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Annual press conference 2016

Following record year, Bosch remains on growth course

Services increasingly supplementing product portfolio

- ▶ 2015: record sales of 70.6 billion euros
- ▶ 2015: result from operations soared 24 percent to 4.6 billion euros
- ▶ 2016: sales growth of 3 to 5 percent expected
- ▶ Broad product range is the basis for expanding services business
- ▶ Connected industry: cost savings and sales each totaling one billion euros
- ▶ Career prospects for 14,000 university graduates

Stuttgart and Renningen, Germany – Following a record year in 2015, Bosch wants to continue its growth trend this year. Despite a subdued economic outlook and geopolitical uncertainty, the supplier of technology and services expects its sales to grow between 3 and 5 percent in 2016. Bosch wants to continue growing faster than the company's key markets. If the first quarter's slowdown continues in certain regions and markets, sales growth will be at the lower end of the forecast scale. In the subdued market environment of the first quarter of 2016, Bosch saw a year-on-year sales increase of just under 3 percent, or roughly 4 percent after adjusting for exchange-rate effects. This growth was achieved despite the very strong nominal growth of the first quarter of 2015. "We plan to grow not only with innovative products, but also with innovative services," said Dr. Volkmar Denner, the chairman of the Bosch board of management, at the annual press conference at [Bosch's research campus in Renningen](#). He continued: "We are increasingly using connected services to build on our broad basis in the hardware business." As it does so, the company benefits not just from its technological diversification, but also from its wide-ranging industry and domain expertise. As Denner explained, "In the future, customers will not only come across Bosch in their cars and kitchens. Connected services will make it a constant companion in many aspects of their daily lives."

Business year 2015: highs in sales and result

In 2015, Bosch Group sales reached an all-time high of 70.6 billion euros. The full acquisition of two former fifty-fifty joint ventures, BSH Hausgeräte GmbH and Robert Bosch Automotive Steering GmbH, pushed sales up by almost 22 billion euros, or 44 percent. Bosch saw strong growth in its operations as well; calculated on a comparable basis, sales grew by 10 percent. After adjusting for exchange-rate effects, the sales increase was 3.8 percent. Aside from the Industrial Technology business sector, all business sectors saw double-digit growth and were able to improve their result in 2015. Similarly, the result for the Bosch Group as a whole improved once again in 2015. The supplier of technology and services recorded 4.6 billion euros in earnings before interest and taxes (EBIT), which equates to an EBIT margin of 6.5 percent. This means that EBIT from operations increased year on year by some 0.9 billion euros, or 24 percent.

Extraordinary effects had a positive impact on EBIT in 2015, but these were offset by an equivalent amount of extraordinary effects with a negative impact. These extraordinary effects arose from the first-time full consolidation of Automotive Steering and BSH Hausgeräte, impairments, and provisions in conjunction with legal risks. “Our ambition is to develop innovations that actively help shape our markets,” said Dr. Stefan Asenkerschbaumer, the CFO and deputy chairman of the board of management. “Our business performance in 2015 shows that this strategy is paying off, and we will continue pursuing it in 2016 as well.” Despite burdens from restructuring and higher investments in securing its future, Bosch aims to keep earnings stable in 2016.

Services to supplement broad hardware basis in the future

Going beyond hardware products for a connected life, Bosch’s strategic objectives include service solutions for every aspect of connecting those products on the internet of things. In the connectivity business, the company focuses on the “3S’s”: [sensors](#), software, and services. “Services are becoming an integral part of our product business. Every sale of hardware should be followed by the sale of complementary services,” Denner said. When it comes to developing and introducing services for the connected world, Bosch’s broad business portfolio offers a particular advantage, as does its competence in software and sensors. Denner went on to say that “Bosch can connect many things across a wide range of domains as no other company can – cars with [houses](#), even entire cities.” Nearly 50 percent of all Bosch electronic product classes are web-enabled. The company plans to gradually expand the existing services business in all four of its business sectors.

Connected industry: cost savings and sales of a billion euros each

In the world of connected industry, also known as [Industry 4.0](#), Bosch benefits first and foremost from the practical experience it gains by applying it in around 250 of its own plants. The company translates this in-house experience into services for third parties. One of these is the Production Performance Manager, which visualizes production data in real time and autonomously initiates maintenance processes. By 2020, Bosch expects connected industry to deliver an aggregate 1 billion euros in cost savings and to generate an additional 1 billion euros in sales. “Bosch’s broad footing and its international presence stand it in good stead in connected industry. We can connect large-scale automotive production as well as small-batch mechanical engineering – in Asia, Europe, and the Americas,” Denner said.

Service Solutions: 15 percent annual sales growth

The newly created Bosch Global Service Solutions division is already seeing strong growth. The division’s approximately 6,000 associates work on projects such as supporting the business processes of customers in a variety of sectors or processing eCalls on behalf of automakers. In 2015, Global Service Solutions handled more than 120 million customer calls for over 1,000 companies in 30 countries – 30 million more than in 2013. Bosch expects the division’s sales to grow by about 15 percent each year.

Smart homes: new smart-home products to debut in fall 2016

Increasing connectivity will make life easier and more convenient in the smart home as well. Bosch launched its Smart Home System at the start of the year, offering a simple and secure solution for [smart homes](#). Further products for the system are to follow over the course of 2016. One of these is a smoke alarm that, besides its usual function, also provides increased security; for instance, when the residents are on vacation. Bosch expects the global market potential of smart homes to reach 10 billion euros as early as 2017. By 2020, some 230 million homes – 15 percent of all households worldwide – will be equipped with smart-home solutions.

Mobility Solutions: one app for car, bicycle, bus, and train

Bosch’s portfolio in the [Mobility Solutions](#) business sector already extends beyond the car. For example, Bosch is working with several partners on realizing a software-based mobility assistant for intermodal transportation. It offers users in the greater Stuttgart area the ability to plan, reserve, and pay for tickets for various forms of transport, including cars, bicycles, trains, and buses, all via a single app. Similarly, [connected parking](#) will also have a strong service component. At present, searching for a parking space in German cities takes an average of ten minutes and accounts for 30 percent of inner-city traffic, Bosch solutions will

soon make this a thing of the past. In what is known as “community-based parking,” cars themselves function as sensors. The vehicles identify empty parking spaces on the street as they drive past, and then report these over the internet to Bosch. The company uses this information to generate a real-time map that displays available parking spaces. And thanks to [data mining](#), [real-time parking maps](#) can be generated using the sensor data from just 6 percent of all vehicles in rapidly flowing traffic.

Bosch IoT Cloud: integral part of the services business

A core component of Bosch’s services business is its own [IoT cloud](#). The Bosch IoT Cloud offers the technological infrastructure necessary for scaling connected solutions. In 2016, some 50 Bosch applications will be running in the company’s cloud. Use of the IoT cloud will also be extended to third-party customers as a service starting in 2017. The [Bosch IoT Suite](#) forms the software core of the IoT cloud. It is the brain of the connected world, and offers all the functions necessary to connect devices, users, and companies. Big data management allows enormous amounts of data to be analyzed in the Suite. Rules for automatic decisions can be stored in the Bosch IoT Suite – such as when patterns of wear and tear should be reported and preventive action taken to service machinery. Bosch and its customers already operate many solutions and projects that are based on this platform. More than five million devices and machines are currently connected via components of the Bosch IoT Suite.

The business year 2015 by region and business sector

Asia Pacific: subdued growth in China

In **Asia Pacific** – including [Africa](#) – the Bosch Group boosted its sales in 2015 by 17 percent to a total of 19.2 billion euros (2.8 percent after adjusting for exchange-rate effects). This was below expectations, the main reason being the subdued pace of economic growth in China and other emerging markets. Bosch sees major potential in **Africa** over the long term. In 2015, the company continued expanding its activities there, and now has its own branch offices in ten African countries.

Americas: strong year in North America

In [North America](#), Bosch was able to benefit from the region’s excellent economic development. Sales here grew by 25 percent to 12.7 billion euros (6.7 percent after adjusting for exchange-rate effects). In **South America**, on the other hand, the recession in Brazil had a major impact on Bosch’s business. Overall, sales in the region fell by 13 percent (3.7 percent after adjusting for exchange-rate effects).

Europe: good development in western Europe

The Bosch Group's business in **Europe** developed better than initially forecast, with sales rising by 3.8 percent to 37.3 billion euros in 2015. Sales developed positively in the company's home market of **Germany** as well, climbing 1.3 percent.

Mobility Solutions: outpacing market growth

The **Mobility Solutions** business sector was able to achieve a marked increase in its growth and result in 2015. Calculated on a comparable basis, sales rose by some 12 percent to 41.7 billion euros (4.6 percent after adjusting for exchange-rate effects). This means that the sector considerably outperformed global automotive production, which grew by just 2 percent to 92 million units. Margin from operations rose to 8.4 percent.

Industrial Technology: lingering weakness in the mechanical engineering market

The **Industrial Technology** sector's development reflected the difficult situation in the mechanical engineering market. Overall, sales in this business sector fell by 1.6 percent to 6.6 billion euros (6.5 percent after adjusting for exchange-rate effects). The decline in sales was also reflected in result: Industrial Technology finished 2015 with an operating loss of roughly 100 million euros. In contrast, the Packaging Technology division performed well.

Consumer Goods: double-digit sales growth

Last year was a good one for the **Consumer Goods** business sector, with 17.1 billion euros in sales. Sales of BSH Hausgeräte, totaling some 12.6 billion euros, were included for the first time. On an operational level as well, both the business with household appliances and the [Power Tools](#) division developed well. Calculated on a comparable basis, sales increased by about 10 percent year on year (5.7 percent after adjusting for exchange-rate effects). The sector's margin from operations increased to 7.2 percent.

Energy and Building Technology: strong growth in sales and result

Last year, the [Energy and Building Technology](#) business sector achieved a considerably greater increase in sales than in 2014. Sales revenue rose 11 percent to 5.1 billion euros (7.2 percent after adjusting for currency effects). The sector's steady improvement in result was reflected in a margin of 4.4 percent.

Headcount: IT and software specialists wanted

As of December 31, 2015, the Bosch Group employed some 375,000 associates worldwide. Headcount rose last year by 17,600 associates (like-for-like comparison). The largest increases were in central and eastern Europe, Germany, Asia

Pacific, and the United States. In the current year, Bosch plans [to hire](#) roughly 14,000 university graduates around the world, with software expertise particularly in demand. At the moment, nearly half of all vacancies at Bosch are software-related.

Press photos:

1-CR-21633, 1-RB-22167, 1-RB-22168, 1-RB-22169, 1-RB-22170, 1-RB-22171, 1-RB-22172, 1-RB-22173, 1-RB-22174, 1-RB-22175, 1-RB-22176, 1-RB-22177, 1-RB-22178, 1-RB-22179, 1-RB-22180

Charts:

1-RB-22199, 1-RB-22200, 1-RB-22201, 1-RB-22202

Video materials:

[Industry 4.0 – an outline](#)

[Active parking lot management](#)

[Smart cities – Bosch mobility solutions](#)

[Data mining](#)

[From connected car to personal assistant](#)

[Video materials from CES 2016 in Las Vegas](#)

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The Bosch Group is a leading global supplier of technology and services. It employs roughly 375,000 associates worldwide (as of December 31, 2015). The company generated sales of 70.6 billion euros in 2015. Its operations are divided into four business sectors: Mobility Solutions, Industrial Technology, Consumer Goods, and Energy and Building Technology. The Bosch Group comprises Robert Bosch GmbH and its roughly 440 subsidiaries and regional companies in some 60 countries. Including sales and service partners, Bosch's global manufacturing and sales network covers some 150 countries. The basis for the company's future growth is its innovative strength. Bosch employs 55,800 associates in research and development at roughly 118 locations across the globe. The Bosch Group's strategic objective is to deliver innovations for a connected life. Bosch improves quality of life worldwide with products and services that are innovative and spark enthusiasm. In short, Bosch creates technology that is "Invented for life."

The company was set up in Stuttgart in 1886 by Robert Bosch (1861-1942) as "Workshop for Precision Mechanics and Electrical Engineering." The special ownership structure of Robert Bosch GmbH guarantees the entrepreneurial freedom of the Bosch Group, making it possible for the company to plan over the long term and to undertake significant up-front investments in the safeguarding of its future. Ninety-two percent of the share capital of Robert Bosch GmbH is held by Robert Bosch Stiftung GmbH, a charitable foundation. The majority of voting rights are held by Robert Bosch Industrietreuhand KG, an industrial trust. The entrepreneurial ownership functions are carried out by the trust. The remaining shares are held by the Bosch family and by Robert Bosch GmbH.

Additional information is available online at www.bosch.com, www.bosch-press.com, twitter.com/BoschPresse

Bosch key data for the business years
2015 and 2014



| Figures in billions of euros | 2015 | 2014 ¹ | Change from previous year |
|---|------|-------------------|---------------------------|
| Total sales revenue | 70.6 | 64.2 | 10.0% |
| percentage share of sales revenue generated outside Germany | 80 | 78 | - |

| Sales revenue of the business sectors | | | |
|--|------|------|-------|
| Mobility Solutions | 41.7 | 37.2 | 12.0% |
| Industrial Technology | 6.6 | 6.7 | -1.6% |
| Consumer Goods | 17.1 | 15.6 | 10.1% |
| Energy and Building Technology | 5.1 | 4.6 | 11.0% |

| Sales revenue in the major regions | | | |
|---|------|------|--------|
| Europe | 37.3 | 36.0 | 3.8% |
| - of which Germany | 14.2 | 14.0 | 1.3% |
| North America (including Mexico) | 12.7 | 10.1 | 24.8% |
| South America | 1.4 | 1.6 | -12.8% |
| Asia Pacific (including other regions) | 19.2 | 16.5 | 16.6% |

| | | | |
|--|-----|-----|-----|
| EBIT (earnings before interest and taxes) | 4.6 | 3.7 | 0.9 |
| as a percentage of sales revenue | 6.5 | 5.8 | - |

| Figures in billions of euros | 2015 | 2014 ² | Change from previous year |
|--|------|-------------------|---------------------------|
| Research and development cost | 6.4 | 5.0 | 1.4 |
| as a percentage of sales revenue | 9.0 | 10.1 | - |
| Capital expenditure | 4.1 | 2.6 | 1.5 |
| as a percentage of sales revenue | 5.7 | 5.3 | - |
| Depreciation of property, plant, and equipment | 2.8 | 1.9 | 0.9 |
| Equity | 34.4 | 29.5 | 4.9 |
| Equity ratio | 45% | 48% | -3 |

| Figures in millions of euros | 2015 | 2014 ² | Change from previous year |
|---|------|-------------------|---------------------------|
| Unappropriated earnings (dividend of Robert Bosch GmbH) | 142 | 102 | 40 |

1 Figures for 2014 are stated on a comparable basis, including Robert Bosch Automotive Steering GmbH and BSH Hausgeräte GmbH.

2 Figures for 2014 are not stated on a comparable basis, and exclude Robert Bosch Automotive Steering GmbH and BSH Hausgeräte GmbH.

| Associates (as per December 31, 2015) | 2015 | 2014² | Change from previous year |
|---|-------------|-------------------------|----------------------------------|
| Bosch Group | 374,778 | 290,183 | 84,595 |
| Europe | 229,599 | 174,025 | 55,574 |
| - of which Germany | 131,994 | 105,429 | 26,565 |
| Americas | 41,037 | 33,879 | 7,158 |
| Asia Pacific (including others) | 104,142 | 82,279 | 21,863 |
| Associates in research and development As per: December 31, 2015 | 2015 | 2014² | Change from previous year |
| Bosch Group | 55,773 | 45,702 | 10,071 |
| Europe | 32,143 | 25,804 | 6,339 |
| - of which Germany | 24,906 | 20,701 | 4,205 |
| Americas | 2,866 | 2,457 | 409 |
| Asia Pacific (including others) | 20,764 | 17,441 | 3,323 |

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² Figures for 2014 are not stated on a comparable basis, and exclude Robert Bosch Automotive Steering GmbH and BSH Hausgeräte GmbH.



Show car provides a glimpse into the automotive future **Bosch is turning connected cars into personal assistants**

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- ▶ Automated driving opens up new interaction and communication possibilities for drivers
- ▶ Interface concept takes an integrated approach; large-surface monitors offer flexible display options that can be adapted to any situation
- ▶ Connecting car and home enhances safety and convenience

Always online, connected with their surroundings, driving themselves: over the next decade, cars and car driving will make huge strides forward. New functions also have repercussions for the design of car interiors. The latest Bosch show car shows how car and driver will soon be able to communicate with each other – and the possibilities that will arise from this. Bosch CEO Dr. Volkmar Denner firmly believes that the “car of the future will be a new digital living environment.” After all, highly automated driving on the freeway will do more than significantly improve safety and fuel-efficiency. From the cars of the future, drivers will also be able to communicate – including by video conference – with others, such as friends, family, or coworkers. “Alongside the home and the office, the car will become the third living environment and a personal assistant,” Denner says.

New display and user interfaces

The show car’s human-machine interface follows an integrated approach. It provides the driver with one single interface that supplies information in the interactive form best suited to the given situation. In practical terms, this means that Bosch has replaced the usual front and middle consoles with large-surface monitors. These can display any information flexibly, as required by the given situation. All-round interior lighting completes the display concept. Its color is selected based on the driver’s preference, but the lighting can also warn of potential hazards: if a pedestrian or cyclist is about to cross in front of the vehicle, the interior

lighting blinks rapidly to direct the driver's attention to the left or right side as necessary. This ambient light function is therefore another of the vehicle's extensive range of safety features, which also include lane-keeping support and emergency brake and traffic jam assists.

Automated driving opens up new possibilities

In the Bosch show car, the driver has access to real-time traffic and weather information, both from the cloud and in social media and communication applications. To ensure that drivers do not endanger others when using these functions, they can be used only during automated driving. Bosch engineers paid special attention to the safe and seamless transfer of this responsibility from the driver to the car and back. In a first step, drivers are informed when highly automated driving is possible. If they want the car to take control, they simply place their thumbs on specific contact points on the left and right sides of the steering wheel for three seconds. If drivers wish to regain control of the vehicle or are about to exit the freeway, they use the same procedure.

It is in automated driving that the strengths of the flexible display concept really come into their own. Images from a video conference, e-mails, or media player then take precedence; a simple swipe is all it takes for drivers to shift back and forth seamlessly between the different displays. Adaptive algorithms adjust the content to the situation and drivers' habits. Preferences such as seat and mirror positions or preset radio stations can of course be saved as well. Fingerprint identification allows the driver to start the car. At the same time, personal settings are retrieved from the memory.

Connected with the entire world – and with home

Over the internet of things, the vehicle can also connect with other domains, such as the driver's home. If a visitor rings the doorbell, the car switches on the intercom. A fingerprint sensor in the car allows the driver to open the front door remotely. In this way, a package delivery person can be admitted into a sealed-off foyer, for example. The driver can also confirm receipt of the package by fingerprint. Once again, this cannot happen without automated driving.

Once the vehicle arrives at home, it reconnects with the home security system, allowing the driver to first retrieve images from the home's exterior cameras before driving onto the property. It is also possible to view the vehicle's direct surroundings using the on-board cameras. This prevents trespassers hiding behind the car from gaining access to the property. Such features are particularly attractive in countries where security is at a premium. Once the passengers have all exited the car, it then parks itself in the garage – ready for the next drive.

Created in cooperation with the prototype developer EDAG, the show car features an outer skin consisting of lightweight 3D-printed modules.

Press photos: 1-CM-22093, 1-CM-22094, 1-CM-22095

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Mobility Solutions is the largest Bosch Group business sector. In 2015, its sales came to 41.7 billion euros, or 59 percent of total group sales. This makes the Bosch Group one of the leading automotive suppliers. The Mobility Solutions business sector combines the group's expertise in three mobility domains – automation, electrification, and connectivity – and offers its customers integrated mobility solutions. Its main areas of activity are injection technology and powertrain peripherals for internal-combustion engines, diverse solutions for powertrain electrification, vehicle safety systems, driver-assistance and automated functions, technology for user-friendly infotainment as well as vehicle-to-vehicle and vehicle-to-infrastructure communication, repair-shop concepts, and technology and services for the automotive aftermarket. Bosch is synonymous with important automotive innovations, such as electronic engine management, the ESP anti-skid system, and common-rail diesel technology.

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BOSCH

April 27, 2016
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**Bosch's diversification as a strategic advantage:
a high-tech company that is also a supplier of services**

A presentation by Dr. Volkmar Denner,
chairman of the board of management
and Dr. Stefan Asenkerschbaumer,
deputy chairman of the board of management
at the annual press conference on April 27, 2016

Check against delivery.

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Ladies and gentlemen, this press conference...



...is taking place at a time when the automotive industry is at the center of public debate. Leaving aside the present focus of that debate, it shows just how much we have to significantly rethink the car. This is something we are by all means capable of. Driving has to become even cleaner, even safer, and even more economical – and in the future also electrified, automated, and connected. But more of that later in our annual press conference, to which I would like to welcome you warmly.

Never before has a car spoken for itself at a conference like this. We've brought this one up on stage because it is much more than a vehicle – it would be more correct to call it a personal companion. In a car like this, drivers can become passengers whenever they want. Alongside the home and the office, the car will be their third living environment. What will be different about this living environment, though, is that it will make sure the home is secure and keep in touch with business contacts, even while it is in motion. This shows how automated and connected driving is changing the vehicle – and how relaxed driving may be in the next decade.

It is not just with this show car that we want to give you a look into the future. The portents of this future are not only visible here on our new research campus in Renningen, but also in our plants around the world, where we are re-defining work and efficiency by introducing Industry 4.0. It is a future we will also exploit with new service-based businesses that take the connectivity of our products on the internet of things as their starting point. This is also something I want to speak about today. But first, though, a look at the main points of today's press conference:

YESTERDAY, TODAY, TOMORROW: THE MAIN MESSAGES

- ▶ **2015 in review**
A **good year for business** despite a subdued global economy, growth and earnings targets achieved
- ▶ **Outlook for 2016**
Planned sales growth of **3% to 5%**, margin remaining roughly stable
- ▶ **Strategy**
Growth with innovative products and services, since Bosch is both a **high-tech company and a supplier of services**

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- 2015 was a good year for Bosch, despite the subdued global economy. We took a great step forward, and achieved our growth and result targets.
- For 2016, we aim to grow sales by 3 to 5 percent. That said, if the slow pace of growth since the beginning of the year continues, we will be at the lower end of that scale. We want to keep our margin roughly stable.
- Beyond 2016, we aim to generate growth with both innovative products and innovative services. This is because Bosch is both a high-tech company and a supplier of services.

This combination will allow us to open up new areas of business in the connected world. At the same time, we are safeguarding our traditional areas of business. Indeed, we are doing so with just as much determination, as the example of Diesel Systems shows. Let me therefore make one thing clear right from the start: Bosch has the technology that is needed to make the diesel engine fit for the Euro 6 emissions standard, also in real driving conditions. In commercial vehicles, we can now comply with the strict legal limits for NOx emissions, both on the road and at the test bench. And for diesel passenger cars as well, we have the technology that will make the diesel engine clean and resource-conserving. As it is, the diesel engine's high level of efficiency means it will continue to play a key role in climate protection for the foreseeable future. For modern diesel engines with modern exhaust-gas treatment, even future nitrogen-oxide limits will be achievable in real driving conditions. We put the diesel on the road, and we are working together with our customers to ensure that it can look forward to a good future.

I will come back to the pillars of our strategy later. But first, an assessment of the past and current business year. For this, let me hand over to Mr. Asenkerschbaumer.

The financial figures: great progress made



ANNUAL PRESS CONFERENCE:
STRUCTURE

- 1.**
THE BUSINESS YEAR 2015,
OUTLOOK FOR 2016
Dr. Stefan Asenkerschbaumer
- 2.**
STRATEGY: EXPANDING OUR
BUSINESS WITH SERVICES
Dr. Volkmar Denner

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BOSCH

Ladies and gentlemen,

I would now like to turn to the financial figures for 2015 and give you our outlook for 2016. As Mr. Denner just said, we made a great step forward in 2015. Sales revenue reached new heights, and we were able to return an encouraging increase in profit.

BUSINESS YEAR 2015 STRATEGIC DECISIONS



Complete acquisition of
Automotive Steering

Complete acquisition of
BSH Hausgeräte



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The leap in sales revenue is partly due to the complete acquisition of our former joint venture BSH Hausgeräte and the joint venture for automotive steering systems, which now makes up the Automotive Steering division. Both are among the leading players in their respective fields. They are also excellent strategic additions, especially in view of our activities in the smart-home and automated driving domains.

BUSINESS YEAR 2015 STRATEGIC DECISIONS



Acquisition of the
battery specialist
Seeo Inc.



Operating unit
for commercial and
off-road vehicles set up



Operating unit
for two-wheelers
set up

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But we made other important strategic decisions as well. With the acquisition of the U.S. start-up Seeo, we have secured a battery technology that could lead to a breakthrough in this field. In the area of mobility solutions, we have established new operating units – for two-wheelers as well as for commercial and off-road vehicles. Our aim is to move even closer to our customers in these segments. Mr. Denner will have more to say on our strategic decisions in the services business later on.

BUSINESS YEAR 2015
GLOBAL ECONOMY



- ▶ **Global economic output**
 - Growth only a moderate 2.5%
- ▶ **Global vehicle production**
 - Including commercial vehicles, up 2% to approx. 92 million units
- ▶ **Mechanical engineering**
 - Disappointing market development
- ▶ **Private consumption**
 - Despite low oil price, pace of growth worldwide on previous-year level only
- ▶ **Global construction activity**
 - Growth weaker than expected; subdued development, especially in emerging markets

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We also did well at an operational level – despite a lackluster environment. We were affected by the slowdown in emerging countries, especially in the key Chinese market. What's more, Russia and Brazil are struggling with recessionary economies. Having said that, Europe, and western Europe in particular, did better than expected. And we saw encouraging economic growth in North America. Key drivers of our business, such as automotive production, private consumption, and construction activity, registered moderate growth rates. Conditions were unsatisfactory in the mechanical engineering sector, and especially in construction machinery, a segment that is particularly important for our business. This is mainly attributable to the slump in the Chinese market, which is being felt worldwide.

BUSINESS YEAR 2015 ACQUISITION EFFECTS

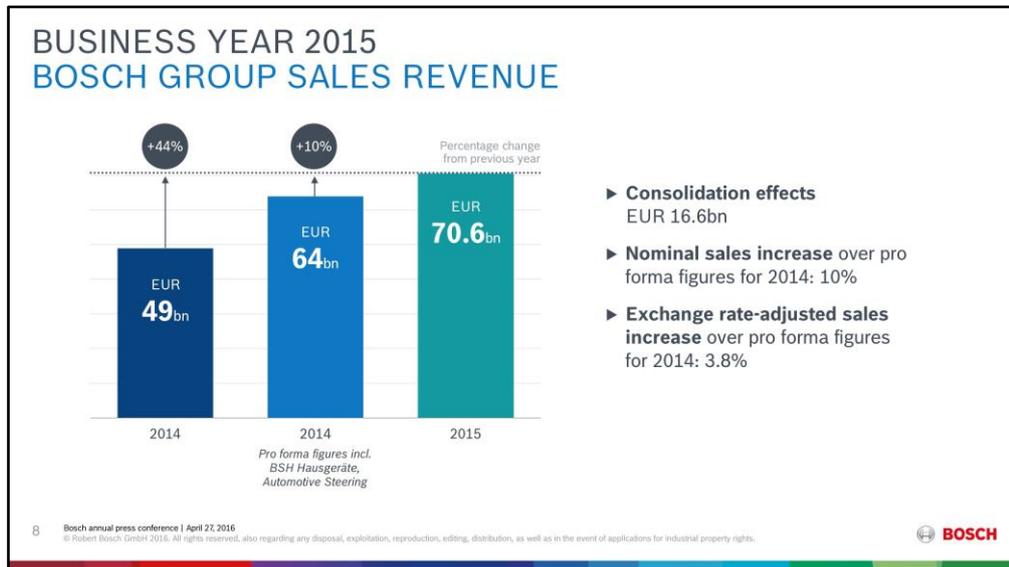
- ▶ **Change to consolidated group** following complete acquisition of fifty-fifty joint ventures BSH Hausgeräte and Automotive Steering
- ▶ **Up to 2014: consolidated at equity**
 - BSH Hausgeräte and Automotive Steering not included in Bosch Group figures such as sales and headcount
 - Only pro rata after-tax profit included in Bosch Group EBIT
- ▶ **From 2015: mandatory full consolidation**
 - Complete inclusion of BSH Hausgeräte and Automotive Steering, with corresponding effects on all key figures
- ▶ **Pro forma statements for the 2014 business year**
 - Analysis is easier if performance is compared with selected pro forma figures that include BSH Hausgeräte and Automotive Steering

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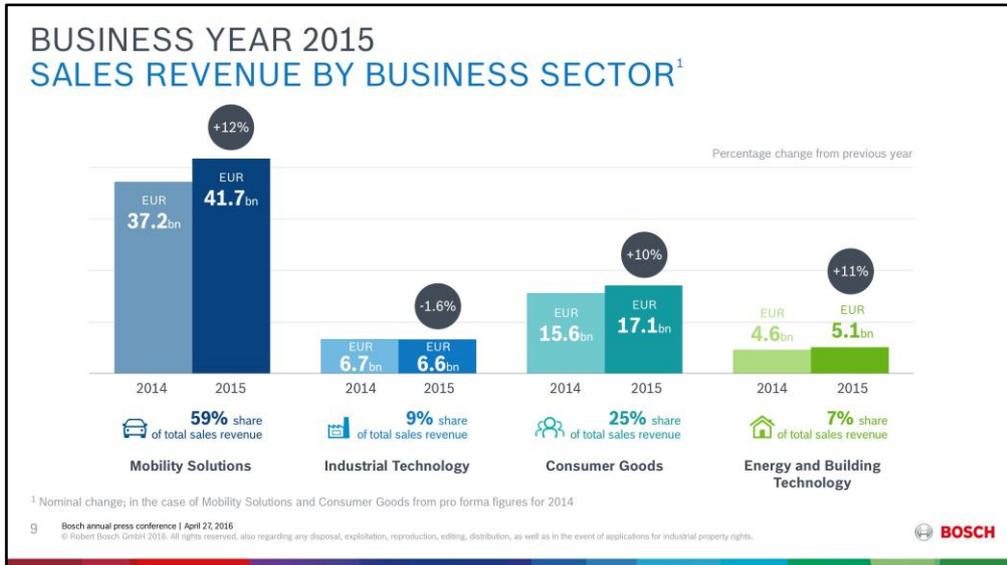
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So what do our financial figures look like against this backdrop? First, let me make a fundamental preliminary remark. Any analysis has to take into account that the former fifty-fifty joint ventures BSH Hausgeräte and Automotive Steering were fully consolidated for the first time in the 2015 financial statements, albeit for 11 months only in the case of Automotive Steering. In 2014, they were still consolidated using the equity method. That means that, back then, neither unit impacted key indicators – such as sales revenue, headcount, research and development cost, or capital expenditure – and that they only impacted group profit with their proportional after-tax profit. To simplify analysis, I will compare sales revenue and profit on an operational level. In other words, I will compare the financial figures for 2015 with pro forma figures for 2014, which include BSH Hausgeräte and Automotive Steering.



In 2015, the Bosch Group's sales revenue climbed 44 percent year on year to 70.6 billion euros. Of that amount, 16.6 billion euros stems from consolidation effects. Apart from BSH Hausgeräte and Automotive Steering, minor acquisitions as well as divestments also left their mark. Operationally, we saw sales revenue rise 10 percent in nominal terms. Compared with previous years, however, there were positive exchange-rate effects amounting to 4 billion euros. Adjusted for those exchange-rate effects, sales revenue increased 3.8 percent. That means that the indicator is within the forecast target corridor of 3 to 5 percent.



However, there were substantial differences between business sectors, and also between regions. The Mobility Solutions business sector reported good growth in 2015. There, we saw sales revenue rise roughly 12 percent to 41.7 billion euros compared with the 2014 pro forma figures, or by 4.6 percent adjusted for exchange-rate effects. That means that the business sector's operations fared much better than global automotive production, which edged up only 2 percent to 92 million units. We benefited from healthy demand for efficient powertrain, display, and infotainment systems, as well as substantially greater demand in the market for driver assistance systems.

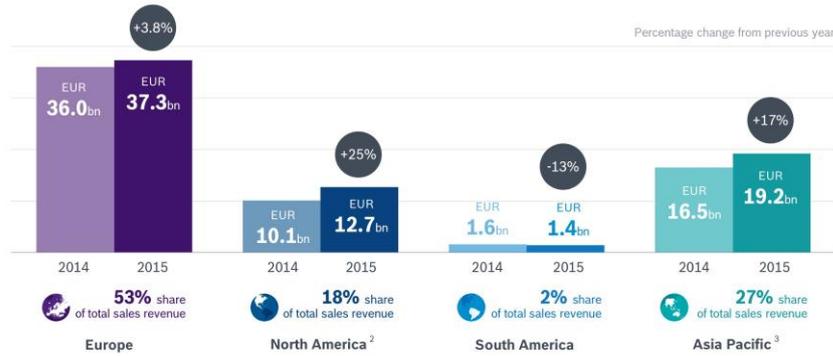
We are also making progress in vehicle electrification. We have already carried out more than 30 customer projects. And we invest roughly 400 million euros each year in the development of electromobility. With mobility becoming electrified, automated, and connected, and with the up-front investments this calls for, we also need to focus our operations more. With this in mind, we decided in 2015 to prepare the spin-off of the Starter Motors and Generators division and, in a second step, to look for a buyer or a partner. In this way, we want to offer the division a prospect for the future.

The development of the Industrial Technology business sector, especially of the Drive and Control Technology division, was not so encouraging. I already mentioned the challenging market environment earlier in my presentation. These economic circumstances left their mark on our subsidiary Bosch Rexroth, and especially its mobile applications business. On aggregate, the business sector saw its sales revenue decline 1.6 percent to 6.6 billion euros, or by 6.5 percent adjusted for exchange-rate effects. The sale of the large gearboxes business in the fall of 2015 only had a minor impact here. Large gearboxes have a number of applications, including wind turbines, tunnel-boring machines, and mining excavators. In contrast, the Packaging Technology division performed well.

The Consumer Goods business sector reported a good development. In 2015, its sales revenue came to 17.1 billion euros. This reflects the first-time consolidation of BSH Hausgeräte, which contributed roughly 12.6 billion euros to sales revenue. But on an operational level as well, both our business with household appliances and our Power Tools division developed well. Compared with the pro forma figures for 2014, we increased sales revenue roughly 10 percent, or by 5.7 percent adjusted for exchange-rate effects.

In the Energy and Building Technology business sector, we were able to grow sales revenue substantially faster than in the previous year. Sales revenue increased by a nominal 11 percent to 5.1 billion euros, or by 7.2 percent adjusted for exchange-rate effects. This improved pace of growth was evident in both our Security Systems and Thermotechnology divisions. With the goal of being one of the world's leading systems suppliers for smart energy and building technology, we continue to develop this business sector. In 2015, we strengthened our position in this area with acquisitions and joint ventures. We also began operations in the smart-home market, and are thus expanding our scope of business activities.

BUSINESS YEAR 2015 SALES REVENUE BY REGION¹

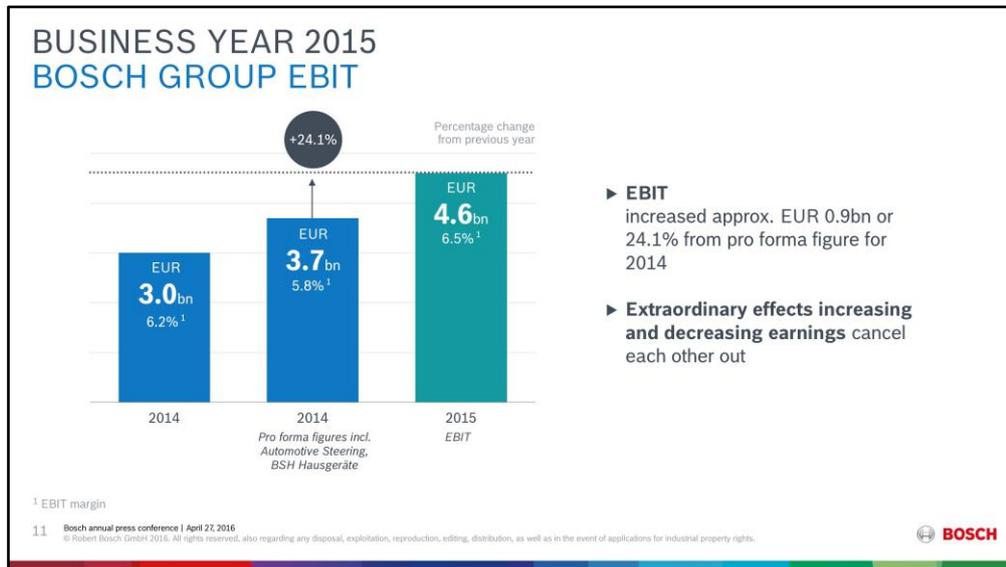


¹ Nominal year-on-year increase from pro forma figures including BSH and Automotive Steering | ² Incl. Mexico | ³ Incl. other countries

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Let's now look at developments by individual regions. In Europe, we increased sales revenue 3.8 percent, on a like-for-like basis. In North America, we benefited from favorable economic developments with growth of 25 percent, or 6.7 percent adjusted for exchange-rate effects. Our business activities in South America were weighed down by the recession in Brazil in particular. In total, sales revenue slipped 13 percent, or 3.7 percent adjusted for exchange-rate effects. In Asia Pacific – including Africa – we increased our sales revenue 17 percent. After adjusting for exchange-rate effects, however, this only constitutes a rise of 2.8 percent. This was mainly attributable to the subdued economic activity in China.

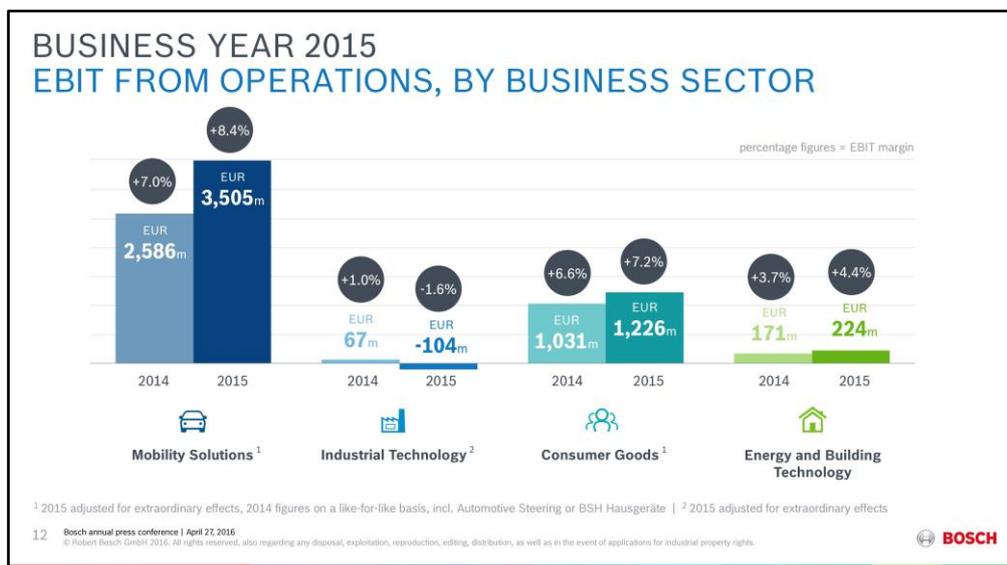


That brings me to the development of earnings. On aggregate, we generated an EBIT, or earnings before interest and taxes, of 4.6 billion euros, which equates to an EBIT margin of 6.5 percent. In 2014, we reached an EBIT of 3.7 billion euros based on the pro forma figures – an EBIT margin of 5.8 percent. By the same token, we were able to increase our profit for 2015 by roughly 0.9 billion euros or just under 25 percent relative to the comparable previous-year figure. In 2015, positive and negative special effects on EBIT offset each other.

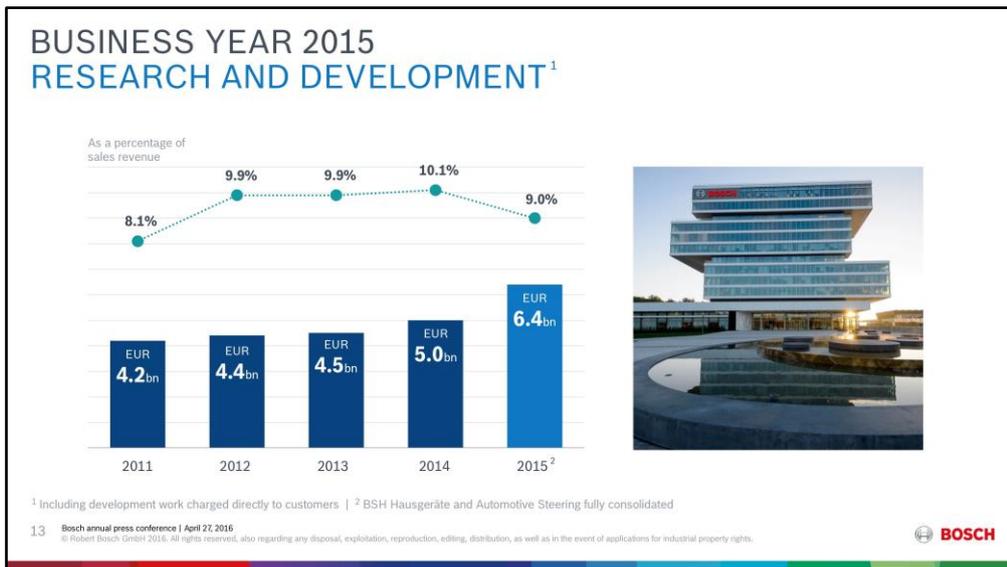
The positive extraordinary effects relate first of all to the first-time inclusion of Automotive Steering and BSH Hausgeräte in the Bosch Group's consolidated financial statements. Here I need to point out some technical aspects. I mentioned earlier that we fully consolidated BSH Hausgeräte and Automotive Steering for the first time in 2015. Under International Financial Reporting Standards, we have to revalue, using a prescribed method, the shares that we already held prior to the acquisition of the remaining shares. As a result, full consolidation of Automotive Steering and BSH Hausgeräte gave rise to non-recurring extraordinary income of 2.1 billion euros.

In a second step, the fair value of the previously held shares and the purchase price of the remaining shares have to be allocated, again using a prescribed method, to the assets and liabilities up to that point and to the assets and liabilities recognized for the first time in the financial statements. That is what is referred to as the purchase price allocation. The resulting, higher write-downs have already impacted the 2015 figures, and counterbalance the positive non-recurring effects. Overall, we have net earnings of 1.3 billion euros.

These positive extraordinary earnings are offset in 2015 by negative extraordinary effects of the same amount. Roughly half this amount results from burdens in the Industrial Technology business sector. They relate to extraordinary write-downs on goodwill in response to the unsatisfactory situation in the Drive and Control Technology division and losses resulting from the sale of the large gearboxes business. The other half is due to negative special effects resulting from additions to provisions to legal risks. We have made additional provisioning of roughly 650 million euros in total. This relates above all to the continuing antitrust proceedings and to the investigations in connection with the manipulation of software in diesel engine control units. As a supplier, we are affected by these investigations.

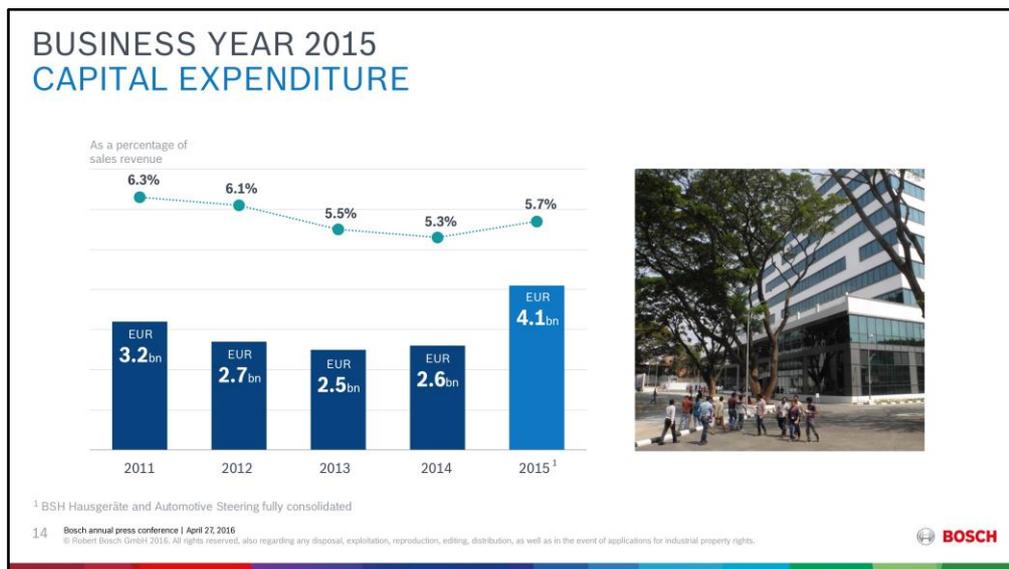


A closer look at the earnings situation in 2015 shows that the Mobility Solutions and Consumer Goods business sectors again returned particularly healthy earnings, with margins from operations – that is, excluding special effects attributable to the respective business sectors – of 8.4 percent and 7.2 percent respectively. This compares with operating margins of 7.0 percent and 6.6 percent respectively in 2014, based on the comparable pro forma figures. It is also encouraging to see the renewed improvement in earnings in the Energy and Building Technology business sector, from a margin of 3.7 percent in 2014 to a current 4.4 percent. In contrast, Industrial Technology reports an operating loss of roughly 100 million euros. Including the special negative effects in this business sector, the losses mount up to 830 million euros.



Turning now to capital expenditure and research and development expenditure, our research and development cost rose to 6.4 billion euros in 2015, reaching 9 percent of sales revenue. The year-on-year reduction in the research and development cost ratio reflects the changed organizational structure, in which the research-intensive Mobility Solutions business sector is no longer quite as dominant. Its share in research and development cost fell

from 82 percent to 75 percent. One major milestone for us in 2015 was the inauguration of our new research campus here in Renningen. The aim is to make it a key hub in our research and development network of roughly 56,000 associates.



Moreover, the research center was among our key investments in the past few years, with a total volume of roughly 310 million euros. Another example of a major project is the expansion of our engineering location in Bengaluru, India, which now employs some 11,000 engineers. In total, our capital expenditure came to roughly 4.1 billion euros in 2015, or 5.7 percent of sales revenue. The substantial absolute increase compared with the previous year is not only the result of the integration of BSH Hausgeräte and Automotive Steering. In response to the good business conditions, we also built up capacity in a large number of fields, as is manifest in the higher capex ratio.

BUSINESS YEAR 2015 BALANCE-SHEET STRUCTURE



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Finally, a word on the structure of the statement of financial position. It remains very sound. The main changes stem from the consolidation of BSH Hausgeräte and Automotive Steering. That led to a roughly 25 percent increase in total assets to 77.3 billion euros. At 45 percent, our equity ratio remains excellent. Moreover, despite the acquisitions, we continue to have liquidity as reported in the statement of financial position of 14.4 billion euros, compared with the previous year's 15.6 billion euros.

OUTLOOK FOR 2016 MACROECONOMIC AND SECTOR-SPECIFIC ENVIRONMENT



- ▶ **Global economic growth** again expected to be just 2.5%
 - Current trends to continue in emerging markets, further slowing of growth in China
 - Low oil price will help stabilize economies in advanced countries

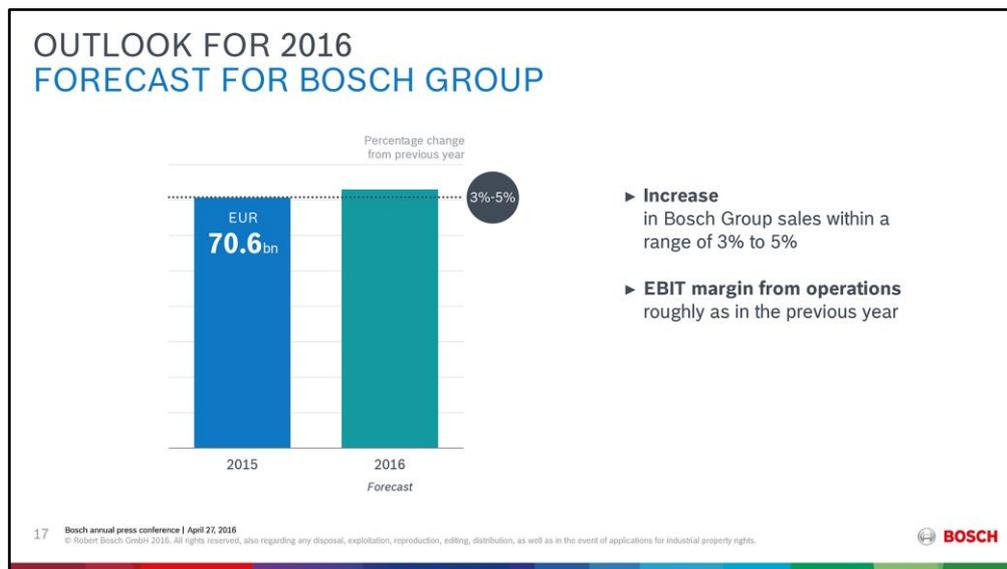
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So what are the prospects going forward? We still don't expect to have any economic tailwind in 2016. Global economic output is expected to grow by just 2.5 percent again. There is no inflection point in sight for emerging economies, especially given that the pace of growth in China is likely to slow further. That said, the low price of oil should help stabilize industrialized economies. The still simmering euro crisis, geopolitical tensions, and structural challenges in emerging economies continue to carry substantial risks in 2016. In addition, we only anticipate global automobile production to rise by barely 2 percent in 2016. Production in the mechanical engineering sector is projected to contract slightly, which poses an added challenge – although private consumption and global construction activity are likely to pick up some momentum.



Despite this weak economic environment, we want to raise our sales revenue by between 3 and 5 percent again in 2016. In the first three months of the year, we generated nominal year-on-year sales revenue growth of just under 3 percent in the Bosch Group, and of roughly 4 percent after adjusting for exchange-rate effects. We did so despite the first quarter of 2015 having been very strong in nominal terms due to exchange-rate effects. We are pinning our hopes on the success of a number of modified products and innovations.

After all, our ambition is to shape our markets. We intend to keep our margins broadly stable, despite the added burden from the spin-off of the Starter Motors and Generators division, the cost of integrating Automotive Steering, and further burdens in connection with the Drive and Control Technology division.

ANNUAL PRESS CONFERENCE:
STRUCTURE

- 1.**
THE BUSINESS YEAR 2015,
OUTLOOK FOR 2016
Dr. Stefan Asenkerschbaumer
- 2.**
STRATEGY: EXPANDING OUR
BUSINESS WITH SERVICES
Dr. Volkmar Denner

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And with that, I would like to hand back to Mr. Denner.

Diversification as a strategic advantage in the age of connectivity

**MORE THAN OFFSETTING RISKS:
DIVERSIFICATION AS A STRATEGIC ADVANTAGE**



- ▶ Bosch is capable of interconnecting many things, and of generating **new areas of business in the process**
- ▶ Connectivity is giving rise to new services, to **“services for life”**
- ▶ For these future services, Bosch is also developing **new business models**

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Thank you Mr. Asenkerschbaumer. Bosch is an exceptionally diversified company. It also owes its current strength to this fact. Only very few companies have diversified as much as we have – in the past, the main motivation behind this was a defensive one, a way of offsetting risks. In an age of connectivity over the internet of things, this diversification is proving to be a strategic advantage. Whether automotive, building, or industrial technology, we can connect many things with each other, and in this way generate new business. Yet only very few industrial enterprises can draw on software and sensor-technology expertise to the extent we can. Today, I want to show you how our diversification allows us to open up services: the third “S” in the connectivity business.

In the age of connectivity, services are about much more than just the classic after-sales model. Instead, the web-based services we offer will accompany and assist our customers, also in their everyday lives – when driving and parking, and in their homes. I could even call this “services for life.”

Clearly, therefore, the challenge we face is that, more than ever, we will have to develop not only innovative technology, but also innovative business models. This is also the reason we have set up our own start-up program, as well as our own competence center for business model innovation. Its tasks are to develop methods for validating new business ideas, to establish networks for exchanging experience, and to provide actual projects with advice. Indeed, there are many projects in the pipeline, as I will show later when I speak about smart homes and Industry 4.0. First, however, I want to focus on the projects in Mobility Solutions, our largest business sector.

Tomorrow's mobility: solutions for the car – and beyond

**BEYOND THE HOOD:
SOLUTIONS FOR ALL KINDS OF TRANSPORTATION**

- ▶ **On the one hand:** further growth with systems for safe and eco-friendly driving
- ▶ **On the other hand:** new solutions for getting from A to B – example of mobility assistant

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As the name suggests, Mobility Solutions is about more than automotive technology. It is about solutions for the mobility of the future – both for infrastructure operators and for all those traveling from A to B. In this context, we will create a mobility assistant that makes it possible for drivers in the greater Stuttgart area to plan their route using different modes of transport, including switching to bikes, trains, and buses. We and our partners have only very recently won the order for this project. What is ingenious about it is that a single

app is sufficient to plan, book and pay for travel involving different means of transport. This will reduce road traffic in what is the German city with the most congestion.

The starting point for our mobility solutions is safe and eco-friendly car driving, and our business with the systems that provide this will grow this year as well. Whether we look at ESP electronic stability program or at gasoline direct injection, we see unit sales rising by more than 10 percent in 2016. For the future of automotive technology we are pursuing three lines of development: making driving electrified, automated, and connected. Or to put it another way, Bosch is bringing new energy to the powertrain, putting the autopilot on the road, and making the car an active part of the internet. On all three paths, we are delivering technological advances and business success:

**PATH #1 TOWARD THE CAR OF THE FUTURE:
BRINGING NEW ENERGY TO THE POWERTRAIN**



- ▶ Objective: make powertrain electrification **affordable**
- ▶ New battery technology: more than double batteries' **energy density**
- ▶ **Electric axle**: save up to 10% volume and weight

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- We have to make **powertrain electrification** affordable. We will succeed in this. The battery is very important in this context. By the start of the next decade, we want to more than double its energy density. We are working on a completely new cell technology that we acquired together with the U.S. start-up Seeo. At the same time, we are stepping up our

systems and components business for the electrical powertrain. We are developing new generations of electric motors and power electronics. And not least, we are working on an electric axle. Here, the electric motor, power electronics, and transmission are integrated in a single housing. This reduces the complexity of the electrical powertrain, and eliminates up to 10 percent of its volume and weight.

**PATH #2 TOWARD THE CAR OF THE FUTURE:
MAKING THE AUTOPILOT READY FOR THE ROAD**

- ▶ Some **2,500 engineers** are working to automate driving
- ▶ Sales of driver-assistance systems will surpass **one-billion-euro** mark in 2016
- ▶ Rapid growth in unit sales in 2016 – radar sensors by **60%**, video sensors by **80%**



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- Bosch has all the essential expertise needed for automated driving. We now employ some 2,500 engineers in this field, nearly 500 more than one year ago. Our objectives are to achieve completely automated, driverless parking within two years, and automated driving on freeways by the end of the decade. At the same time, we will use driver assistance systems to create more safety. These systems are a fast-growing area of business for Bosch, with sales set to surpass the one-billion-euro mark for the first time in 2016. Unit sales of our radar sensors alone will grow 60 percent this year, and those of video sensors by 80 percent. Bosch is taking the path to automated driving step by step. At each of those steps, we offer attractive products and functions. Why attractive? Because with each step, they make driving significantly safer and more relaxed.

PATH #3 TOWARD THE CAR OF THE FUTURE: THE VEHICLE AS AN ACTIVE PART OF THE INTERNET

- ▶ **Connected driving is coming**, whether as smartphone integration or with communication boxes
- ▶ With infotainment systems and instrument clusters, Bosch is growing **much faster than the market**
- ▶ Unit sales of freely programmable instrument clusters will **grow by one-quarter**

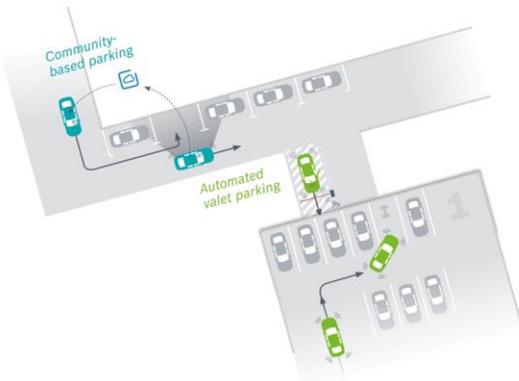


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- We are making **connected driving** possible not just in one, but in two ways: first, by integrating smartphones in a way that apps can be operated safely while at the wheel, and second, by installing communication boxes of the kind needed for functions such as the eCall emergency call function. The number of vehicles fitted with these solutions is rising. By the end of the decade, we will see the share of new vehicles in Europe equipped with one of these solutions rise from 15 to 50 percent. We are using our infotainment and display systems as the interface to this connectivity. This business is growing by double digits each year, much faster than the market. Unit sales of our freely programmable instrument clusters alone will grow by one-quarter this year. One of our strengths is simple yet compelling models for the interaction of people and technology, such as a touchscreen display whose virtual buttons have a physically tactile quality.

NO MORE HASSLE: PARKING IS BECOMING CONNECTED AND AUTOMATED



- ▶ One-third of city driving is taken up with finding a parking space. **Bosch is revolutionizing parking**
- ▶ **Automated valet parking:** car is left in a dropzone outside a parking garage – and finds a vacant space on its own
- ▶ **Community-based parking:** cars detect and report curbside parking spaces, giving rise to a **real-time parking map**

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Connected parking is a prime example of how two of our development paths come together: automating driving and simplifying communication between the vehicle and the outside world. And it is precisely here that Bosch is offering innovation not just in the technological sense, but also in the services sphere. Studies show that one-third of urban driving is taken up solely with finding a parking space – what a waste of time and resources, what an unnecessary strain on the environment! Bosch wants to revolutionize parking. We can offer a number of solutions here. Let me mention just two:

- The first is automated valet parking. Here, all drivers have to do is leave their vehicle in a dropzone, from where it will drive itself to a parking space. It is only over the final centimeters that it uses its ultrasonic sensors to find its way. Before that, it does so with the help of the parking garage's CCTV. Thanks to this communication between the vehicle and the infrastructure, automated valet parking will become reality as early as 2018. As you can see, classic automotive engineering is merging here with the security systems in buildings. Worldwide, Bosch is the only company that specializes in both areas.

- The second is community-based parking. Here, the vehicles themselves act as sensors. As they drive along the street, they register free spaces. They transmit this information over the internet to our server. We use this to generate a real-time parking map. And over the internet, this information is fed back to the community of subscriber vehicles.

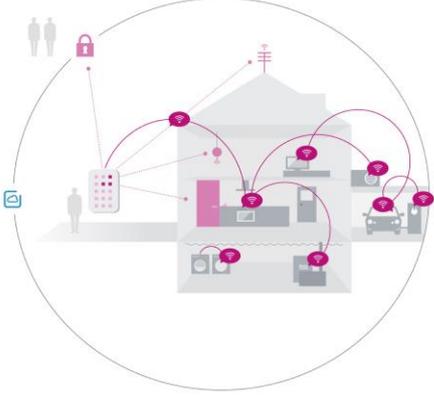
An example like this shows especially well how creatively Bosch is moving into the emergent services business. Projects such as connected parking are also bringing the company closer together. The network of software engineers from all over the company plays a not inconsiderable role. And our researchers contribute a key competence in the form of data mining. This means we can generate a real-time map on the basis of the sensor data from just 6 percent of all vehicles driving along the streets. It is artificial intelligence like this that we need for our smart-city services.

It is not just city driving but the car itself that is being revolutionized. The car of the future next to me on stage shows what is possible when automated and connected driving come together...

(Demonstration: driving in the next decade)

Living intelligently: Bosch technology is making homes smart

LIVING INTELLIGENTLY: BOSCH TECHNOLOGY IS MAKING HOMES SMART



- ▶ **Global market potential** of ten billion euros for smart-home solutions by 2017
- ▶ Success will depend on **ease of use** and flexible interfaces
- ▶ **Privacy** is also important. Bosch solutions allow smart-home data to be stored locally, in the customer's own home
- ▶ Bosch contributes an excellent concept and a **powerful brand**

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As the applications in this car of the future suggest, no other company can connect its mobility services with smart homes the way Bosch can. In the future, when your car's GPS device reports congestion on your drive home, your house will respond by preparing a relaxing welcome, with dimmed lights and soothing music. This "welcome home" will be the result of your vehicle and your home communicating over the internet while you are still on the road.

Smart homes will come – of that we are sure. Even next year, we anticipate a global market potential of ten billion euros for smart-home solutions. The things that will make it a success are relief from everyday chores, simple operation using a smartphone or tablet, and flexible interfaces that mean nobody has to wait for a universal standard any longer.

At the start of this year, Bosch set up its own company dedicated to smart-home solutions. We have already launched our first products, and more will follow over the course of the year – such as a smoke detector that can do

more than detect smoke. When the home-owner is on vacation, it can be programmed to sound the alarm automatically if a window is opened. What are the three main strengths of our concept?

- First, ease of use: a controller and an app are all it takes to connect and operate all the domains in the home, from lighting and heating to security.
- Second, openness: our smart-home system will work with all appliances, not just Bosch ones. Right from the start, our system has been compatible with a lighting solution made by Philips.
- Third, privacy: Bosch customers can choose to store their smart-home data solely on the controller in their own home. And they will decide for themselves whether they also want web-based services in the future, such as an alarm call to friends.

Despite all the strong points we have on offer, we expect competition here to be tough, especially from the IT industry. One advantage we have is the power of our brand. Following the full acquisition of BSH Hausgeräte, we have strengthened our end-user business even more. It now makes up a good third of Bosch sales. And especially when it comes to products for homes, the diversity of our product portfolio is unrivaled: we are a globally leading supplier of heating and security systems, of power tools and household appliances. Nearly 50 percent of our product classes are already web-enabled.

Service Solutions: more than 120 million services rendered each year

A SIGN OF CHANGE:
THE NEW SERVICE SOLUTIONS DIVISION



- ▶ Supports business processes of more than 1,000 companies
- ▶ European market leader for processing eCall and iCall
- ▶ Employs 6,000 associates at 23 locations
- ▶ Processed more than 120 million customer calls in 30 languages in 2015
- ▶ Annual growth of 15% up to 2020

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This shows just how much the new services business can rely on our classic product business. And this new business is gaining importance in all our activities. Indeed, our Energy and Building Technology business sector set up a new Service Solutions division at the start of the year – a highly visible sign that the transformation at Bosch also includes becoming a supplier of services.

Service Solutions arose from the work of monitoring our security systems. But this business has long since grown into something much bigger, supporting the business processes of more than 1,000 companies and offering services such as help desks for customers such as Thomas Cook and Lufthansa Cargo. And not least, Service Solutions is the European market leader for processing eCall and iCall, i.e. calls transmitted by cars requesting emergency assistance or information. At the end of 2015, three million vehicles were already connected with Bosch for these services, twice as many as one year previously – and by the end of the decade, the number will likely be 10 million. For our Service Solutions, we employ roughly 6,000 associates at 23

locations. In 2015, this team processed more than 120 million customer calls in 30 languages, 30 million more than in 2013. We are on a clear course for growth here. Between now and 2020, our target is 15 percent annual sales growth in the Service Solutions division.

Connected industry: Bosch is reaping the economic benefit worldwide

**INDUSTRY 4.0 IS BECOMING REALITY:
WITH GREAT ECONOMIC BENEFIT**

By 2020
EUR 1bn cost saving

EUR 1bn extra sales

- ▶ Connected manufacturing is leading to **new business models**
- ▶ Bosch is working together with partners in **all three major economic regions**
- ▶ A common technical language is essential for **boundless connectivity**
- ▶ Bosch combines **German and U.S. standards**

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We also expect to see our business with services grow in industrial technology. In this sector, increasingly connected manufacturing offers considerable potential for efficiency and effectiveness – also by making new business models possible. In Germany, this goes by the name of Industry 4.0, but communication among machines along the value chain does not stop at national borders. Bosch is working together with partners in all three major economic regions. We are working especially intensively with the U.S. Industrial Internet Consortium, or IIC. At our plant in Homburg, Germany, we are combining IIC and Industrie 4.0 standards for the first time. A common engineering language is essential for cross-border connectivity. On the ground in Homburg, it allows proactive control of both manufacturing operations and electricity consumption, reducing peak loads by as much as 10 percent.

ABS AND ESP FROM AROUND THE WORLD: BRINGING CONNECTIVITY TO A MANUFACTURING NETWORK



- ▶ Sensors and RFID chips help reduce downtimes
- ▶ Bosch is translating its positive in-house experience into **services for others**
- ▶ New at Hannover Messe: a **service tool** that has been tried and tested at six Bosch plants



5,000 machines
at 11 locations



Productivity
increased by **25%**

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This alone illustrates the huge economic benefit offered by services for connected industry. Bosch has long since progressed beyond the project stage, and is now putting the first elements of Industry 4.0 into practice in its own operations. Here, we see ourselves as both a leading user and a leading provider. This two-pronged strategy is paying off. By 2020, we expect connected industry to have saved us an aggregate one billion euros in costs, and to have generated aggregate extra sales of the same amount. At Bosch, we approach this in three stages:

- First, we put applications into practice in certain plants,
- Second, we optimize value streams all the way to the end-user, and
- Third, we operate global networks.

In 2015, we already won an Industry 4.0 award for a project from the third stage – for enabling some 5,000 machines at 11 locations in our global ABS and ESP manufacturing network to communicate with each other. With the help of sensors and RFID chips, a virtual copy – a digital twin, as it were – of this network has been created. The system detects deviations in machine

performance at an early stage, supports associates with repair work, and reduces downtimes. All in all, productivity has risen nearly one-quarter within a year.

Because this was such a success internally, we are translating it into external services. At the Hannover Messe trade fair, for example, we are currently presenting what we call a production performance manager. This is a service tool that visualizes manufacturing data in real time and initiates maintenance processes. We have already put it through its paces at six Bosch plants – in Bamberg, Blaichach, and Nuremberg, and further afield in Bursa, Daejeon, and Wuxi. Once again, the wheel has come full circle, bringing together our established plants and our new services business.

Bosch's own cloud: trustworthiness in the digital world

**BOSCH HOLDS ALL THE ACES:
A "3S" PROGRAM FOR CONNECTIVITY**

Sensors
Software
Services

- ▶ Bosch is **global market leader** for micromechanical sensors
- ▶ **Five million objects** are connected via components of the Bosch IoT Suite
- ▶ Bosch development kit quickly leads to **new applications**

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The diversity of our services thus rests on solid foundations. Above all, however, it is tied up with the two other “S’s” we bring to the internet of things: sensor technology and software.

- It is sensors that teach things how to feel, such as a parking space that indicates whether it is vacant or occupied. Bosch is the global market leader in the business with micromechanical sensors. And our business continues to grow at a double-digit rate. In 2015, its sales passed the one-billion-euro mark for the first time.
- The internet of things calls for a software platform – for the brain of connectivity, as it were. In the form of the Bosch IoT Suite, we can offer such a brain. Even now, more than five million objects are connected using components of the Suite. Not least, the software suite allows huge volumes of data to be evaluated. Such data mining is important not only for showing where parking spaces are free, but especially for proactive quality management. In the future, it will be able to detect deviations in the field so early that expensive recalls will be a thing of the past.

The decisive thing, however, is that our existing expertise should give rise as quickly as possible to new business ideas for the internet of things. Our XDK development kit helps here. It contains the most important sensors, as well as the necessary software. Using this kit, start-ups will also be able to create prototypes quickly. Within two weeks, for example, it was possible to design an HVAC control for a large office building. You could say that our XDK is a midwife for applications on the internet of things.

TRUSTWORTHINESS IN THE CONNECTED WORLD: BOSCH'S OWN CLOUD FOR THE IOT

- ▶ Customers have **first and last word** on how their personal data are used
- ▶ **Even in 2016**, some 50 customer-sensitive Bosch applications will run in the cloud
- ▶ **From 2017**, the cloud will also be available for other companies' solutions
- ▶ The **software intelligence** of the Bosch IoT Suite is part of the cloud



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There are very few companies apart from Bosch that can offer sensors, software, and services for the internet of things from a single source – if you will, we hold all the aces for the connectivity business. Just one ace used to be missing, and we added this just a few weeks ago: at Bosch Connected World, our industry conference in Berlin, we presented our own cloud for the internet of things. Initially designed for our own solutions, from 2017 it will also be available to other companies – and will thus be an integral part of our IoT business.

With the Bosch IoT Cloud, we are not only competing with larger cloud-infrastructure providers. Far more importantly for us, the cloud offers three features for the internet of things that nobody else offers:

- First, the Bosch IoT Cloud integrates the intelligence of the Bosch IoT Suite. In the future, developers working at our customers and partners will be able to download software packages from the cloud in order to generate new solutions for the internet of things. This is nothing less than software as a service.

- Second, it is in the cloud, and nowhere else, that customer-sensitive Bosch applications will run, from connected parking to smart homes. This year alone, there will be 50 such projects.
- Third, in our cloud, it is customers who will have the first and last word on how their personal data are used. That is our response to data privacy concerns.

Having a cloud of our own is thus not just about making Bosch a full-line IoT provider. At the same time, it honors a crucial pledge in the digital world – a pledge that is linked to the Bosch name: it creates trust.

The 100 percent target: a connected service package for every product



This brings me to the end of my presentation. To sum up, connectivity is not an end in itself. Bosch has set itself the target of making 100 percent of its electronic products connected. But this will only result in business if we have the services to go with them. In the future, making every product web-enabled will also mean offering every product with a services package. The result will be things that are no longer mere objects, but also have a multitude of

benefits. It would therefore be oversimplifying the matter to speak of an increasing share of sales generated by services. Instead, services will be an integral part of our product business – any hardware sales should wherever possible also generate sales from services.

Achieving this strategic objective will also mean a change in the way we see ourselves, at least in part. We have a broad footprint in the hardware business, and this will not change in the future. And we are the only company that is developing its business on the internet of things from such a broad base. This is a special strength, but equally also a special challenge. With connected services, Bosch will become its customers' everyday companion, far more so than with familiar products such as ABS, fridges, or power drills. Up to now, we have mainly supplied automotive systems and household appliances. From now on, we will also be supplying mobility solutions and smart homes. The sound quality of our innovative technology has given Bosch a head start in the credibility race – that is our strength. Transferring this head start to the digital world of services – that is our challenge.

