is now down to not the market performance or the performance in the divisions, but the restructuring. If you could just explain what changed there. Is the market actually a little bit more challenging now or is the performance in your divisions not going as well and you are putting more emphasis on restructuring?

Klaus Rosenfeld: We call it restructuring. But, Julian, as I said at the beginning, we are clearly focused on delivering what we promised. But that is also a function of the environment. We set targets or ambitions, whatever you want to call it; there is a semantic issue around it that we need to deal with.

But in 2016, with a certain view on how the world is going to develop, based on IHS numbers, based on what we saw in terms of our own activities, we said, 12 to 13 percent for the portfolio as a whole is a target that we should be able to achieve. That was clearly something that was stretched. But it was stretched on purpose to guide the organization into the direction that we are there to be a profitable and well-managed supplier.

Out of today's perspective, with the hangover in the second half of this year, it will be more difficult to reach the 12 to 13 percent. We already saw this last year, with some of the structural things, with some of the new things that had to be put in place. The bridge says, there is probably less contribution from the ongoing business and we need to do more in terms of how we can optimize our performance. That is why we have put in place the BCT restructuring.

Someone said yesterday, you talk too much about organizational stuff. But the purpose of the BCT restructuring is to bring up efficiency and bring down cost. We are basically releasing 1,000 people out of the plant network. It is another efficiency initiative like CORE 1, CORE 2 that is now more or less geared towards the automotive operations. I think, two thirds, Dietmar, of that is Automotive and one third is the rest of it.

The only message I have is: We are ready to put in another initiative if necessary. What, I think, is always important to understand: If you run in an environment like this, you have to do this in digestible sizes. It is more important to come up with

something you can execute than giving a big plan and this and this. That is what we follow as a logic. We revisit more or less quarterly or every half year where we are running, first CORE initiative, second CORE initiative. We have put the Shared Services initiative in place. That will not materialize as quickly as others. And now we do the BCT.

If we see that that is running, we will then see if we need to do more. I can tell you, I have already ideas what we can do next. But it is a process. It doesn't happen from a drawing board on 1 January and then you just sit there and wait. No, you have to do it step by step and it is a function of how the environment is developing. And the environment is difficult to read, that's for sure.

Dr. Jochen Schröder: To your first question: I actually said that the EV is tricky in terms of whether it is cheaper or not cheaper. You have seen on that slide a bandwidth of cost behind that. There are definitely, if you think about small city cars, cars which are very cheap solutions in euro per gram. Probably the OEM was thinking about such concepts when he had that in mind. But if you look at fleet solutions, there are not only small city cars. There are bigger cars, SUVs etc.

The battery e.g. is not only e-range; it also scales with power. So if you also want to have a lot of horse power, you also need more battery inside to deliver the power. This is what I said. For some cars, especially performance cars, or, when the market drives you to install more and more e-range to be able to sell your cars, then you put more battery than from a euro per gram perspective would be the sweet spot, let's say. Then it comes to the point, especially for performance battery electric vehicles that there is so much battery inside that hybrids are getting cheaper and that EVs even get more expensive than the penalty or the fine threshold.

Austin: I have two questions, one on the powertrain mix and another clarification on 2020.

On the powertrain mix, the message seems to be that you are hearing from OEMs that they are thinking more about hybrid and different types of hybrids rather than BEV. But do you understand what is leading them to that conclusion? They haven't launched many BEVs yet. How do they come to that conclusion?

Dr. Jochen Schröder: We are talking to a lot of customers about that, as you can imagine. They are starting to get concerned because they do not see that the EVs are accepted by the market in the quantities that they would need to be to fulfil this target. These observations now start.

What is behind them? You see that battery prices are stuck a little bit. You see that if you look at battery prices. So the downtrend is not as linear as some assumptions suggested. And I just explained the trend to more battery range; so the customers want the long range, 500 kilometres plus. Then you realize, oh my God, it is getting more expensive also in my car. Are there better options?

Maybe the third driver is the concern: If you have a lot of EVs in your portfolio, but you don't sell them, how can you react? If you then don't have hybrids in your portfolio, you cannot react. A hybrid is easy to sell. A hybrid is behaving like a standard car. You put fuel in, everybody buys it. If an OEM needs more hybrids, he just puts more to his production plants, makes this cost-attractive and customers will buy hybrids, whereas for EVs it is not that easy. You cannot just push EVs into the market to the amount of volume that you want.

Matthias Zink: That is it exactly and simply. The OEMs start to make their portfolio planning and see, if I don't have the option of a hybrid, I could be in a dead end, exactly for those reasons: infrastructure costs, buying behaviour of the end customer. That is where we are. Through the whole bunch of customers that we see, the hybrid transmissions are very up to date again.

Dr. Jochen Schröder: Of course, we still see the 30 percent. We see the 40 percent of hybrid with more CO_2 effect, but we still see the 30 percent. So EV will play a role and we prepare ourselves at the same amount of intensity also for the EV. We are not just focusing on hybrid. We are doing both, but we do it in a balanced way and not shooting just at the EV and forgetting the hybrid because we don't think that this will be the future.

Austin: I just wanted to clarify on the capital expenditure to sales ratio where you were saying: hopefully back into the 6 to 8 percent range. Is that for 2020 or after 2020?

Klaus Rosenfeld: On purpose I have not specified this … perspectively. That is something we are debating at the moment. We are in planning at the moment. It is not going to happen in 2019. That would be clearly too ambitious. But it is a commitment. We have said, we can do better on the capital allocation discipline. We have to do better.

Dietmar, who basically runs our capex committee now, is much more in the granularities of that than we have been before. We have lowered the thresholds. We have clearly committed in the Board that when we do return on investment calculations, there are no excuses. We need to make sure that we meet the thresholds. There are certain exceptions for new businesses that need to be justified, but I can say that the discipline that came from him on this is more or less what is behind that statement.

Yes, we are cleaning up certain legacy things, also in the Industrial business; think about the logistic building we have just done. We are clearly thinking about a localization building, new plants. All of this comes on top. But on a run-rate basis, I don't see why we should not be able to operate with something in the mid point of this range on a more mid-term basis than what we are having today, where we are at 9.

You will see also in the second half of this year that we will try to control our capex in a much more disciplined manner. That is what is behind it.

Christian G. (Atlantic Investment Management): I actually wanted to pick up on exactly that point on capital discipline and capex. I wanted to ask you in very broad strokes if you break down capex into ICE, e-mobility, hybrid, BEV, how do you see that evolve from where we are at the moment? Can we stay in this envelope even if we are assuming a fairly rapid ramp-up on the hybrid side?

How should we think about it physically? We have heard that e-motor can be done within existing facilities. To what extent can hybrid also be done in existing facilities? Or is actually additional brick and mortar required for that?

Along the same lines, does the same also apply to the R&D envelope? Can we stay within the current R&D envelope or is more required there?

Finally, with a view to "Agenda 4 plus One", what is embedded in terms of e-mobility break-even? Are we assuming that by 2020, 2021 e-mobility is starting to make money? What is the planning assumption on that? – Thank you.

Klaus Rosenfeld: These are delicate questions. Again, I would be happy to lay out all the details of the plans. But you will understand that we can't go further in terms of more granularity.

But to give you a directional statement, again, on capex – Matthias can help on what I am saying –: When it comes to capital deployment discipline, I can say – it is a little bit of a quote of the old Mr. Schaeffler –, we earn our money with those machines that are written off. What that tells you – and that is what we are debating – is: How can we make use of machines in processes that are already there? That is where the trick is and what we need to do.

There are certain things that we need, for sure, to do something like this. We will always try to do this in-house with our own "Sondermaschinenbau". Don't think about this meaning a completely new process, a completely new machine, mega money that needs to be spent. That is not the case. It is much more step by step; how can we see what we have? How can we maybe add something? Maybe there is a start, then we need to be able to industrialize it. So it is not so distinct in a sense that we cannot utilize certain things.

Don't forget: Our E-Mobility is very much driven by the transmission technology we have and the know-how we have there. I will not share the capex numbers. But I think we can say, still at the moment the cash flow generated by the e-mobility business is negative. This is how we look at this.

When it comes to break-even, the margin there is one thing. We would rather look at the cash flow profile of this. That will need some years to bring this up. It is a function of the volume increases. Within the "Agenda 4 plus One", within the timeframe of 2020, the e-mobility business, from a cash point of view, would not break even.

Matthias Zink: On the R&D side: It would be way too early – that is what I tried to show with this pyramid – to dry out the as-is business because the as-is business is not yet an as-is business. It is still very vital. The mechanical transmission, this engine part: We still have to develop there, luckily. But if I were allowed to disclose – what I am not – our R&D quota of the four divisions of next year, you would see that those two get more money than others because we really want to feed in the money in this new mechatronic stuff – not enough, I know. But we don't want to drain out or dry out our home base because we benefit from it.

Jochen learns winding for e-motors from winding …, from this and that. It would be too brutal to cut that. But in the long term, for sure, we have to think that way: What kind of paybacks, what kind of R&D quota in what kind of business? But that would be too early.

Utku Yurday (Pelham): I have two questions, one on the e-axle, e-motor side of things: How do you see the competitive landscape evolving? There are a lot of talks of more players than your traditional mechanical components, mechatronics side of things.

My second question is on the steer-by-wire side. Can you talk a bit about the competitive landscape there as well? Paravan looks like a great little deal. Who else makes the stuff? What is the potential there from a market share perspective?

Dr. Dirk Kesselgruber: Paravan is unique. Paravan does not have a competitor at all today. It is a unique set-up that is not present in the market so far. If we look onto the long term, for sure, the typical steering suppliers today that you know are approaching this technology because a lot of the current steering market is being replaced or substituted by steer-by-wire. For sure, those don't want to run out of business. So it is a question of the timing. In this, for us, Paravan is an advantage.

The entire mechanical set-up of the steering is revolutionized as well. Whereas the competitors have currently a good position in the customer, we have a unique technology position. I would think that this gives us this opportunity. But, for sure, I see on the current possibly seven or eight steering makers in the world that two or three have the technical capabilities also to run fast, but they don't have Space Drive.

So I would clearly say as a steering engineering legacy person that the Paravan thing is really unique and surprisingly mature. There are steer-by-wire systems in the market, Infiniti e.g. They are in contrast to the Space Drive and its simplicity of the design and how easy you can scale this. If you put 12 ECUs into a car and put two motors on a rack and two motors on a steering wheel, yes, it works, but is nothing that is going to be mainstream at all. And the Paravan solution is the one that exactly has this balance of being proven that it works and also has the ability from its simplicity to be scaled into mass production.

Klaus Rosenfeld: Let me add to this. The very convincing feature about Paravan is that it has been road-proven for many years. It is homologated. All the authorities around the world have already approved that technology. That gives us an advantage of at least three to four years to sell this, integrate it into our systems. That is the uniqueness of the thing. It is simple, it can be scaled, but it is also road-proven.

Dr. Dirk Kesselgruber: There is one thing that we should mention without allowing us to be too much in the details: You can be sure that the majority of all autonomous driving fleets in the world right now, when it comes to robo-taxis as well as for passenger cars, are running with Space Drive. Whenever an OEM in the world is trying to bring a test fleet onto the road – you know that legislation is now changing; also in the U.S. driverless vehicles are going to be legal if only the insurance is big enough – those cars have Space Drive on board already today.

Dr. Jochen Schröder: I give you a few answers on the competitive landscape in e-mobility or electrification. Starting with hybrids, I have shown that the trend goes into these hybrid solutions with more CO_2 level. We do not see that many competitors are out there that are able to really highly integrate all these components into the drivetrain. There you cannot enter easily from one side. You really need to understand how the whole system works, the combustion engine, the transmission, the electrification. There are only few that manage to really know about all these three. We have been in combustion engine and in transmission for many years, so we really understand the drivetrain system. We understand electrification and this brings us in a very good position now for the hybrids.

You see that also from our products. If you look to our hybrid modules, they are so closely integrated, damper functions and the torque converter is combined with the e-motor. These are not really single components anymore. These are highly integrated solutions. So you need this know-how from all the three worlds in one product. So there the competitive landscape is more or less convenient for us, I would say.

For e-axle drives, literally everybody tries to do that, to be quite open there. You know that, of course. So a lot of competitors try to do that.

But still – and this is my key message here – in the end, if it comes to high-volume production – an e-axle is a mechanical part. Look at those companies and where their DNA is. Is their DNA in a drivetrain? I mean, it is electric. But look at production. We don't really care. Of course, from a know-how perspective, yes. But from an industrial perspective, it is a mechanical production that you need in the end. We feel comfortable because we have all that background and high-volume mechanical production. And it's these strengths that we will put here.

Utku Yurday (Pelham): Can you give us a bit more flavour on what the process looked like with the e-tron win? That's a great one for you guys. But what was the landscape? What are the competitors that you saw in that process?

Matthias Zink: We had the usual suspects there as competitors. What made us being the supplier there was exactly what we said: the power density. There was no one offering in that design space a concentric transmission with that power density. Even this light-weight differential – I know, it is very technical now – is a differential we have patented. That is our idea. Only with that tight packaging – it is 30 percent less weight, 30 percent less space – it was possible to integrate this transmission plus the e-motor to the rear axle on this car.

Was that a one-off? I don't think so. Was it a premium car? Yes, it was. But that is exactly the entry ticket into the market. We are optimistic seeing those solutions as well in AD class in the mid-term future.

That e-tron transmission was a development of two and a half to three years, as a usual development for a transmission. What was maybe new to us: This was the path on his roadmap, the first section where we said, we want to be a transmission maker. I guess that's a great achievement because prior to that we had ZF, GETRAG – to name some of them; there are more – but we have not been a transmission aggregate supplier. This brought us there. So this is a very, very first important milestone.

I know there are some statements or reports saying, those are very simple transmissions. It is not the case. If you have to have a transmission, very efficient, high power density, very silent, for an e-drive, for a luxury car, that is quite a challenge. We can definitely say, proudly say, we are a transmission maker now. And now the next step will come here with the e-modules.

Kai Müller (Bank of America Merrill Lynch): Following up on that part, we have seen a few of your customers talking about whether they insource or outsource. I think it is not necessarily on the economical side, but actually what to do with the people who currently buy your parts and assemble the engines in-house.

Could you see the whole business model changing that you are almost selling the IP and have your customers assembling that? How can you see yourself actually producing certain parts, let's say, the mechanical side again, and the customers deciding to assemble it in-house themselves?

Matthias Zink: I think it could even be the other way round, that the customer outsources those operations to us. But for sure the discussion is ongoing on both sides. Either the customer wants to keep his workforce, wants to keep his factories running and wants to insource even more than today. And there are customers talking just the opposite way, saying, could you do the transmission for us? We don't want to invest. We want to focus on autonomous driving, on apps, on whatever.

I guess that battle is still on. But from the rationale, I think it makes more sense – not because it is on my wish list – to outsource it to suppliers because it is no longer so diversifying. Today, a combustion engine – V6, V8, R5, whatever – is a brand-decisive issue. In future, it is a silent, very powerful, very effective electric powertrain.

But that has not to be in the house of the OEM. That can be commonized on the supplier side. That is the rationale. But all the workforce, union discussions, that is a different animal.

Dr. Jochen Schröder: Maybe just to add on this, because it is part of my personal history as well. I am coming from BMW; the “M” in BMW stands for “motor”. So you can imagine that there are a lot of emotional discussions on BMW motors: Is it in-house or not in-house? I changed to the supplier. Take this as a sign what I think will come.

(Laughter)

This is a kind of personal story.

Maybe a second thing to think about: For a combustion engine, the workforce needed is much bigger than for an e-motor. This is something the OEMs start also to realize or what the unions already have realized: that this is not the answer to this transformation. You cannot stay with this amount of people in this transition. I think there are numbers out there. You can look at them. It is really dramatic: The number of people needed for e-motor production reduces by a factor of ten.

Kai Müller (Bank of America Merrill Lynch): Do you see a regional difference, let’s say, that maybe the Americans are more on the outsourcing side and the Europeans might want to do more in-house? Are there regional differences, or is it too early to say?

Matthias Zink: It is probably too early to say, but there is a regional flavour; let me say it that way. The Americans are maybe quicker in outsourcing it, yes. But it is really a tendency; that is not yet a kind of mainstream, I think.

Kai Müller (Bank of America Merrill Lynch): Just a follow-up: You said you create certain parts that competitors use in their e-axles. How is that relationship working if you then meet each other again at a tender for the whole system?

Dr. Jochen Schröder: That’s a real-life question.

Klaus Rosenfeld: That’s a good one!

Matthias Zink: Those relationships have to be re-cultivated, whatever. These are the open discussions we have, for sure.

On the other hand, look at the past, take the example of ZF: It is a competitor on dual mass and torque converters. We supply them with a three-digit number of bearings etc. So some of those relationships – on a different scale maybe – are already there where we at least can derive some ideas and discussions from. But for sure, the competitive landscape is changing a bit. But it is not an exclusive or whatever situation there.

Klaus Rosenfeld: It also spans the Industrial business. We do business with ZF as a tier-2 supplier and we are competing with them in certain powertrain solutions. You need to be able to handle this. It is also a compliance issue and you need to be very careful that you don’t burn your fingers.

Overview – Automotive Aftermarket

Michael Söding: Good afternoon everyone! Returned from lunch, I hope you enjoyed it so far. The Automotive Aftermarket – new as a Division in the Schaeffler company. But as we believe, the business model of the automotive aftermarket is also quite unknown to most of the investors and analysts. That is why we want to bring the business of the automotive aftermarket to you from two different perspectives. I will start with elaborating on: What is aftermarket in Schaeffler? How do we do our business and how are we proceeding? And then you, Robert.

Dr. Robert Felger: I will show you how we unlock the value in the workshop. It will involve a practical session. This is why the hardware is here. And we are seeking a volunteer. So you have some time to decide.

Michael Söding: Thank you, Robert. – The idea is that all what I am going to deliver, what I am going to present to you, you afterwards try to check from the perspective of a workshop, whether everything really makes sense.

Short introduction: My name is Michael Söding. I have been in the supplier industry for almost 30 years. I started with tyres, then went to batteries, at that time into air-brake systems and now for 16 years with Schaeffler and proud to run the Automotive Aftermarket since the beginning of the year as CEO.

Our business is performing well, profitable, growing. Nevertheless, if you recall the growth rates per year in the last couple of years, you saw some fluctuation. Please allow me to explain and give you more insights on the next slide.

Looking at it from a geographical footprint, it is clearly dominated by Europe, with the Americas to follow. Then you see that there is a lot of room for us in Asia, namely in Greater China and Asia/Pacific, as we put it, and you will see some of the activities that we have running in order to untap these markets.

When we look into our business as such, first we have to split the two channels, the OES, the business with the OE producers in their service organizations, and then the so-called independent aftermarket. The first indication: OES, 18 percent. And that means: We sell into the OES channel what has been produced and developed by Schaeffler in the beginning. So that is basically what we can develop in that market. But the bigger part is, obviously, the independent aftermarket, which gives you an idea that independent aftermarket is more important than OES. I will again show you in a couple of minutes why that is case.

Inside that channel, very much like our colleagues from Industrial and Automotive OE, we are merging from components into solutions to support the workshop best also in the future.

So let me start with some basics about our business and why business is fluctuating. We have developed what we call the three S concept. The first S stands for “sequential”. What you see there is the demand for a certain part over the lifetime. Obviously,

in the beginning, there is a part developed and produced for OE demand. That's the big mountain in the beginning. And then, over time, starts OES. OES typically starts earlier than independent aftermarket. One of the reasons is: It's a first-hand car, it's running under contracts. So if there is anything to be repaired, it's in the domain of the OEs. Then gradually, there is the third mountain or the third, let's say, development which is reflected in the independent aftermarket. What you can see there is a time span that basically starts like eight years after start of production till 20, 25 years after the original equipment production has been ceased.

Typically in our portfolio, Schaeffler parts are lasting quite long in a car. Eight years translate into something like 15 kilometres per year, driven kilometres. Yes, a Daimler Sprinter is used more, so they have earlier consumption, and there are other cars that have later consumption. But the sequentiality says: The aftermarket only really picks up after a time span of eight years – which already gives you a certain indication about what e-mobility may do to the aftermarket.

Assuming for a second that there will be the same pattern of demand structure, the cars that are going to be repaired in 2026 are already on the road today. As you all know, at the time being, there are very little electric cars and even very little hybrid cars.

The second S stands for "seasonality". I have picked a part number that has a positive development in the last few years. But what you can see from the monthly demand, for us it is simply impossible to predict: Will the peak of the demand be in Q1, will it be in Q2 or even in Q1 and 2? So if anybody is asking us in general or basically on a part-number level, when will the demand take place, for us it's almost impossible to really see how our first-level distributor is ordering his products.

The third S is about "singularity". Here I have to disclose a secret so to speak. If you look into the specification of the OE customers, you simply do not find repair. All the products are developed and created for long-time endurance. If you look into our award statistics, our plants are proud to say that they are awarded from their OE customers for best-in-class quality.

So if every part is made for lifetime and the quality is best in class, why does aftermarket exist? The reason is: Systems don't work the way they should work. It's not the single component in most cases that doesn't deliver according to the assumption, it's the system as such. What we see in business are ever faster development cycles. There is ever more technology brought to the road. What then happens is: Once in a while there is a failure.

There is one ugly word called "recall". But even before it comes to recalls, there is plenty of, what we call, field actions from the OE to make sure that the car is, let's say, in best shape – which creates a demand for us. But again, nobody tells us upfront: Year after next there will be a big demand for a certain part number in our business. So we are on a very reactive side of things in order to cope with these sudden demands.

Automotive aftermarket: Are we just selling single parts as they come out of Schaeffler production into the market? Is that the business model? No, it is not. What we discuss is the ecosystem of aftermarket. On the left side, you see all the players

in the aftermarket. We call this the seven levels. From bottom to top, the first important level is the car driver, the motorist. He is the one who drives the car into a garage once he has an issue. What he basically decides is: Do I drive into a franchise dealer – Volvo, Hyundai, BMW, whatsoever – or do I drive into an independent aftermarket? That is his decision. Next to that, he is driving to the workshop that he trusts. He doesn't know what the problem of his car is. The only thing he knows is: The car broke in a moment that he doesn't like. The thing that he needs most is to have it back tonight and he goes to that workshop where he believes he can trust.

The workshop, on the second level, has an approach that we call "fixed first visit". It's 7 o'clock in the morning, that guy doesn't know what this day will bring, but in the afternoon he has to deliver the solution. Then there are various distribution levels inside the whole chain. What they want is hassle-free business. They do not want to have returns, they want to have happy workshops. The repair solution level is what the automotive aftermarket is creating, is delivering out of what comes out of production.

Who is the customer in that regard? Any idea? Who would be the customer in these seven levels? All of them – because all take decisions. If there is one who is taking a decision against Schaeffler, we are not going to do the business. That is why we have to do everything necessary that all the decision makers take a decision pro Schaeffler.

In order to grant that, we have created in the centre, what we call, the seven elements. It always needs a product of good quality. It always needs a programme, everything in the box, like we indicate already over here: every screw, every nut, every release bearing that you may need for that repair in that one single box.

Thirdly, the know-how and the tools. On the commercial side, it's more about stocking, about replenishment, about pricing, about marketing. On the workshop side, it's obviously very much about technical aspects, training, special tools, data etc.

Availability: We can't sell when it is not available.

Pricing: The turn rate in a warehouse of a distributor of ours is three to four. From the day that he decides to buy from us till the day that he sells, it's his risk what the prices are doing in those four months. Whether it's FX influence, whether it's internet, whether it's grey market, he will not be our fan if, at the moment when he is selling, he has to realize that he is going to make a negative margin.

Customer proximity: We have these ever-condensing markets. There are mergers and acquisitions, there is vertical and horizontal integration. There is internationalization and we have to be where our customers are, in all angles of the globe, to understand how they are developing their business further.

Then, last but not least, what we call customer service. The customer wants to have an answer within five minutes. All this together creates that ecosystem on all the seven levels.

That is our view and, obviously, we are asking our customer: What is your view on us? Yes, we announced earlier this year that one of the international trading groups, ADI, Autodistribution International, awarded us Supplier of the Year, *the* Supplier of

the Year, a very global organization. We ask obviously our customers from distribution as well as customers from workshop. There you see that the customer satisfaction on workshop level is even higher than on distributor level which is extremely important. When we think about future trends like e-commerce, when we think about trends like distributors gathering more and more market power, we have to make sure that the workshop says: I want a Schaeffler product. And not the other way round: The distributor says, I offer you just the best deal that I have from my perspective.

Now we have described the ecosystem to a very large extent, but we missed one very important element. That element is time. Everything that we are doing and everything that has to connect, has to connect under a very tight timeframe. If it is right, as I said at the beginning, that your car breaks down in a moment when you don't like it, but what you say is, I want to have it back this evening, in the case of Schaeffler you have to understand that a repair is taking four to eight hours. So the guy knows in the morning at 9 o'clock what he has to do and at 5.30 he has to print an invoice, clean up the car and the job is done. So everything that we do in that ecosystem, has the job to guarantee that the repair on the workshop level is done within one day.

You see a couple of lead times how this whole value chain operates.

So that retailer on the very last level is like a pizza service. Then you have markets with shotgun-delivery: Workshop asks for a part, that guy jumps into the warehouse, into the car and delivers. You have markets like Mexico or Turkey where the workshops are next to a retailer. Then you have markets like Central Europe where they have milk-run systems. So every workshop can source from three to four retailers and they deliver four to five times a day, so he can source 20 times a day.

So time is most critical, time matters. You will see that slide again when Robert comes on stage. If you look into the value, what you see is that, from a workshop perspective, he lives to a very large extent on the service time that he sells. More or less 50 percent of the overall cost, at least in the case of Schaeffler products, is related to the service time. That gives you an indication why we have a high-margin business. If we understand the ecosystem better than anybody else, it's not just that we are selling pieces of metal, it's not just that we are selling data. It's that the market in the end of the day says: If I cooperate with Schaeffler, I can do my job in six hours, other than in eight hours. With that, I save, depending on the geographical region, two times 75, two times 100 dollars or euros. Why the hell should I try to bargain on the product side?

We believe that we deliver in that ecosystem better than many of our competitors. You can outperform us in logistics, you may be better on prices, but at the end of the day, if you really have the comprehensive ecosystem as such, that is where we state that we are leading in that industry.

Now we have set the baseline: What is the automotive market? What are the drivers for volatility? What is the ecosystem all about and what are the main players in our business logic?

What are now the building blocks for our future? We have programmes in place that I am going to elaborate on from now on. Obviously, the fundamental layer is our op-

erational excellence. Next to that, digitalization is a very huge aspect and issue in our environment, in the aftermarket industry. And then we have dedicated activities when it comes to ever increasing our product portfolio, to develop on our global presence and to optimize our customer relation with, what we call, cross-selling.

First: Operational excellence. If is right that there is a volatility in our market and it's more and more difficult for us to forecast, to predict the sales on a part-number level, proximity is most important. If you want to develop a business in any geography on earth, but you have to deliver from another region with a lead time of six weeks, eight weeks, three months, we are simply out of business.

So one thing that we do is: We invest into our infrastructure. We create the so-called aftermarket kitting operation where everything that needs to be gone in one box is kitted in the very moment that we know the customer demand. Why? Because we are optimizing our single parts. So a release bearing may fit into 50 different rep sets. If I pack it, not knowing what the real demand is, I have the release bearing in the wrong rep set and the demand is somewhere else. So the later I do it, the more precisely I know the real demand, the better I can cope with that request. Therefore, we establish the, what we call, aftermarket kitting operation on every continent. South America is done, North America is done in Mexico City, Asia/Pacific out of Singapore and China out of Shanghai.

We announced to invest like 180 million euro into our flagship aftermarket kitting operation in a place called Halle/Germany. That will help us to be much more responsive and also make even more reliable business, needs less working capital because we reduce throughput time and have higher margins.

Digitalization: For us, digitalization is the umbrella for very many activities. The first, obviously – Klaus already made that point – is to optimize our internal activities. Product: Product-related information. We need this product-related information in 25 different aspects, related to car park, related to weight, related to tariffs, related to packaging design etc. Wouldn't it make sense to put all the related data into one single point of truth? That is what we call PSP, Product and Service Platform.

We need these data in not only one location, we need it in the 25 legal entities that we run, out of which we do business. So we could reduce the amount of activities by generating one system for 25 use times, 25 locations. So that is one example for efficiency in our own organization.

Next: online business. We as Automotive Aftermarket have been doing online business for 20 years. The point is that we are doing this online business in a B2B channel with a partner whom we know on the other side. We founded together with some industry players a company called Tecom (?) 20 years ago. All the communication, the interaction, invoicing, delivery announcement, everything is established in that system and has been working for 20 years.

What's new for us is obviously B2C, the business to unknown. We tackle it in various dimensions. In the U.S. we are more with Amazon, in China we are on JD and Taobao. In Europe, we run our own little first shop where we offer parts which the distributor doesn't like to stock. Tractors are a very good example. A tractor never dies. There are tractors not on the road, but off highway with 50 years of age, but

they need parts and that is how we do our first steps to really catch up with doing our own e-commerce capabilities.

Is it because we want to change everything into online sales by ourselves? Probably not. But we need to have the know-how also to understand what our customers are doing and, when it comes to negotiation, to always have an option: Do I sell via a distributor or do I sell via my online channel?

Then connectivity. The buzzword here is called telematics. Everybody knows that cars are gathering data. There are 100 million lines of code in a car today and there will be 300 million and a car produces like 5 GB per hour. All this is data. Now everybody wants to get access to this data from the telematics box. The first thing that happens, at least in Europe, is what we call e-call. So there is, by law, a telematics box in every car that is engaged with an accident. But the telematics box is already there. So, obviously, now everybody wants to get access.

Here, all of a sudden, we are not talking digital anymore, we are talking political. Matthias, you were mentioning CLEPA. The German association VDA here in Berlin, in the U.S., in China, we are fighting that we do get access to these data. In an open market, we need to have open access and that is a political discussion. So that is a strong fight.

Imagine for a moment that we will be successful, then are we going to do with that data? We have to deliver it to a platform. We have to translate it into something that we can read and therefore we founded a company, Caruso, together with partners of the industry under the body of the company TecAlliance to create a marketplace for that data.

Then, third, comes that every individual player is then trying to derive its business models. There are so many examples for business models. Volvo does it with the trunk. You can ask to deliver parcels into your trunk, not back home, but the guy comes in front of your car, indicates one time opening the trunk, puts the parcel there, trunk is closed, business is finished.

Imagine your calendar knows that you are going to travel by plane. So your car will sit like two days in the airport and somebody says: By the way, you need a repair. Isn’t it advisable, instead of paying 50 bucks in that airport, to pass me the key, I do the repair and once you return you get that car back and the 50 bucks we share? Something like that.

These are the possibilities that everybody thinks about. These are the solutions. So, first, we need to have the political access, anything but digital. Next we need to have a transfer of all these data into a platform and thirdly we arrive with our business model and every stakeholder will probably have its own say.

Now the first pillar. We talk China. We want to grow our business in China. The starting point is: We can only sell what we have. If you look into the market of China, then you see an ever-increasing variety of cars. Now we have two options. The first option is that we ask Matthias and his team to be ever-successful on the OE side. And the more they stretch out into the market, eight years later, the business will be coming in our direction. Or we try to accelerate by developing parts and solutions on our own;

that is exactly what we are doing. That is why we were growing faster than the market in the last two years. Looking into our figures, obviously, in our portfolio it takes us the eight years to pick up, but once we pick up you see that growth coming.

Second example: our Asian expansion. The one thing is: You have to globally know what you are going to do. You need the logistics and supply chain, you need your IT and planning systems, the sales footprint and obviously the product coverage. But it's not enough to sit in Langen, Germany, to say: Now I want to be successful in Thailand. So what you have to do next to that, in parallel, is: You have to optimize your local footprint in terms of a sales organization as well as product coverage. It's not enough that you know the part from your catalogue, not enough that you know the cost. You have to have it available in that market at short notice with short lead times, which obviously offers us also to do local sourcing.

And on the sales side, again, you need to talk the language of the customer. When there is a retailer or a workshop in Thailand that is only speaking Thai, it doesn't make sense for him that you spread the information in English, French or German. So all this has to be developed. These are our dedicated programmes in those four given markets where we are establishing that local organization to ever increase our business.

Then the last example: cross-selling. Cross-selling means, it's one thing to have a good relation to an individual customer, it's a better thing to increase your share of wallet within his portfolio. What I brought to you here is an example from our customer GPC, NAPA who runs 4,000 stores in the U.S. We started together with him to develop the clutch business in the year 2011 and he awarded us not for all the 4,000 stores, but two out of his seven regions, to start in a wheel-bearing business together with them. The Americans do not think in pieces, they do not think in components, they think in categories. That says, if you want to have the business, you have to provide us 9,000 skews.

So that means, we first have to establish the programme, we have to understand the cataloguing, the pricing, all the data and then we have to deliver overnight into at present for that bearing business like 1,200 shops. That is how we optimize our footprint, that is how we see that our customers are basically happy with our market approach and they are going to award us with ever new categories on the back of the success stories of the past.

Well, that's the view of Schaeffler Automotive Aftermarket. So now I would like to hand over to Robert. Time is most critical, as I said. Hopefully, Robert, the workshop owner now delivers how our seven elements go hand in hand with that workshop level.

Deep-dive – Unlocking Value

Dr. Robert Felger: Thank you, Michael. – As Michael said, the bulk of the value created in the Automotive Aftermarket value chain is in the workshop, but half of the money spent by the consumer net of taxes is on labour. The labour times are set, so an extra hour needed for the repair will be on my cost, being a workshop owner, and then I command a margin on the parts which will typically run at about 20, 25 percent. You can do the maths. This is why we need to focus on the workshop.

When the guy who throws away the boxes, as one American once put it, chooses our product, that will work upstream and pull the product through the supply chain, through the value chain. It makes then sales have an easy job which is my ultimate target.

I will show this to you along our rep set 2CT, the repair solution for the dry double clutch. That's a product Matthias was running to Volkswagen for between 2005 and 2007. This is how long it goes back. But you see how past technology, today's technology and then future technology can tie into each other to unlock the actual bit of value that makes life easier for everybody.

This is how it starts: You come in the morning to your vehicle and the malfunction indicator light is on. You drive the vehicle into my workshop. At this point, we have no clue what the problem is. We have the stress situation. We didn't think about it yesterday. We have difficulties to handle today and we want to get rid of it as soon as possible because we need the vehicle.

The next thing I am going to do is: I walk on to the vehicle with a scanner, with a diagnostics tool. This is the second time the vehicle comes in touch with Schaeffler technology because we will have fed everything we know about the product into the most popular diagnostic tools to make sure that the right fault is diagnosed.

The Situation for the workshop is: Nine out of ten times they accept the job. One out of ten times they need to turn it away and half the turnaways are for not being able to diagnose the fault. That's too bad because that might just be the jobs with the extra margin.

Here it says – the important part is in the middle –: Clutch 1 has reached its tolerance limit. I do know that will need a clutch change.

What's next? I will need to tell the customer how much the part is, how much labour is involved, give the customer a cost estimate and ask the customer: Do you want the vehicle repaired?

Maybe that is important: One reason to turn away the job is: I don't know how to do it. On a high-running part we are selling, the amount of parts we sell in a market equals about the number of workshops. That means, on average, a workshop does that kind of work about once a year. The next category is: It would be done maybe once in a career. The third category is: You would maybe know somebody who will do it once in a career. So, in essence, it's like done the first time every time. Or when you compare it to your personal tax return: You do it once a year. You know how you feel about doing the tax return: In essence, you know what you need to do, but you need

some assistance on the side. This is what we do with Schaeffler REPEXPERT. We provide this technology. We help identify the right part, give the online assistance, show up at house fairs, promote the product, produce the brochures, installation videos, step-by-step installation. I will show you in a moment how easy it is when you know what you are doing, to do the job and keep me as a workshop in business.

Let's move over online. Online has the advantage: I can reach out into the world. I don't need to call somebody on the phone which is still very popular, but I can do it online. So the first thing is: I go on www.repexpert.com. Meanwhile, we have more than 100,000 activated user accounts. This means, these are professionals that do the job in a workshop. So it's not just consumers, it's real professionals. We are adding about 2,500 a month. We have a world-leading global reach in that. Nobody else has that. We have 23 sites around the world in 13 languages. That's a unique advantage where we are a key search point for technical information and then easily for our products.

So we start with the catalogue, enter the VIN number, the vehicle credentials. In this case, it's an Audi A1. It says in the vehicle registration papers 0588/BDG. Search, move over, yes, it is an Audi. So the system knows the same thing I do – good. Select the product category, select the clutch kit, clutch parts, arrive at our clutch kit which is the double-clutch kit right here, 6020007. Then we offer product details in the sense of a full set of technical documents, brochures online, offline, installation videos, step-by-step instruction. If I was in doubt whether I can do the job, I will be able to have the job done with the assistance of Schaeffler. I move over, this is the information, move over further, look for repair times on the clutch and I see: 6.8 hours of labour. What I didn't show you is: 6.8 hours of labour, typical Audi rate: 75 euros. It's about 500 euros, the part itself is 500 euros. That equals about an equal amount. This is why we show this. But it could be easily eight hours of work, like on a transmission repair, and 300 euros in parts. But it is definitely away from windshield pipers where it doesn't take any labour.

So there are 100,000 users which lend themselves also for customer surveys, for marketing purposes etc.

You need to do the estimate: 1,000 euros plus tax is 1,200 euros. You want me to do the job? – Good.

Let's go ahead. I start working and now the supply chain needs to start working. I have ordered the parts. I have about 2, 2.5 hours to remove the transmission and in the meantime I want the part delivered. If the part arrives any later, I have the lift blocked, I don't have any idea what to do other than go out smoking and time is wasted. So here it is of essence that the parts arrive on time and in our case that we also have the tools arrive on time.

Everything we need for professional repair in a single box, all the accessories included. I will show you why it is cheaper to buy a full set of rings and why it is expensive to only buy one of them and then find out something went wrong. The next step is the full set of tools. For most complex vehicles, you would have special tools required; that is customary. As a workshop, I can either loan the tools; loaning a single box costs me about 50 euros a case, with materials. Selling double clutches of up to 3

million for this application, I may opt to just outright buy this. We offer the tools on REPXPERT against bonus points. Or you can just outright buy it. So 500 euros a piece.

May I should have said: I need a volunteer. – Well, I said that upfront. Who wants to volunteer here? – I see somebody moving.

We have the kit. Like in a cook show, I have prepared something to make it easy for you. We have installed the puller. The puller is part of the box. We take the wrench, 22 mm nut and now it's your job doing the most difficult. – Oh, you may want to turn it the other way.

(Laughter)

You said you have an economics degree. – Okay, we are doing good. You did the most difficult part that here is. Congratulations! You have graduated.

You want to assist me with the others? – Was it difficult?

(Volunteer: No, it wasn't!)

It was dead-easy, wasn't it? The difference between dead-easy and damn difficult is: You need to know what you are doing.

(Applause)

Now I am going to show you three more tricks where we say: If you do it a smart way, it will just save you so much hassle. It will save you efficiency, it will avoid mistakes and it's so easy to empower personnel in the workshop to do it the right way first time around.

The first trick: This design will require these shims. There are two sizes of shims. We have included all possible thicknesses in there. Including everything may be cheaper than just ordering what you need. The first thing is: In order to determine the right shim thickness when you go to a Volkswagen dealership, he will say, use this calliper, measure, do some maths and then walk over to the service counter and order it.

(Klaus Rosenfeld: Here is your service counter!)

We thought of something different and that is: We have put together a set of gauges with an added weight and a feeler gauge that will slide in much easier. When this slides in easily, we know we have the right thickness. There is no waiting for a service counter or service personnel. Klaus may be out smoking by the time I need him. We have that for both sizes, it's included. That definitely saves time and effort.

I ask the engineers: What is easier, working out this with nuts or this? – Okay, engineering says, this is easier. Good.

The next trick: When we reinstall the clutch – I would just do it as if – we say, before you start pushing the clutch onto the spline here, you may take a measurement. If it's more than 8 mm, chances are that you are tooth on tooth and then there is no sense in pressing the clutch on because you would just damage the spline. Not available in a Volkswagen/Audi dealership. One out of ten times you may do a silly mistake and need to do the job again, again money spent for parts, money spent in time.

The third trick is: In our toolset we have a dial gauge that will be fitted and two hooks. So we can make sure before we reinstall the transmission when the clutch is installed, that we have the proper free play, the proper backlash which needs to be between 0.3 and 1.1 mm. If it's not, 2.5 hours later – the clutch is installed into the vehicle – the vehicle doesn't start. We need to do the job over. The clutch can't be reused, we need to change the clutch again. So do it right the first time.

These were three very simple tricks. Like in any other example, it's the simple things that make the magic difference. It's the simple things we try to innovate in the Automotive Aftermarket that will allow us the extra bit of margin.

The ultimate goal is: A happy customer will return for return business. An unhappy customer will still return, but not for return business. We want a happy customer to return to the workshop. Our customer satisfaction, our net promoter score on workshop level is far greater than on a distributor level and ensures us the brand presence, the satisfaction and also the volunteered feedback when we are out on fairs in the sense of: Problems are treasures. I love problems. Problems lend themselves for solutions. Solutions lend themselves for business, allowing us the extra bit of business.

All in all, like in an industrial context, we need to empower workshop personnel, we need to eliminate waste in the workshop, we need to make sure zero defect is assured as a first prerequisite. Second, everything you need in a single box. I hold our teams responsible to achieve that. It's the extra – it's maybe a bit more difficult to get our hands on components – that will make the difference. Our team is sure, I make sure it's included. It's the extra mile we go, along with REPXPERT. There are 70 live REPXPERTs, like in these shirts, around the globe, speaking 27 languages, from expert to expert, with a high level of credibility.

Thirdly, intelligent solutions. The intelligent solutions make the difference. The intelligent solutions set us aside, having a lot of competitors on a component basis. In some of our products, there are no competitors, like in a blue ocean. It is our strict workshop orientation which creates our tangible unique selling proposition which ultimately allows us the margin level we promise. – Thank you.

Michael Söding: Robert, the workshop owner. Did Schaeffler help you with 2CT double clutches?

Dr. Robert Felger: I think you touched on cross-selling. When I am happy with a 2CT, I will also be happy with a bearing and sales programme in the U.S. I will also be happy on engine components. I just trust the brand.

Michael Söding: Very good. Thank you very much, Robert. The last thing is the clicker.

Time matters – that is baseline of this story. Time matters on that workshop level for the customer to return due to the competence that the workshop delivers. That is why

time is not only critical in the part, but in all the elements of our ecosystem. That was basically the story that we wanted to tell you today.

We elaborated on that basic ecosystem that we offer and where we believe we are best in. Only last week, similar to your symposium, we were just coming back from the Automechanika Fair in Frankfurt which is the flagship fair of our industry. We could host thousands of customers at the customer reception day. On Wednesday night, there were more than 500 to exactly talk about that story. That story is not only important to be understood by the workshop itself; the distributor has to understand why it makes most sense also for him to cooperate with Schaeffler the best that he can.

Looking forward, we laid the foundation and we are, let's say, developing our organizational excellence, our logistical footprint and, obviously, our digitalization activities. Then we have the three growth drivers: global expansion, cross-selling activities and increasing coverage, range extension in every corner of the globe. That is why we are simply convinced that we are going to deliver a high profitable growth also in the future.

With that, the Aftermarket session is over. – Klaus, do you want to join us again? We are happy to receive your questions.

Q&A

Sascha Gommel (Credit Suisse): My first question would actually be on the capital efficiency of the business. Given that you need to hold a lot of inventory, is there anything that you can do structurally to the business to improve your asset efficiency? Maybe you can give some insight into what you are doing to reduce the capital that is employed into the business and make it more cash-generative.

Secondly, that's more short-term: You had a very strong H1 in terms of profitability. Why are you not more confident that you can actually defend that high level of profitability?

Michael Söding: Coming to the first question: The starting point of our business is: We have availability. That is why we need stocks. The full value chain is not that flexible that we can just produce on demand.

But as you said, we are always driving to optimize our working capital, specifically our inventories. That is why we are optimizing our lead times in our own organization. The one little example that I gave to you with the aftermarket kitting operation, where we are integrating eight existing warehouses with lead times in-between and transfer times will give us eventually like three days. That is one example where we can reduce waste in our supply chain in order to optimize our working capital.

That is basically the balance that we are striving for: how can we increase our delivery service to 95 plus by at the same time reducing inventory? There are also lots of things going on in forecasting, planning, predicting future demand. We are looking into artificial intelligence to learn more from historical data and look into the future on that. So that is what we are doing in order to reduce working capital because also our experience is: Inventory per se doesn't make your delivery service better; in many cases you are sitting on the wrong parts.

To the second question: What we have to accept in our business – fairs are one example – is that the seasonality of our marketing activities is always more to the latter part of the year. There is the big Automechanika in Frankfurt, there is the Las Vegas Show at the end of October. There is the Shanghai event at the end of December. So in the second half of the year we always have higher related costs. This is one of the reasons why we do not say that we will keep the level of the first quarter.

Klaus Rosenfeld: Sascha, don't forget: There was a one-off impact in the second quarter that we could not adjust for because it was not big enough as an adjustment. But we mentioned that the high margin in the second quarter cannot be extrapolated. So you need to take that into account as well. But the guidance is a guidance for the year.

Kai Müller (Bank of America Merrill Lynch): Just a question coming back to your aftermarket parts: If you think about your market share in the OE business in some of

those parts, how does it then compare in the aftermarket? Given you have these special kits, is your share actually then higher? Can competitors' product be replaced with yours or is it only like-for-like?

Dr. Robert Felger: There are components that lend themselves more for a one-to-one exchange where we compete with good enough parts; wheel bearings would be an example. They were probably a little bit lower than the OE share. Then there are other parts where it's more a marketing aspect, a value proposition where we clearly beat the OE market share. It is our ambition to be more to the better end. This is why we are elaborating on the more complex repairs, offering solutions where we are really unique.

Kai Müller (Bank of America Merrill Lynch): Do other competitors really not have these packs, or do they just have a different approach?

Dr. Robert Felger: This is an example where we are the sole supplier, –

Michael Söding: That' the leading edge.

Dr. Robert Felger: – where we have a unique position inherited from OE. But we do have other solutions like the repair of the physical transmission where we come up with a repair solution that costs a few hundred euros as a gross price and saves hundreds of euros to an end user. It's this kind of value proposition where we can unlock value to everybody involved, leave some money on the table. So the workshop can keep some of the money, pass some money on to be more competitive in a community. And some of the value can flow upward to be a margin in our pockets.

Michael Söding: Coming back to the example of the cross-selling: There we sell 9,000 skews and sealings we have never produced. The customer is asking us: You are now the one to sell the whole range of sealings to me, plus bearings of any kind that is not in the portfolio of Schaeffler. So in that combination we can obviously increase our market share against our competitors which, from the beginning, has nothing to do with the competence of Schaeffler.

Sascha Gommel (Credit Suisse): Maybe just a follow-up: In your investment in this big distribution centre, which you spent a lot of money on, given that a lot of the inventory still sits with distributors, how important was it then? Was it just to save these three days in terms of inventory or is it that you also ship to the workshops directly?

Michael Söding: Out of our German warehouses, we have already 1,000 express deliveries per night. We do it on the back of our distributors who say: I have a demand, I don't have it on stock and please deliver it into my branch or even into the place of business that I tell you.

A distributor typically says: I am only going to stock parts that I sell more than twice a year. One of our major distributors says: I have in my catalogue like 600,000 part numbers. After the year-end I see that I have been selling 240,000 out of which 120,000 I sold out of my stock. – So they have 120,000 parts that they are selling less than twice per year. These parts sit with us and then they are more likely to say: I am going to pay for the express shipments. Please ship it directly to my place of business, to my branch, to my retailer etc.

It's a combination of who owns the customer context and who does the physical logistics. That's already happening today. And our forecast obviously is that this type of express orders, that the order lines per shipment and that the quantity per order line is ever-reducing also in the future. AKO definitely prepares us for that changing structure of the demand pattern.

Dr. Robert Felger: Part of the reason is also in this box. Going more into the solutions business means: We need to have operations that more resemble assembly operations than warehousing operations, where a ton of parts will need to arrive in parallel which is then assembled into kits. For this, we need exquisite operational excellence.

Klaus Rosenfeld: To add one thing on the AKO thing: That is also an efficiency game. Today, this is organized out of six, seven locations. Now we consolidate this at an appropriate location in Halle. Therefore, we can also, once again, increase efficiency and become more cost-efficient. So it's not only the in-time or on-time delivery, it's also the way how you deal with that.

Florian Treisch (MainFirst Bank): As EV is not yet an issue for aftermarket today and probably not the next decade, I stay in today's world, the Diesel issue. If you listen to the political intention to remove all the old cars from the fleet, this will have an adverse effect on your business probably. Is that really true? Can you quantify that? Or is there even something like an upside from whatever, retrofitting, an upside from some new business opportunity from that?

Michael Söding: We are proud to say that we have a global business and we do not believe that whatever happens in the political arena will force to scrap the cars. So what's going to be more likely is that the car migrates from one market into another one.

That says, in the first stage, our business will not change, the geographies might change, which, in the big picture, for us is not a problem because, as Robert elabo-

rated, our REPXPERT speaks 25 languages and is going to speak 30 languages soon. So the first statement is: From our business point of view, it doesn't matter where it takes place as long as it takes place. We are prepared for that.

The second one then, obviously, is: What comes afterwards? When a market is devastated from the existing car park, will there be new solutions? Again, the solutions are not yet there, as Matthias and Jochen explained. It's not that overnight there will be completely new solutions. We do not believe that there will be only bicycle drivers in Berlin tomorrow. Lots of them, but not only.

Klaus Rosenfeld: There may be one other aspect: If you think about the shared economy, if you think about what that means for the utilization of the car, that creates probably additional opportunities for them because in a shared economy, a car is used not two hours a day, but maybe ten hours a day. If you want to run this efficiently, you would rather repair the car than just throw it away and buy a new one. I think that is a future trend. Particularly in countries like China that could be a big opportunity for our aftermarket colleagues.

Dr. Robert Felger: When we look back in time, every technological change in vehicles has also driven a surge in demand for repair solutions. This will hold true for electric vehicles as well. This is why we are going into these solutions, because it will definitely require more a solution than a like-for-like business.

Marc-Rene Tonn (Warburg Research): With parts becoming more intelligent in future probably as well, stuff like predictive maintenance e.g., what might this mean for your business? Could you perhaps make more business directly, let's say, skipping the distribution out of the equation? Do you see some opportunities for you from that side if the part is becoming "intelligent", knows when it will break down? That was the starting point: It always happens when it should not happen, that the part is breaking.

Michael Söding: The buzzword is telematics. Who sits on the information? If we get access to the information, we may bypass others or we may be in the driver's seat. If politicians allow that the data sits with the OEs, then, obviously they will be leading in that game.

It's less a question of how many repairs are going to take place. It's more a question of who sits on the information and who has the lever to increase his own margin to the downside of his competitors? That's the battle that we are talking about. So we at Schaeffler will be the producer of parts, we will be the creator of the repair solutions. But in the end of the day, who owns the information first and influences the way to the market, that is the open question.

Victoria Greer (Morgan Stanley): Could you talk about normalized margin expectations for the business? Do you think of it as one that should be over 20 percent and the measures that you are taking around the kits etc. are first to get it back to that level, but longer term also keep it there? Or do you think that, structurally, it should go higher or lower?

Klaus Rosenfeld: Maybe I can tackle this, Victoria. This Division has been created a year ago. We first need to gain a little bit of experience how that works. Therefore, the 16.5 and the 17.5 is our starting point. I think the question is a very good question, but it comes a little early because you can't compare the way it was run as an integrated part of the business of Prof. Pleus and Matthias. We have set it up now separately. Therefore, we need to talk about this maybe next year. But the 16.5 and 17.5, from our point of view, is a sound basis to be achieved.

Michael Söding: Number 2: Schaeffler, as usual, is the first mover in this regard. How many companies do you know that really disclose their margin level on aftermarket business? There are two on the horizon that are going to announce this. So we also have to understand better where we are compared to our competitors, which we simply don't know today.

Our assumption is that we are on the much higher end than many of the others. Having said that, obviously, we also would like to have more transparency in our competitive environment.

Kai Müller (Bank of America Merrill Lynch): A follow-up question in terms of the margin profile: When it goes to the OE and their own workshops, do they buy that through the OE contract, on the OE margin or do they buy it in your Aftermarket margin profile?

Michael Söding: Two answers: As long as we sell the spare part while the car is used, the OES pricing follows the OE pricing. Then there is a certain point in time EOP and, depending on the customer, plus X and afterwards we are free to negotiate and we have to because, obviously, we have scales of business. It's a difference whether you produce them 100,000 times a year, regardless of whether they go left to OEM or right to OES, or whether you afterwards just produce 1,000 per year.

So in the beginning, the margin in the OES side is influenced by the OE contract and then afterwards you have a higher margin. But you also have a higher cost.

Kai Müller (Bank of America Merrill Lynch): How long is the gap deemed to be?

Michael Söding: As I said, EOP plus something. That “something” depends on the OE contract.

Klaus Rosenfeld: But, Kai, don’t forget: The bargaining power of an OE in this business is much smaller than in an original equipment business because you have the big competition from the workshops. There is this independent aftermarket that plays the most important role. The OES is 15, 16 percent of the overall.

Michael Söding: 18. The good thing about the OES sales channel is the following: If you look into the margin generation at a dealer level, where do they earn money? Do they earn money with sales of new cars? 1 percent. Do they earn money with the sales of used cars? 0 percent. They earn their money on services, financially and repair services. That is why they have an own interest to have a certain price level. That is why the OEs have a certain interest to have a certain price level on the dealership level because these dealers have to invest into those flagship stores, hangars etc. and all this has to be financed.

That is why there will be not too much margin pressure on the end user price side which helps us to have a decent margin in that value chain on the independent aftermarket.

Austin: I wasn’t sure if you covered it in terms of the geographic differences in the aftermarket between North America, Europe and China. Are there different sort of structures or is it pretty much the same?

Michael Söding: There is a huge difference, to begin with. A Chinese dealer thinks his business ethic says, I buy single parts and I buy them from the producer. It’s very difficult to sell LuK boxes into China. When you open it, you find the brand of a competitor inside.

In Europe, as we said, the workshop, pretty much the whole value chain thinks: I have a transmission issue. LuK should solve my problem. I have a bearing issue: FAG solves my problem.

In the U.S., as I said, they are thinking in categories: full ranges to 4,000 shops.

Our ambition, obviously, is to bring that idea of repair solutions also into Asian markets, for a good reason: The wages in Shanghai are meanwhile pretty similar to the wages in Europe. That is why the repair costs are pretty similar. So the logic why we do these things more and more picks up in these markets as well. That is why we see, coming from a very low level, that the solution business also makes sense in these markets over time.

Klaus Rosenfeld: I think the big difference between the European and the U.S. market and the China market is that the Chinese fleet is still young. You have heard about eight years of lead time on average, whatever that is in the future. But there the fleet is young.

The second difference is that the structure from workshop to regional local distributors is very heterogeneous. We have a mature structure in Europe and a probably more mature structure in the United States, but in China it's very different.

Michael Söding: Traditional, very traditional.

Klaus Rosenfeld: Very traditional, very low visibility, difficult to build relationships.

Therefore, the big strategic question we have – I think the team from Aftermarket is working on a solution for this –: How do you sustainably enter into this market? I think the logic here is e-commerce, digitalization because the Chinese people are much more open to these kinds of solutions.

But we are spying into this heterogeneous, invisible structure. Putting our bets on the wrong horses, that is something we want to avoid. So we are working on an e-commerce, digitalized market entry structure for China.

Overview - Industrial

Dr. Stefan Spindler: Good afternoon to the Industrial part of the session! I want to do a general overview on the Industrial business first and then I have shared the presentation together with my colleague Christian Zeidlhack who has been running the Industry 4.0 strategic business field. We are also going to introduce a new colleague, who has joined us, at the end of our presentation.

But let me start with the overview on the industry in total and also give you an insight into what our strategic direction is. I also tried to pick up some of the questions which came up during the course of the evening yesterday. Let me try to summarize these questions in the beginning. Maybe you can reflect whether you have some others also.

I was asked a lot about: How can you survive as a bearing manufacturer because the Chinese competition is growing so significantly? I hope I can cover that also in my presentation. Market volatility was an issue. How is 2019 going and how will the future go? Another question yesterday was: How can you survive with products beyond bearings? You are so strong in bearings and you have not really proven that you can also do systems and Industry 4.0. So what's the potential there? Also I was asked about: What's unique about your strategy? Why do you need linear? How does it fit into the picture?

Of course, we are also asked: How can we grow stronger than we have been growing in the past? Today, I was also asked: Why did we not plan 2018 more aggressively? We came out with a growth expectation of 3 to 4 percent in the beginning of the year and now we are at 8 to 9. So how come that we have not been bolder in the beginning?

On the numbers side: You are able to read the numbers. I am not going to read them to you. The headline is: We are a little bit proud of that that we can say we have managed the successful turnaround in 2017. There was growth in 2017, there was also growth in 2018 and you also see that we are at an EBIT margin level in the first half of 2018 which we did not really expect a year ago. Of course, there were a lot of structural issues and organizational issues. There was also tailwind from the market which helped us, that's clear.

But let me also try to use this slide here to answer a couple of questions of yesterday in the evening. Number one: When you look at the regional split, you have to remember – I explained that the last time also –: When we did the revitalization and the reorganisation of the Industrial business, we said there needs to be clear business accountability. We put the business accountability into the regions. So we have four regional presidents who are close to their customers and who are hunting the business with large or with small customers in their regions.

Of course, Europe is still the largest one. It's quite remarkable that China has been growing to the level that they are as big as America, which wasn't the case before. I think this regional accountability is one part of our success. This is also how we differentiate a little bit from more local manufacturers: that we have this worldwide setup with strong worldwide organizations.

Look at the sector clusters on the left hand side. I also have reported that, besides the regional accountability, another strength of us is that we have sector specialists and we have people who take the global lead of developing the strategy and the technology for these sectors.

If you look at the sectors, you have these eight clusters which are rather unique business clusters and you have about one third of our business which is distribution. What are the key success factors for each of these segments? The key success factor for distribution is certainly not only to have cheap products. The key success factor is to be able to offer to the distributors solutions, a little bit similar to aftermarket. You cannot just sell a part to a distributor. He wants support, he wants solutions, he wants availability. That's an area where we, with our set-up and our technical and system competence, definitely have strength and an advantage against others.

Look at the coloured clusters: With 13 percent, the biggest one is industrial automation. That covers the machine-tool industry, it covers robotics, it covers all kinds of systems that help produce components. Meanwhile, it also covers some, let's say, rather commodity-type of businesses, like textile machines. Industrial automation is such a wide area where we with our approach on the component side and also on the Industry 4.0 side can definitely take an advantage in the business and can also take market share from others.

Wind is also a very big one. You all know: Wind is not just a business for cheap bearings, it's a business where you really need a lot of know-how. Also our customers really see it positively that we can provide them quality, support and leading products.

You can now go through the sectors sector by sector. You will find some sectors where you have clear commodity types of businesses, but you still have also the advanced and high-performance product type of businesses. Take something like offroad: A lot of that business is commoditized, but you will also notice that there is quite a part in the offroad sector where we do see really demand for technically advanced solutions.

Power transmission is similar, two-wheelers is similar. In some sectors, you definitely find this type of commoditized business. There we also face definitely severe competition, that's clear. But that's normal.

I also have to say: We are not chasing after every business, i.e. low performance, mid performance. High performance is definitely our area, mid performance selectively. Low performance is not our type of business.

Part of the Industrial strategy, which you see there at the bottom right hand side with the pyramid, is that when we go to the components business, we focus on the business where we see a profitable portion of the business for us. We call it also a little bit of a restructuring of this component business. Then, of course, we want to grow beyond market in the mechanical and mechatronical systems and the Industry 4.0.

A couple of topics which you can read from that slide and where you can see: That kind of set-up, that kind of strategy is rather unique. The pyramid also clearly says: We have two legs on which we stand. It's the rotative business and it's the linear business. We have made a conscious decision there because we believe there are

some areas where the combination of rotative and linear plus sensorization, intelligent components makes a lot of sense. We have several customers in several sectors that buy both. To be able to offer that is a customer advantage.

Taking the pyramid and now going a little bit through what we have done in the past years and what we are doing in the future: Here you have a time scale, starting in 2015. We have put CORE I in action. That was more an overhead cost topic. Then CORE II came. I have to say, CORE II was planned a little bit in a different way. We had the plan to do more of restructuring. I believe we have also communicated that. When we then saw the strong market development, we kind of slowed down the restructuring. We took advantage of the market dynamics and therefore we have invested more into growth and pricing and with these levers also achieved our margin improvement which we have targeted.

There is going to be a next step – I think Dietmar Heinrich will also talk about it –: the reallocation of the plants. The bearing and component technology division in the company which we had, we are going to allocate the plants now directly to Automotive OEM and to Industry. We are convinced that it's a cost advantage because we are taking out complexity, overhead structures in both, in the indirect areas, but also on a plant level. Plus we have a direct access to the plants. That means also that we can steer the plants much more directly. It's a very positive step, both operationally and cost-wise.

So on the components side, the restructuring continues. We will get more and more cost benefits from that. It's going to be a continuous effort over the next years. When we go into mechanical systems, you find again our strategy based on the pyramid which we developed in 2017. And it's also clear: It's a different strategic approach. If you are at the bottom of the pyramid, it's a lot about scale and cost and efficiency. The more you go to the top, it's about increased content per application and innovation.

Industry 4.0: I am not talking much about it now because Christian Zeidlhack will talk about it and also our new colleague Rauli Hantikainen will say a few words to you. Two weeks ago, he took over the leadership of that strategic business field. We have also communicated targets in that respect which are the guiding principle for us. I am also going to talk a little bit about footprint.

Before I do that, let me go into the market. This answers a little bit also the question why we are not so bold with aggressive growth predictions when we look into the future. This is a view of the industrial markets which are relevant for our products. It's not a Schaeffler view, it's really a market view. We look back to the year 2000 and you see the ups and downs. It's a pretty wide range. From peak to bottom, it's about 30 percent fluctuation. On average, the market has been growing by 3.8 percent. That's history.

Now the question is: How will the future develop? The good message here is: The market will continue to grow, but it will probably not grow as we are showing it here. There will be some volatility. There has been volatility in the past and there will be some volatility in the future.

The question is: Where and how and when will we see what kind of volatility? We don't really know. We definitely have an estimate how we want to react to his on a regional level. You see at the bottom on the right hand side the volatility in the previous years. On a world level, from minus to plus, in South-East Asia we see quite a significant minus peak. When you look at India and Greater China, it was very volatile, also 30 percent, but more on the plus side.

What's interesting, of course, now is the question: How will the market be in the next years? You see that on the right hand side there. This is the future growth. You see that compared to the historic growth. The historic growth is the grey-shaded numbers and the estimates for the future are in green. South-East Asia will be growing more than in the past; that's one of the messages. South-East Asia will be more steady, there will be a growth of above 4 percent. Greater China will be growing less. There will be strong growth, but not in the two-digit range. It will go down to a single-digit range. If you take these numbers, India will be the strongest growth machine in the Industrial business over the next five years. On the world level, you find again the 3.8 percent.

So keep that in mind: on average 3.3 percent growth in the industrial sectors which are relevant for us.

Now I am coming to the targets which you see on that picture. When you look at the right hand side, what's our target? We have communicated that on an EBIT level, 13 percent, but we also know: When the markets are going down, it's hard to keep that EBIT level. But we said: The range of 11 to 13 percent is a range in which we must stay. That's our EBIT target.

When you then look at the growth target, you see 3 to 4 percent. Then you say, well, the number we have seen before is 3.3 percent market growth. So 3 to 4 percent, that's within market. But you want to add Industry 4.0, so why don't you see more than 4 percent?

When you look at the headline, you see: We want to grow in Industry 4.0, but we also want to restructure our core business. That's what I said in the beginning: We don't want to chase after every commodity type of business in every country and at every customer. So it's a balancing out of attractive business at the component level and also improving the profitability at the component core business level and then it's an additional business on the Industry 4.0 side, so that organically we will grow by 3 to 4 percent.

If I jump to the right hand side of the picture, you see also M&A as a topic. We have talked about that a couple of times. We have two directions. Number one is the technological approach. We want to find partners with whom we can make a leap on the technical level and then expand the market reach. That means also to find players in the markets where we are maybe not so strong, so that we can take that as a lever to grow stronger in these markets. So M&A is on the agenda.

On the strategy side, you see these numbers, 1, 2, 3, 4, 5, 6 – I am not going to explain every example which I have here in a lot of detail. Just one message: On the standard components side, efficiency and scale are on our agenda there. On the customized components side, there is a lot of potential and a lot of market for individual-

ized and rather unique components which are also rather attractive price-wise. Then, on the system and the new business model side, that's definitely a growth machine.

Operational excellence is critical. We tend to forget that. We always try to look at markets, customers, products. Operational excellence is key on the supply chain side, also on the agility in terms of going up with the prices and going down when it's appropriate. And then, of course, localization.

A couple of examples in that respect: I didn't bring examples of standard components, but I thought it's maybe interesting to see on the left hand side: We are going to introduce an e-commerce tool. That means basically that we can reach every customer in the world electronically. We have something like 18,000 part numbers now in that e-commerce tool and we are rolling it out first in Europe and then we go international. That's, of course, also something which not everybody has – if you try to compare us with other makers.

We offer our products in a way easy to access, with a lot of additional valuable information, easy to order, without sales people running around. That's something we do now successively. We also believe that we can get more business by that. There may be customers who like to order electronically, but who don't like to call us or talk to sales people. So it's also additional sales potential.

The value of the Schaeffler brand or of the product brands which we have under the Schaeffler company brand, like FAG, is of course important. In 2004, we started to set up this brand protection team. Just to give you an idea: Last year, in 2017, we had, I believe, 700 cases where we had hints of fake parts being circulated into the market. We have a team that goes around and chases these guys. If we can identify one, we are of course destroying these parts. We are making this also more efficient. We have this nice app, the OriginCheck App. Everyone who receives a component from us and has that app – one can of course easily get the app – can check on the package of the component and on the component itself if it is an original Schaeffler component. If not, via this App, he can send a message to us and say: I have got a component which was supposed to be one of yours, but it isn't. So go after it. – Then it's easier for us to chase that.

These are smaller tools, digitized tools which help us to improve the standard business.

Second example, some of you may have seen that upstairs during lunch: The Vacrodur is a very nice example. It looks very simple. It's a bearing, it's a bearing with balls. It's a spindle bearing, it's an extremely high-tech bearing with very low tolerances, tight clearances and high performance, highest speed. It's completely new material. Rigidity, robustness is on a level which nobody has been able to provide so far. You see, we have received prizes. One of our customers – we have also published that –, DMG MORI with whom we have a partnership, has decided to use these bearings for his high-performance spindles.

So on a customized product side and in a close partnership with customers we are able to provide products on the components side which others cannot.

The same goes for wind on the right hand side. The nice thing is: If you have a very good position on the product performance side, then – we did that here together with ZF – we also developed an idea of how to go into digital service models with so-called LifetimeAnalyzers. If you are interested, we can definitely explain to you more on that. But those are examples where, from a product side, we can go into the Industry 4.0 dimension. We are quite convinced that this will provide more potential.

Systems. You may not recognize that, but that's a housing with a bearing, with seals integrated. We are tackling here specifically the market of large electro motor makers who usually have small design departments and who don't like to design everything with the bearing, around the bearing, who like to have modules. Then we can extend that with condition monitoring, with automated lubrication. These are systems which we are now introducing into the market, showing to our customers, developing together with them. You will find more and more of these systems from us, also in the next months and years. That's the business where we say that's growth above market.

On the right hand side, on the linear side, you see an intelligent linear guide. This is quite nice because this guide has an automatic lubrication. Whenever it feels like there is contamination or there was too much load it relubricates and the operator doesn't have to worry about what's happening with this component.

Rail: Since we are just currently at the InnoTrans, the InnoTrans is a world-leading international fair and basically everyone around the rail industry is meeting there. Those who have had a chance to go to our stand: We are also showing here our full spectrum, starting with the component. Wherever you have rolling, rotative movements, we are there. We also started now to show our linear portfolio. Of course, we are also showing our digitized concepts.

We signed two cooperation agreements, actually, one again with ZF. Similarly to what we are doing in wind, we are now doing in rail. Another one is with a small start-up company out of the UK, Perpetuum. They have developed a system where they go only into the retrofit market. They retrofit condition monitoring systems on the wheel set, on the gearbox, on the wagon. They can identify any kind of abnormalities on gears, on bearings, even on tracks. Their business model is to sell information to operators. They only talk to operators, they have no interaction with OEMs.

When they sell this information to the operator, the information may be: You have a health issue with a bearing. So what happens? What does the operator then do? He has to do something. If it's not a big operator like a big state railway, these operators sometimes want help and you can sell help to them and this is why we are trying to team up. We are developing that together, so that we then of course also have more direct access to operators and we can do after-sales service in a combination with such a partner.

So there are quite interesting new models also in the rail industry. This week was very encouraging in that respect.

I don't think I am going to go into a lot of details. I mentioned basically what we are doing here. We used to have this bearing components and technologies element in Schaeffler. These were the factories and the R&D departments for bearings. They

had 27 plants and we have now split the 27 plants into Automotive and Industrial. The large plants, where we have a lot of Automotive and Industrial business, we are making a campus out of that. So we have one plant today which will in the future be two plants, one Industrial, one Automotive, on a campus. This is why we also go from 73 plants to 80 plants. Industrial will have 24. More efficiency, more direct access and also cost savings, I believe, will go into the numbers.

Let me now also go into localization. It always sounds so easy. Localization: We do that rather consciously and we are not only localizing simply production, we are also localizing R&D. I told you about the potential that Asia/Pacific has, as we see it in the next five years. It's not only a pure local sales potential, it's also an R&D potential.

We have decided to set up a unit which goes into Industrial automation, R&D and application and development topics. They do that out of our site in Japan because there is a lot of local market, local know-how. Also our two-wheeler business is managed out of Japan because there is *the* market for two-wheelers, besides India maybe.

Another aspect when we go to Asia/Pacific is: As you see here Vietnam, that's a typical example. Vietnam develops as a low-cost production site. There is not a big local market, but it's a very nice production site. We are taking that as a pure industrial plant because so far we have only been in Korea in Asia/Pacific with the Industrial business and now we are also going to Vietnam and scale that up. So on the standard type of business, this will give us an advantage.

In China, we are increasing our Nanjing facility which is now an Industrial factory. That's our hub for small and large-size bearings for China.

Finishing up, just a couple of headlines on CORE: You know the elements, growth, cost of goods sold savings, overhead savings, optimization of supply chain. We stick to our target of 11 to 13 percent margin in 2020. I think you can read the elements and we have also talked about it. We are on track here, even though we have slightly modified it. Klaus Rosenfeld has also shown the numbers to you. We see a net effect of 84 million in 2019, mainly coming out of CORE II. That's on schedule, on plan.

With this, I would like to finish up and hand over to my colleague Christian Zeidlhack for Industry 4.0.

Deep-dive Industry 4.0

Christian Zeidlhack: Thanks, Stefan, for paving the way for Industry 4.0. – Ladies and gentlemen, I am now giving you a little bit more insight what Industry 4.0 means for us, for Schaeffler. How do we see the market? Why do we call it a growth potential or even a growth machine in the future?

I will give you a few examples how our portfolio approach looks like and what makes us confident that based on our domain we have USPs which will generate the growth we are heading for.

Maybe a few words on my person: I started my career basically in the automotive industry and then joined Schaeffler in 2007, so nearly twelve years ago. Schaeffler is kind of a family business for myself because my dad used to work there for forty-something years, designed the first wind turbine gearboxes and main bearings. So it was always part of my life. That's what I am not going to extend in the future.

Industry 4.0 is kind of a buzzword, as well as cloud-to-cloud and whatever. So I want to make it tangible for you today. In the last six to twelve months, we laid the basis with one organizational unit now within Schaeffler. We have put together all the groups and even legal entities in one strong unit where we now have 300 dedicated people in the division working on putting life to Industry 4.0 solutions and into the portfolio. We are doing that under the brand name Schaeffler – so also there consolidation, clear effectiveness in terms of marketing and how we approach the industry with our solutions.

The 10-percent target of sales was mentioned by Stefan before. We are driving that at the moment basically out of Europe, but consistently ramping up capabilities as satellites in the regions. The first was mentioned with Japan in Asia/Pacific where also a lot of potential can be found in the market.

The unit integrates itself into our strategic concept, into the strategic pyramid. You know we are keen and we are proud of our mechanical competence, of our system competence. Building on that solid foundation, we see an excellent baseline now to make the next step, going via mechatronics, mechatronical systems into the area of pure digital services. All of this can be linked together, but this can also be sold independently from each other.

Strategically, it's about to extend the scope for the Industrial Division product-wise, building up consequently and continuously a second pillar. The more digitized and sensorized our products are, the better we are integrated in the processes of our customers. This makes us less vulnerable by competition. Also price-wise we see a good chance to differentiate ourselves there.

If you look at the product areas we have combined in that unit, we have linear actuation – you will find that in medical –, we have direct drives – you can find that also in the medical area, CD scanners e.g. –, we have had condition monitoring for years within our portfolio. We have condition monitoring in connection with digital services on a smaller scale for the time being. For instance, we are monitoring cruise ship engines and drive trains. There are also sensorics, which came up in the last two years. We are consequently filling our pipeline with new sensorized, more intelligent bear-

ings and components. I think that's the logic we are following: Based on our know-how about the customer process, about our bearing know-how and mechanical know-how, we are going forward, extending the scope.

Stefan mentioned the rail area, but there are also other areas we are focusing on. A few are to be mentioned here: Everybody knows about wind, everybody knows about robotics, maybe logistics. There is also the area of machine tools, which is pretty big. It deals with mechanical precision competence. It's the core of a significant part of the German industry. And we are users of machine tools, so we know the pain points of a machine tool user. We are operators ourselves. Then there is a large ground basis with drivetrains, power transmission, pumps, e-motors, generators. Basically every key sector uses generators, gearboxes etc.

So if build scale-up solutions and a portfolio which can be used in various sectors, then we have done the job right. That's exactly the approach we are following.

If you look at external studies like McKinsey or other consulting groups, what they are predicting in terms of Industry 4.0, up to 50 percent of all the existing machines and the newly built machines will be upgraded to Industry 4.0 capabilities, sensors with connection capability, with interfaces, to cloud systems. So if only the lower end of this prediction is right, there is really a huge market out there we can go after.

Maybe a little anecdote: I said, there are much more sectors where this will play a role in future. My dad-in-law used to run a quarry – pretty solid, dirty business, a lot of equipment into which we sell bearings. He would never understand what I am talking about today. But now his son is running the company and the third generation is about to take over. I have talked my brother-in-law into using an automated lubrication system for his conveyor belt and a little SmartCheck for his shaker screen. Guess what! The pure mechanical guys now say: Oh, that works. It helps me running my business to get more efficient and to get a better profitability and overall equipment effectiveness out of it.

That example should just show that it really goes into every sector. It might not have the same dynamic in each sector, but the dynamic itself is there.

To underline the study I mentioned before, it is about collect the data, connect it, to analyse it, but then there is the crucial point: You need to know what the data mean. You need to provide information to the customer. The data set itself means nothing if you cannot give a really precise advice what to do with it. That is what we are heading for.

If you recall our strategic pyramid, coming from the components, going into mechatronics, that is exactly where we have been generating the domain know-how for decades now within Schaeffler and we are now combining that with data analytics know-how to really get the right information to our customers, to the operators to increase the profitability of their business. I think that is what drives us and what pays off as I showed in the beginning.

Example 1, a little bit more deep-dive: machine tools. If you look at the number of newly installed high-premium machine tools, we estimate that roughly 20 percent of all newly produced machine tools are high-precision ones, high-premium ones. In

addition to that, look at the number of the installed base. You easily can see, there is just a huge market out there.

Combining that with our expertise as a machine tool user – I think we are using roughly 5,000 machines in our plants – gives us a good starting position to know the pain points to talk on eye-to-eye level to operators on the customer's side.

Transferring the know-how of customer pain points into solutions is what we are after now. This slide is pretty busy with solutions we provide for a machine tool. You might have seen the picture; we displayed on the last EMO and at the Hanover Fair, equipped with various sensors. What we are now showing here is that we are continuously growing the portfolio we are providing to it.

If you look at the right top, there is the new SpindleSense we will launch next year on a larger scale. To one third, the main spindle is the main cause of a failure, of a shutdown of the machine. So if you can solve that with a sensorized main spindle solution, you will ease operator's life tremendously.

The second solution on the lower right part is DuraSense; that is the linear competence we bring into the field. If your linear system, mainly your feed axis, is not working, that is the second third which is causing failures in your machine park. So two thirds of your main concerns can be solved by using SpindleSense and DuraSense. That is what we are after.

We underline this, if you look at the bottom, with new solutions, process monitoring itself; that's what we had in-house for quite some time. Klaus Rosenfeld mentioned at the beginning that we have bought a company called autinity systems. They provide capabilities of really going deep-dive into the product part quality in process monitoring. That is what is really new.

Recalling the number from the page before, high installed base, high number of new machines produced each year. Then multiply that by a content per application we foresee for Industry 4.0 solutions. You see we are going to the billions of potential.

In terms of sensorized solutions, we are now, as I said before, filling the pipeline. We will launch quite a few next year. Those solutions are set up in a way which makes us unique – unique on an individual solution perspective, but also unique in combination of all of those for a machine tool maker.

Our partnership with DMG MORI was mentioned, but there are other big guys in Asia which are working closely with us, forming partnerships also in providing our solutions to the market. We have e.g. a partnership with Mitsubishi. They sell our components, just our intelligent components on a component level into their market. So leveraging on strong partners on the technology side, but also on the sales side also fits the picture of the new approach into those markets.

The second example I want to give as deep-dive is power transmission and the drivetrain itself. If you look at the new instalments each year of generators – high voltage, medium voltage, e-motors and gearboxes –, it is a huge number. It goes into the millions. If you then look at a wind turbine connected to a drivetrain, the main failures caused in a wind turbine come from the gearbox and obviously in quite half of the cases out of a bearing. If you can solve the gearbox trouble and you can solve

the bearing trouble in a running drivetrain wind turbine system, the operator will love you.

If the gearbox as a trouble maker stands still, if the whole wind turbine stands still, we are talking about 50,000 euro easily for a yearly failure rate; that is only one part of it. This drives us for robust components, but also to intelligent solutions to give really the operator the opportunity to know the conditions of his stuff and to run it appropriately, to know the right parameters to stretch, maybe, his operations to the latest possible level, until he has his plant maintenance scheduled.

In that regard, we have little devices like on the left top button, our SmartCheck. SmartCheck is a little condition monitoring hardware, but not only that. There is also software integrated into that stuff. This little device enables you to really have the visibility of the condition of your little machine. This is highly cost-efficient. So getting this easily-assembled plug-and-play solution on your generator or critical gearbox will give you a good start into Industry 4.0.

A key driver for us is to make it scaleable. That is what I said before. To underline that: Here you have easy entry points on various levels to a customer. Wherever his specific pain point is, you can come with a specific sensorized solution, with a specific condition monitoring solution. But we are also able to sell the whole package and connect it with each other.

So I think it is a little bit similar to Aftermarket, Automotive: easy, plug-and-play, just do it.

The strategic backbone or framework behind it, like I described verbally before, is really to come from the component domain know-how, getting it now sensorized and smart, whatever we sell to customers, being able to really create the data set we need and then combine data analytics competence with mechanical physical competence. I think that clearly separates us from others, how we are consequently driving that approach.

Then, like I said before, it is about the information which flows out of the whole system, going into an optimization of maintenance cycles, the products themselves or even production or the whole process. Therefore, it is really key that we understand the processes, strengthening that by our competence on the solution side, but also by our capabilities of virtually displaying all those processes online, for us internally and for our customers.

I think that is the whole in a nut shell, our ecosystem. That is our driver, that is our guideline, how we develop solutions, how we approach the market, what is the rationale behind it, how we have already put it into practice. A little bit of proof how we put it into practice and what customers think about our approach will be displayed in a short movie. It will give you an even better understanding of what we are after. – Please, movie on.

(Movie)

I hope that gave you a little bit of a flavour in which direction we are going. Now I would like to ask Stefan and Rauli on stage and Stefan to conclude and introduce the way forward.

Dr. Stefan Spindler: Christian, thank you very much. I think you have shown very clearly that we have laid the foundation for more Industry 4.0 business. Christian is actually running our global key account business. You know, in addition to the regional accountability we take care of the global key accounts with a bracket managed under Christian. We have asked him to, in addition to his GKAM job, set up this Industry 4.0 strategic business field.

We have also said that we want to look for a new colleague who then fully concentrates on that and grows the business based on this starting point. There we have looked for somebody who actually doesn't necessarily know everything about bearings and gearboxes etc., but who comes from the world of understanding processes and comes from the world of selling solutions and software. Rauli, we are glad that we found you. So, please introduce yourself.

Rauli Hantikainen: Thank you, Stefan. – Good afternoon, ladies and gentlemen! My name is Rauli Hantikainen and I joined this company two and a half weeks ago. That is the reason why Christian was making the presentation. So I am pretty new, but not new to the industrial IT and industrial automation business. As you see, I have a 25-year experience of building up and running industrial IT and industrial automation businesses. I was 17 years with ABB – you probably know this global technology company – where I built up the industrial IT business and ran that for process industries. In the last eight years I was with Landis+Gyr, this leading smart metering company where I built up the software service business for EMEA and then took over the global R&D organization of 1,200 people for software devices and also the communication devices.

The key success factor for me in both of these companies and all of these positions has always been to utilize the domain know-how, customer intimacy, implement technology leadership and then strict execution.

What motivates me now here in this new position? As you learned already, there is a great business opportunity. I am really excited about that. From what I have seen during the first two and a half weeks: It is really true. Secondly, a good foundation has already been built up during the last years. We have already an existing portfolio, as you have seen, that can be scaled up. Thirdly, there is very deep domain know-how. Schaeffler has deep domain know-how in all of the focus fields where we want to focus now with Industry 4.0 applications.

So if I look at all of these elements and combine them with my background – that I am coming from industrial IT, industrial automation –, I think that we have a very good mixture, we have a winning formula. I am very confident that we can build a successful business and then meet our strategic targets.

I am now looking forward to working with my new team and first scaling up the business based on the existing products – there is already a lot of opportunities there – and secondly building up digital services and creating new business models, that we

can create new value-add solutions for our customers to help them to improve their efficiency. – Thank you.

Q&A

Sascha Gommel (Credit Suisse): It is actually a question on the short-term development and the margin guidance. You should have still pricing tailwind in the second half of the year because you increased prices last year. Is there anything else you see in the second half of the year that makes you more cautious on your profitability, like costs associated with any special projects or something like that?

Dr. Stefan Spindler: You have seen our guidance with the EBIT margin on the 10 to 11 percent and with the growth on the 8 to 9 percent. What we traditionally see is a weaker December, but that has to do with factory closure, that has to do with year-end effects. So that is nothing special for this year, but December will not be as good as the other months. That is one effect why we believe we will not stay on that higher level or on the same level as we are at the moment.

There are certainly some cost aspects which are coming into the picture, like the ramp-up cost of our logistical centre which was opened in May, like certain factor costs which are coming and are pre-programmed. That is why we say, this is the overall guidance which we have given.

In terms of the order book, you have seen the number in our last publication, Q2/2018. We show you the year-over-year sales development and we also show you the year-over-year development of the three-month order book. So we have shown you a 15 percent higher level, year over year in the three-month area. We still see that, so that we basically know, in terms of sales we are staying on a robust level in 2018.

Sascha Gommel (Credit Suisse): And the pricing points? How much tailwind do you see actually?

Dr. Stefan Spindler: In pricing, we are seeing tailwind and we are taking definitely advantage of transferring some material price cost increases into price increases. We also take advantage of the current market situation where the demand is simply very high.

You know that from the publications of our competitors; we do it the same way. So we have been increasing prices actually in all four regions, in Europe, Asia/Pacific, China and the Americas. We have even done it in some cases more than once, so incrementally. You know, it is not like you do it today and tomorrow you see the effect of these price increases. We are seeing the positive effects now, in the second half of this year, and we definitely are also going to see it next year.

Q: Thank you for sharing your insights into your Industry 4.0 strategy. On the monetization, is the direction rather that you think you can earn some more profit from analysing the data or analysing the data and selling this to third parties together with your

customers? Or do you rather think that predictive maintenance like this gearbox example for the wind turbine is a way to monetize what you have?

Christian Zeidlhack: I think there is no either and or; it is a mixed picture, like Rauli said, for the years to come. Short-term it is more based on the current portfolio, mechatronics, but then doing the next steps, also thinking about software as a service, that is also in our project pipeline, but not ready to be displayed yet. But also this is a strategic concept to say, this can be sold independently and also monetized in a way.

Dr. Stefan Spindler: If your question is “what do we think we can do in the future?”, we think we can sell information in the future. We are doing that to a smaller degree already, but that will be part of the future development.

Q: On the Industrial side … much about the aftermarket. I am curious how big that business is margin-wise. What’s it like relative to the original equipment business? With the sensorized solutions, how is that going to play out over the longer term in the aftermarket?

Dr. Stefan Spindler: We differentiate a little bit between aftermarket and distribution. When you see our cake, we have these eight sector clusters and then we have distribution. The distributors sell quite often into the aftermarket, but they also sell to OEMs, as you know. There are some smaller OEMs who are not directly served, but they also buy from distributors.

In general, we say that we have a distribution business but, of course, a large portion of that distribution business goes into the service or the aftermarket. As you know, the aftermarket has on the one hand its complexity – you have to store parts etc. –, but on the other hand it has its beauty because the margins are high. Also in our case the distribution business is a high-margin business. Therefore, we also like it very much and we take care of it.

In terms of how attractive these Industry 4.0 solutions are to our distributors: There are some distributors who definitely recognize the value of this portfolio. We had a conference with our German, Austrian and Swiss distributors just a week or two ago. We introduced that portfolio to them and they clearly also gave us the feedback in the workshops. Some of them said that this is not really their business, but some of them said: That is the future. So our task is now to really, as you said, Rauli, make sure we find out what we can scale. But I am sure: Also in the Industry 4.0 area, there is scalable business that we can package in “kits” and then sell it through distribution to the aftermarket. So there is definitely potential.

Sascha Gommel (Credit Suisse): Two clarification questions; I wonder how much detail you are able to provide. You mentioned in terms of CORE II that you maybe slowed down a little bit because you wanted to take advantage of the growth. Can you maybe just expand that? Has anything actually changed in terms of the timing of the savings or anything like that?

Dr. Stefan Spindler: When we were planning CORE II, we had four restructuring projects in the pipeline. That was the closure of a smaller factory, Elfershausen, which we executed. It was a transfer of products from a German location into an Eastern European location, which we executed.

That was a restructuring in a U.S. plant, which we took away from our plan because we said, let's rather invest in the U.S. and let's rather grow the local business, for various reasons. Number one, it is an attractive market. Number two, we were a little bit stuck in the middle and we said, either we restructure it or we invest into it. Because of the current market dynamics and also because you don't know what happens politically in the U.S., we said it is better to be locally there. So we have definitely changed that plan.

There was a fourth restructuring element in it with a German plant where we saw then all of a sudden such a high market demand in these components that we just did away with that plan.

So, let's say, from the plant structural measures, we executed two out of four and with the other two we changed the strategy. On the indirect overhead personnel we basically executed what we had in the plan. That is something we did not know when we were planning CORE II, the positive pricing effects which we are now gaining and some investments into growth. So this net balance of 86 million is actually more than we planned in the beginning, but it is a different scope.

Klaus Rosenfeld: I think it is also a good example for the fact that you need to be flexible.

To be a little more outspoken on the U.S.: We planned CORE II before President Trump was elected. We had a certain view on how this would move forward. Again, I am not here to talk about Mr. Trump, but when we saw what he put in and what changed in the industrial landscape, we said that we need to revisit the plan and said that it doesn't really make sense now to leave one of these areas that could become more important. That is why we said that we are not going to close the plant in Joplin, we are going to continue with that.

But I said to Stefan: The 80 million is the 80 million. If you don't get the benefits from the U.S., you need to bring it somewhere else. And he brought a little bit more. Again, it is a mini example of what I said before: If we cannot achieve a target by the originally identified measure, we need to find another measure. That is a good proof that that works. It doesn't work one to one. Sometimes you need to be a little bit creative. But that is the philosophy behind it.

Sascha Gommel (Credit Suisse): The second question is on pricing. I am not sure what you are willing to say in terms of pricing. It would be great if you could give us as much detail as possible in terms of what was implemented at distributors, what was implemented at original equipment. When were these increases implemented? It sounds to me as if you were saying that you still expect a tailwind from pricing in 2019. If you are not willing to quantify absolute amounts, maybe you can just say whether it was greater or enough to offset raw material prices.

Dr. Stefan Spindler: I think I can say that: It was greater than to offset raw material prices. We started in 2017, even late 2016, in Asia/Pacific. We are now, in 2018, doing a couple of steps in Europe.

When we had the last Investors' conference, you were asking me what happened because SKF dropped their prices by x percent. So there was rumour in the market that the prices were dropped significantly, by a two-digit number.

We will actually also be doing that. That doesn't mean we drop our prices by 20 percent, but we restructure our price lists. That means basically: Harmonize more strongly the gross prices on an international level, so that we 1) don't have big differences and 2) have more reasonable rebate schemes. So we restructure our gross price list and our rebate system, so that at the end of the day the bottom-line effect is positive, but it looks like a lowering of the gross price.

If you take that into account, plus a couple of incremented price increases, we definitely have a positive impact, beyond material cost.

Sascha Gommel (Credit Suisse): One more question on your product portfolio: When you look at the scope of your current product portfolio, do you see any kind of blind spots where you still want to add product or markets or clients? Or the other way round: Do you see any products where you might want to divest?

Dr. Stefan Spindler: Divesting products in terms of really taking an entity with a product accountability and a factory etc. and sell that, that is not on our agenda.

We are restructuring the portfolio and that means taking certain types out which are not profitable, maybe even certain types at certain customers. So it is more a rolling product portfolio optimization than going ahead with a big chunk which we divest.

Klaus Rosenfeld: Maybe I can add to this to support Stefan. It is a streamlining. Parts of the initiatives under CORE I and CORE II go through the portfolio and look for low performers and say which of these products bring a gross profit that is below the target. Can you either improve that or can you reduce production or even sales in

these products? So it is very much a streamlining that is based on the principle, we should earn on every product we do a sufficient gross profit to margin.

Henning Cosman (HSBC): To be a bit cheeky and put it all in perspective: I think you often say, you call it as you see it, often when it comes to negative developments. Here it seems things are developing a bit more positive than you had expected. So I just want to understand if you are telling us the full truth or if you are maybe leaving a little bit up your sleeve for when other things go wrong down the line, as it has maybe happened just now.

You seem to have achieved the bottom end of your range where you want to get to already. You have more price increases coming through. You have CORE benefits to come through. So it looks like you are a bit ahead of plan, but still you are not really saying that. Are you prepared to comment?

Klaus Rosenfeld: Stefan, let me help you on this one.

(Laughter)

We are definitely seeing a more positive development than we expected. We want to deliver what we promise. We are supported at the moment by a positive market environment. You saw the cycles. They are different than in auto. There are different characteristics.

Therefore, let us also be here and there a little bit conservative to manage expectations right. We are not saying that there is a positive momentum at the moment. The chart with the growth potential shows you that we cannot extrapolate 8 to 9 percent growth.

On the margin, I think, Stefan and his team are exactly on the right track to get to the 11 to 13 percent. We have always said: That is the target. We are quite proud that we are getting there. But in terms of absolute EBIT and what is going to happen next year, the target is for 2020 and should be a sustainable achievement and nothing where we cry too early: Here we are.

We are on a good track, for sure. We are getting a lot of business that we have not seen before. But let’s see where the development goes. We are optimistic on this and we are proud that things have been implemented properly.

Operational Performance and Efficiencies

Dietmar Heinrich: Good afternoon everybody! Last presentation for the day; you might be very tired, so I hope you can still digest the finance presentation – just numbers, but I think this is what you like. No, it is not going to be just numbers, not just boring numbers. Actually, I want to close the loop: I want to get back to what we started with today, actually to the opening word of Klaus when he talked about strategy: Strategy is about making choices and strategy is about implementation, about execution.

I want to give you a little bit of insight into four examples actually how we are implementing our strategy, how is the progress. There are four initiatives, two of which are part of the “Agenda 4 plus One“, the other two initiatives are add-ons that we are doing. So I would like to shed a little bit of light in regard to where we are with our Shared Services Center initiative, how we progress; Stefan already referred to this with the dissolution of the Bearing and Components Technologies, which is really a big improvement for us.

Then I want to get back not just on efficiency, but also in regard to steering effectiveness, then talking about how we are going to influence the cash flow and show a little bit what we already did in regard to working capital optimization. I will close the presentation with looking at how we are moving forward in regard to our financing structure.

Now we are looking at the shared services activities. What we are doing there is building up a captive, multi-functional Shared Services Center; so it is not just finance shared services. We already did this a long time ago in the finance area; I think we started back in 2004. We established our first not really offshore, but Eastern European finance shared services in 2012. But now we are moving forward with bringing more and more indirect functions of the group into the shared services center scope. We are talking about human resources, we talk about IT, we talk about logistics and we talk about purchasing.

What we want to actually achieve there is, by leveraging standardization, automation and digitalization, on top then realizing advantages by choosing best-cost locations, so that we achieve more efficiency, so that we achieve significant savings and we will tell you later where we are in that regard right now.

In regard to the pilot or in regard to build-up, we started activities actually last year. We needed quite some time for preparation. We recruited around 40 people which are coming on board in the next weeks. We will do pilot process implementations for all four functions until the end of the year. We will then increase the Shared Services Center, the location of which is already decided, the space is rented. Until the end of next year, we will have 150 people working for us in Poland. You can see, it was a diligent preparation. It needed some time. But now we are in the ramp-up phase.

The benefits that you can see over here are: We had to post the restructuring expense at the end of last year, amounting to 39 million euro. We are having the preparation work this year and the ramp-up situation next year. But we are planning in 2022 with this initiative to realize additional savings of 22 million euro and going up

finally to a range of around 800 people being employed in our Shared Services Center in Poland.

The second example I would like to highlight is the dissolution of the Bearing and Components Technologies. Actually, we established this a couple of years back already as an internal cost center, an internal center of excellence which should provide the products, mainly the bearings in an equal way, independently, to Automotive and to Industry and focus on best efficiency, best-cost achievement, and making sure that both divisions are serviced in the same way, so not giving preference to one division over the other division.

But we realized, especially last year, when we had been in discussions, it did not work properly. The BCT was not connected well enough to the business side. They acted independently in some regard, they had their own strategy, their own consideration and we actually realized that we need to bring the factories much closer to the divisions Automotive – looking at Matthias – and Industrial – looking at Stefan. That is actually what we concluded – we announced this in May of this year – to achieve better operational management effectiveness.

On the other side, when looking into this, we had established an overhead structure who was responsible to manage that business. That is not needed anymore; we can dissolve this organization. Some people need to move to the divisions in order to run the business. But some people we don't need anymore. So we established in line with this a restructuring programme which will finally lead to a headcount reduction.

When looking more into this matter and also by using outside consultants doing benchmarking, we realized that these factories are not running with the same efficiency in regard to overhead structures in the indirect areas as we are having in our lean manufacturing sites, especially in the Automotive area.

These are the two areas on which we focus to reduce on the one side headcounts to increase efficiency, but also on the other side to increase effectiveness.

We have a target organization which will go into place in January of next year. But we need to make sure that in the interim period the business, the factories are run under proper guidance. For this, we established an interim organization. Since 1 July 2018, these factories are run either by Automotive or Industrial. The people are getting into this and we can realize that actually we are getting much closer to better. We are finding better, improved ways of how to manage the business.

What are we going to achieve? In line with the redimensioning that we did on the overhead area we posted as per end of the first half of this year a restructuring expense amounting to 22 million euro. We are going to do the final restructuring expense posting until the end of this year. And we are expecting from the dimensioning – from today's point of view, we are going to achieve this – finally the first full-year savings in 2021 amounting to 60 million euro, then finally having a reduced 950 headcount. This is the second example of how we are implementing our strategy.

Now let's go to the third example; it is in an area where I am having a responsibility, also as a sponsor. It is about working capital development. You can see here on the

chart, on the lower left side, that over the course of two years, our working capital in percent of sales decreased by close to 200 base points.

What we are doing there is basically not targeting inventories – originally there was a consideration, but we realized that we need to approach this in a different and more operational manner, being driven also by the operations –, but focusing on accounts receivables and focusing on payables.

In regard to payables, the target is the harmonization of payment terms and the harmonization of payment dates, so that we are reducing internal work, but we are also having the payout at a time when it's proper also for us, in order to match cash inflow and cash outflow. We made good progress over there. You will see it on the next chart.

The second thing is in regard to receivables: to improve our dispute management, but also looking into other areas of improvement. We are well progressing. You could see this on Klaus' chart this morning when he had the "Agenda 4 plus One" initiatives on the screen that we are very much advanced. We are actually going to close this at the beginning of next year.

Looking at the achievements: The accounts receivables side was reduced by around 100 million euro. We have some compensatory impacts coming from the growth. So, naturally, with growth the accounts receivables are increasing, but we managed to counter this one. And you can see, especially on the accounts payable side, we have a significant improvement of over 200 million euro, by which we actually could reduce our working capital and the pressure on the financing side as well.

The activities continue and are going to be concluded until the first quarter of next year.

The last example, actually, is our debt situation. You can see on the lower left of the chart: Looking back to the year 2012, we had a debt of more than 7 billion euro. We managed with the positive development, with the cash generation to significantly reduce this debt level since then. In line with this, the outside view on us as a company also improved. We have actually got investment grade rating from two of the major agencies during the last years already. Finally, just a few weeks ago, Standard & Poor's also was convinced that we are moving into the right direction, have got more confidence in regard to our development and also provided us the upgrade to the investment grade rating.

Now, for us, it is important to actually get a benefit out of this by readjusting our finance structure to investment grade levels and, of course, using this opportunity as well to reduce interest cost. That's actually what we are doing here.

First of all, what we did was extending the maturity of the existing loans, of the revolving credit facility as well, as the term loan that we are having on a group level, and the investment financing, the specific one that we are doing. Now also, with the investment grade rating being issued or being confirmed by Standard & Poor's, we can release certain terms and conditions, certain securities, guarantees. After having done this on the loans, we are also looking into how we can use this improved situation for the bond side, too. So we are investigating currently preparing in that regard,

also to actually generate finally benefits and improve the impact on the earnings per share.

Let me summarize, getting to the end of my presentation: I hope you could get a little bit of insight how we are executing our initiatives, how we are putting them into place, how we are realizing the benefits out of this. I just mentioned four examples: the Shared Services Center, the dissolution of our Bearing and Components Technologies entity, how we are optimizing the working capital and, finally, how we are using the achieved investment grade rating to actually improve our financing structure as well.

With this, I just want to highlight that we as a group, that we as a company are focusing continuously on profitability, on cash flow. But also we aware: This is not just continuously moving up, it’s also about countering challenges.

This is what I wanted to present, giving a little bit of insight into the executing. I am open for questions. – Thank you very much.

Q&A

Sascha Gommel (Credit Suisse): The first question would be on capex. At the moment, you are running above your 6 to 8 percent target. Can you give us a better understanding how that will face towards the 8 percent and then also when it will really fall below the 8 percent?

Dietmar Heinrich: We have been above 9 percent last year. We are in the range of 8 percent this year and we are moving towards the 8 percent, as Klaus already indicated. But it also needs a different handling of a couple of matters inside. It's about investing in the right places, establishing the investment strategy, but it also means – that's what we started – to look into the areas: Where are machines not used in an efficient way? How can we use this machinery for future demand situations or needs? That's what we are looking at inside.

From a medium-term perspective, the 6 to 8 percent – which was historically also our range that we needed to enable our growth – is the right area; we feel confident about that.

Sascha Gommel (Credit Suisse): The second question would be on your interest cost. How much savings do you think you can achieve there?

Dietmar Heinrich: From the financing side, it's around 40 basis points on the loans. When we look at the loans, it could be in a range of a bit more. It depends on how we use the maturity, actually, how long the terms will be. But it could be in a range of 100 basis points or more, in that area.

Sascha Gommel (Credit Suisse): Very last question, very quickly: What is the current level of the receivables you have sold?

Dietmar Heinrich: 150 million euro.

Kai Müller (Bank of America Merrill Lynch): That's actually a follow-up on the receivables: Have you got any plans in terms of your factoring programmes going forward?

Dietmar Heinrich: It's basically programmed that it's used in a structural manner. So we are selling the receivables every week at one given day. We have the possibility to extend the programme. So we are looking into this. But in the very end, it will remain in a reasonable manner. For us, it is interesting because it's cost-effective fi-

nancing. The interest rate we are paying there is significantly lower than what we have on average for our financing.

Kai Müller (Bank of America Merrill Lynch): In your 450 for this year, there is no more incremental you would have on top of what you have already?

Dietmar Heinrich: The 150?

Kai Müller (Bank of America Merrill Lynch): In your 450 free cash flow guidance, is there any incremental factoring included in that?

Dietmar Heinrich: We need to see then how it finally gets out. We are looking into that, how we are going to handle this going forward.

Christian G. (Atlantic Investment Management): Just a clarification on "Agenda 4 plus One" and not looking for exact numbers, just a qualitative answer: Looking at the profile, we see the meaningful improvement from 2019 to 2020 and then another nice improvement from 2020 to 2021. What is the number one effect and number two effect that gives you that improvement from 2019 to 2020 and then from 2020 to 2021?

Dietmar Heinrich: What we are having today as a positive contributor is the CORE programme, as Stefan explained, what we are having there as an improvement. We have in there what we could see on the Shared Services Center side and we have in there the improvement on the negative situation on the e-mobility side.

I think, Christian, you asked today also about a break-even point. That's lying in the future, but we see that the improvement will contribute in that regard as well.

Christian G. (Atlantic Investment Management): So that's the order of magnitude, you would say. Number one is CORE and number two is Shared Services, number three is improvement in e-mobility.

Klaus Rosenfeld: At the tail end, there is also the whole range of digital initiatives we are doing. Within the agenda, there is this digitization initiative. There are numerous smaller business cases. We need to see how they materialize. For example, if you think about autinity, we are not using this only for external purposes, we are also using it internally. That has probably the biggest potential swing, but also the biggest potential disappointment. If these digital business cases don't materialize, the 300 million is at risk.

Austin: I won't be quite as cheeky as Henning. When you became the group CFO, what pleasant or unpleasant things did you discover?

(Laughter)

Klaus Rosenfeld: It just stands next to him.

(Laughter)

The most unpleasant sort of colleague stands next to him.

Dietmar Heinrich: Actually, it was a difficult situation. We just had a profit warning and it was about organizing the troops, organizing the people to understand the urgency, the emergency that we are having, but also not just looking into: Okay, we are going to save some money now, but next year we are going to spend again. It was about to get this established in a regular manner, so that it is also working moving forward.

Then, of course, it's looking to the business guy and looking now to Matthias in a bad way. It's always their asking about additional investment, capex, growing business – and no money.

Renata Casaro: It's about choices, as you said.

Dietmar Heinrich: It's about choices.

Klaus Rosenfeld: A good CFO must be able to say: Which part of "no" do you not understand?

Closing Remarks

Klaus Rosenfeld: There is not much of a conclusion. Hopefully, it has been an interesting day. We thank you for coming. It was a great location. It's like an arena. Hopefully, you have your thumbs up like in old Rome.

Just to summarize: As we said, we have a sound strategy in place. We have made our choices. We need to deliver on that strategy. We are very focused on execution. We think that the foundation of this company is a very solid basis for future success. We know the gaps that we have. We have shown the examples how we fill these gaps, both with internal initiatives, but also externally. I think we need to do more to explain to you the different types of businesses. Michael has been very good with Robert to do this in a practical manner. Aftermarket is something different than Matthias' business. I think the composition of businesses is interesting because they have very much in common. We will do more to explain the characteristics of the three divisions.

Short-term, the times are challenging, that's for sure. But mid-term we are optimistic. As I said before, we had the discussion about targets, ambitions, whatsoever. But what I can tell is: We are very much committed to deliver on what our plans say. Sometimes it goes a little bit faster, sometimes a little bit slower.

What I can say again: Stay with us! It will be interesting. You can be rest assured that we are working on lots of interesting things. I very much hope that you will continue to follow the company and also the Schaeffler share.

With this, I want to close – not without saying a big "thank you very much" to Renata

(Renata Casaro: To the whole team!)

and to the team that has organized all of this.

(Applause)

We are now very interested in what you suggest for next year because we are upgrading also the performance in these Capital Market Days. So a big "thank you very much" to you!