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AI that gets things moving:

Bosch makes everyday life easier with algorithms

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at the Bosch Tech Day on June 24, 2025.

Check against delivery.

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Ladies and gentlemen,

Dramatic turns of phrase should be used sparingly. Not every advance marks a turning point, not every invention is epochal. However, what we're currently seeing in artificial intelligence is big enough to justify almost any linguistic exaggeration. Cars, aircraft, computers, and the internet have perceptibly changed the world – but they haven't had much effect on how people see themselves.

AI will have a much more far-reaching impact here; the closest comparison in human history is probably the invention of the printing press. AI is much more than just a new technology. In the coming decades, it is set to transform our everyday lives – and also the way we as humans think about ourselves. We will get to know completely new worlds, virtually and in reality. We will experience new challenges and at the same time solve many problems that have been on our minds for decades. And we will share deeply human traits – such as intelligence and creativity – with machines.

We all know that, just as with any other technology, the use of AI is not without risks. However, I'm convinced that the opportunities clearly outweigh the risks – at least provided we don't abandon our own intellect and powers of reasoning when dealing with AI in the future. At Bosch, we're determined to continue making systematic use of both artificial and human intelligence as we pursue our ultimate aim of creating technology "Invented for life." And with that, I warmly welcome you to our Bosch Tech Day.

As is plain to see here on our IT campus, artificial intelligence has long since left the test labs at Bosch. It's a part of everyday life: in our strategy, in our development work, in our processes. And, of course, in our products and solutions, too. For two years now, our entire portfolio has either been equipped with AI or developed or manufactured with its help.

To date, most people's dealings with artificial intelligence haven't gone much beyond using it for welcome and fascinating assistance in creating texts or images. Yet AI's true potential doesn't lie so much on screens and in the purely virtual world, but rather where it meets the physical world – which is to say, wherever things move, wherever technology makes people's lives easier. Or, to put it another way, wherever we are to be found. Because Bosch is at the forefront of this development. After all, our strength lies precisely in how we can bring AI and in-depth industrial knowledge together.

That's why we're planning to invest more than 2.5 billion euros in artificial intelligence by the end of 2027. We aim to use AI to make our processes even faster and our products even more innovative. And Bosch AI is already making everyday life safer, more secure, and more convenient. Let me name just a few examples: for riders of e-bikes, range anxiety is a thing of the past thanks to the AI-based "Range Control"; on construction sites, our wall scanner detects metal or electrical cables in the masonry simply by holding it against the wall – also thanks to AI; and in the kitchen, our Series 8 oven sets the correct cooking method and temperature for more than 80 dishes it recognizes automatically.

However, artificial intelligence won't just give innovation across all our businesses a powerful boost. It will also noticeably boost our growth. Let's consider mobility. With our ADAS product family, Bosch has developed automated driving systems for a range of vehicle classes. These employ adaptive algorithms to analyze and evaluate the data recorded by our AI-optimized sensors. This means the vehicle can distinguish between pedestrians, cars, and obstacles, and it can also assess the likely behavior of dynamic objects – almost like a human can. The difference is that the technology never gets tired.

These kinds of AI-based solutions are increasingly becoming the standard in the automotive industry – and they will make assisted and automated driving safe and reliable in the future. While these developments have yet to reach their peak momentum both in the market and at Bosch, there's no question in our minds that automated driving will become commonplace. We offer the right solutions for this, and that's why we remain confident: we expect our sales of software, sensor technology, high-performance computers, and network components to double by the mid-2030s to well over 10 billion euros.

Our particular strength in this area is how we can combine the data we've collected and stored worldwide with what are known as collaborative AI training techniques. Over the past few years, our sensors have recorded a huge number of traffic situations all over the world, and we can now use these to train our AI models. In total, the data adds up to significantly more than 200 petabytes, or 200 million gigabytes. We use federated learning for the training. This is a machine learning process in which a shared AI application is trained across multiple servers distributed around the world. While these servers exchange various parameters with each other, the data itself

isn’t shared. Given that some countries make exporting data more difficult or prohibit it altogether, this process is a decisive advantage that considerably shortens our development time.

AI has long been part of Bosch’s core business. Some 5,000 experts are working on the development and use of AI in a wide variety of areas. Since 2013, no other company has registered more AI patents with the European Patent Office than Bosch. This is also due to the fact that few other technology companies entered the market as early as we did. Back in 2017, we established the Bosch Center for Artificial Intelligence. It is now spread across four locations: Renningen, Pittsburgh, Bengaluru, and Haifa. This means we’re always up to date with everything that is being discussed, planned, and realized in the world of AI.

Of course, that includes not only technological trends but also AI’s social and political dimensions. After all, the competition between the world’s major regions won’t be decided in development centers alone. And at the moment, compared to the rest of the world, it unfortunately looks as if Europe is unnecessarily delaying its AI future with excessive regulation. As is well known, the EU wants to introduce uniform rules for trustworthy AI throughout Europe. This approach is fundamentally correct for two reasons: first, AI is not an end in itself, but should serve people; and second, AI solutions will become commercially viable only if customers really trust them.

But to implement the EU regulation, developers and companies need clear guidelines and defined standards. However, these are now set to be introduced much later, and this is causing confusion – especially for high-risk systems, which include automated driving. In addition, the

regulation stipulates that AI systems must be continuously tested, monitored, and documented. This mixture of bureaucracy and strict but unclear requirements makes Europe a much less attractive location for AI companies than other parts of the world.

We have to counter this. After all, dealing with AI is more than a question of economic competitiveness. It's also about political freedom: in the future, a society that has no outstanding AI capabilities of its own will become increasingly dependent on others. What we lack in courage today, we will lack in security and sovereignty tomorrow. One thing is clear: the way for us to overcome these challenges is not by slowing down technological progress, but by directing it. Otherwise we will lose touch: Stanford University publishes its AI Index on the current state of the technology once a year. According to the latest report, 40 significant AI models were developed in the U.S. last year, 15 in China, and three in Europe.

Yet Europe in particular has an enormous competitive advantage – namely a unique wealth of industrial experience plus the corresponding data. If we succeed in combining this knowledge with pioneering AI applications, then Europe will be able to remain an industrial world leader in the 21st century.

To achieve this, however, we need more than just a policy of cautious regulation. We also need society to be as well informed and educated as possible when it comes to AI. Unfortunately, the results of the latest Bosch Tech Compass are rather sobering in this respect. We conduct this survey once a year to find out what people in leading industrialized countries think of modern technologies. This year, around three-quarters of respondents in India and China feel well prepared for the

coming age of AI. In Germany, the figure is just 35 percent. At the same time, however, 72 percent of Germans consider AI to be the most influential technology of the next ten years. This is an imbalance that we need to rectify.

One way to do that might be by introducing AI as a school subject. But by the time this had any noticeable effect, the global AI race would have long since run its course. That's why I think it's now up to industry to rise to this challenge. Bosch has been running corresponding training programs since 2019, and more than 65,000 associates have already completed the various courses at our "AI Academy." And our "Ask Bosch" AI platform provides all associates with a wide range of applications: language models, chatbots, translation agents, and, of course, agents for the creation of images and texts.

This is another reason why we at Bosch have the necessary expertise to use AI consistently and precisely in the area in which we see the greatest potential: where intelligent and self-learning algorithms meet sensors, actuators, and powertrains. However, rather than developing our own large language models for this, we prefer to use our partners' existing models as a basis. Depending on the application, we also work with our own smaller, special models.

In addition to generative AI, we're also increasingly working with what is known as agentic AI. My colleague Tanja Rueckert will explain what's behind this in a moment. As I mentioned earlier, both forms of AI together will create completely new worlds. And that includes the way we communicate with the technology around us. Our voice will soon increasingly replace all the levers and switches. Whether for vehicles, home appliances, or heating systems: the era of weighty

instruction manuals is coming to an end. And I'm looking forward to intelligent technology that makes our everyday lives easier, safer, and more convenient, that relieves us of more and more tedious routine tasks – and that we will control rather than operate. That in itself marks an epochal shift.

Now my colleague Tanja Rueckert will give you an overview of where and how we at Bosch are bringing the AI revolution into everyday life – and what's behind the term "agentic AI"...

Thank you!

Many thanks, Stefan, and a warm welcome to our IT campus from me too. Let me start directly by addressing "agentic AI." This topic is still in its infancy – but it won't be long before agentic AI gives AI roughly the same boost as the smartphone has given the internet. Like generative AI, agentic AI is based on large language models, but it can generate much more than just text or images. It can make decisions and act autonomously, it can parallelize tasks, adapt dynamically to new situations, and work extremely independently toward complex goals. For industrial manufacturing, it's a revolution.

Agentic AI consists of one or more agents. These agents, in turn, are made up of several cooperating components. Depending on the application, this can include sensors for recognizing the environment, data structures for storing knowledge, and algorithms for selecting the best actions – always in line with the current situation and the specified goal. The model proceeds in much the same way a human being would: it breaks down challenging tasks into individual steps and solves them strategically. Bosch is already using models such as these

for internal process control. But their biggest impact is in manufacturing and industrial technology – especially as we have the advantage of being both a user and a supplier.

For example, if a machine suffers a malfunction, the associate in charge can simply communicate with the AI agent via a chat or voice interface – in their native language and without in-depth knowledge of the production processes. Agentic AI compares the reported incident with the relevant manuals, searches for matching entries in the shift log, and then provides the associate with detailed instructions on how to rectify the fault – or it informs the maintenance team. The AI performs a root cause analysis and plans the necessary measures to prevent errors in the future. It records the incident, automatically makes an entry in the shift log, and automatically informs the next shift of the current status. And in the future, if the same machine is located in other plants anywhere in the world, the incident and solution will also be reported there. We call it Manufacturing Co-Intelligence.

In other words, not only can agentic AI improve individual applications, it can also intelligently coordinate many subprocesses. That in itself is a huge advance. In addition, it's much easier to interact with the AI: agentic systems often require only a description of the desired goals. Lengthy and expensive modeling can usually be dispensed with. This greatly lowers the barriers to entry, especially for companies without extensive AI expertise.

What Stefan has already said also applies here: communication between humans and machines is entering a new era, becoming faster, more efficient – and cheaper. Natural, human-centered voice control alone can save a plant several hundred thousand euros a year. With comprehensive, orchestrated use of agentic AI, the cost benefits rise to a moderate seven-figure sum. And Bosch is at the forefront of agentic AI, too: we're already running various applications in plants in Germany, Hungary, and India, and we'll be launching our first agents on the market at the end of the year.

However, industry isn't the only place where AI made by Bosch can be found as agentic AI. It's also in forests, for example. Or on major construction sites. And of course in the car. Wherever it can directly benefit customers. The past few months have been very successful in this respect, and I'd like to share a few examples of that success with you:

We recently presented a cockpit with AI functions at Auto Shanghai. This enables the driver to speak with the vehicle almost as naturally as with a person. New functions and applications can be installed over the air via software updates. Production will start this year with a six-digit number of units.

Just as in road traffic, automation is also making enormous progress in mobile machinery. Our Drive and Control Technology division is increasingly bringing AI to construction sites and agriculture. For example, we have developed a self-learning grading assistant for excavators that allows even huge buckets to be moved with high precision. With its integrated AI, this assistant can adapt to the specific behavior of the respective excavator model in the shortest possible

time. With commissioning reduced from days or even weeks to a few minutes, the excavator can, for example, smooth out uneven ground much faster than before, and operating it becomes easier. An initial batch of customer projects are already underway, and we expect this application alone to have annual sales potential in the solid eight-figure range.

Artificial intelligence helps with the maintenance of our hydraulic components as well. Thanks to AI-supported diagnostics, the Hydraulic Hub online platform saves our customers a lot of time when it comes to problem solving and other services. So in industrial technology, too, the formula for success is also: domain knowledge plus AI.

This also applies to our Wildfire Detection system. Special detectors in forests or green spaces are fitted with Bosch Sensortec intelligent gas sensors and networked with each other. An AI-based algorithm detects smoke gases at an early stage and automatically provides the emergency services with all the necessary information.

And AI can also help in other critical situations: for example, we have developed an AI-based breakdown service that resolves 40 percent of all cases directly, understands dozens of languages and dialects, and can even take the caller’s mood into account. And if a person does have to take over, all the necessary data is available right away. This slashes waiting times and ensures customers are more satisfied. Incidentally, we also offer similar systems for elevators and for emergency telephones on the highway.

You will see some of these examples later in the exhibition we have prepared for you in the foyer. What won’t be on display there, however,

is the large and rapidly growing role that generative AI in particular is playing in our software development. The extent to which productivity can be increased depends heavily on the complexity of the task, but a potential of 30 percent is certainly not exaggerated. Here, too, digital assistants support our human experts – whether in validating requirements, generating code, preparing documentation, or quickly accessing standards, design specifications, and specific information.

Artificial intelligence will not only be key to Bosch's technological success in the years ahead. It will also change our business models and put value creation on a different footing in many areas. Our vast trove of data from manufacturing and research will unlock huge opportunities for us. We will adapt AI models to regional rules and look for global technology partners. And we will prepare our associates for the coming age of AI in the best possible way – Stefan already mentioned earlier the many training courses on offer.

The speed at which AI is entering everyday life is breathtaking: algorithms are the new driving force of our world. They will inspire us and sometimes also give us cause for concern. They will enrich and sometimes limit human intelligence. All of us across society, business, and politics still have to weigh up a number of decisions and sound them out together. I hope that we will soon find a set of clever, practical, and worry-free rules that will pave the way for AI that is as trustworthy as it is efficient. We are well prepared for this at Bosch. And we are determined to play our part in ensuring that AI is there for people, that it is a technology "Invented for life" – and for nothing else.

Thank you!