Industrie 4.0: Harnessing the Potential of Digitisation

Rede

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Es gilt das gesprochene Wort!

Sperrfrist: Beginn der Rede!

Dear Dr. Il SaKong [Präsident des Institute for Global Economics]

Ladies and gentlemen,

Thank you very much for inviting me to this breakfast meeting. I have today the honour to explain you a bit the German approach of “Industry 4.0”.

We all agree that *Industrie 4.0* offers massive potential for further economic growth.

Industrie 4.0

Industrie 4.0: no other concept is creating such a stir across the economy, not only in Germany, but in Europe and all round the world.

Industrie 4.0 means the merging of production technology and information technology.

Industrie 4.0 also describes a new level of organisation of value chains.

In *Industrie 4.0*, people, machines, plant, logistics and products communicate and cooperate directly with each other.

Production and logistics processes between companies in the same value chain are smartly connected in order to make production processes between companies even more efficient and flexible.

Potenziale von Industrie 4.0

From an economic perspective, we in Germany expect *Industrie 4.0* to generate more than **€30 billion euros of increased economic growth** a year in the medium term.

This growth results from the fact that all the components are connected, which means that decisions can be taken in real time.

The smart new value chains include not just the production process, but all phases of the product's life cycle – from concept to development, manufacturing, use and maintenance, and on to recycling.

Networking in this way will firstly make it possible to take account of and meet **individual client needs** – from the concept for production, use, through to recycling, including the related services.

Customised manufacturing and (remote) maintenance of products could become the **new standard**.

Despite this customisation, networking companies and skills can also lead to a reduction in costs.

This is because production processes can be steered between companies **in a way that raises efficiency and productivity.**

Productivity is expected to increase by **up to 30%** [Schätzung Akademie der Technikwissenschaften]. Costs could fall by **2.6%** per year [Umfrage PricewaterhouseCoopers].

By networking within a specific value chain, a company will be able to react to the fact that particular raw materials are available or need to be replaced, at an early stage.

Overall, production processes can be steered in a way that conserves **resources and energy.**

New production processes play a role in this. Take 3D printing, for example.

Currently, machine components have to be milled out from pieces of metal.

By using 3D printing, however, these components can be built up layer upon layer. This can mean up to 90% less resources are needed.

But the digitisation and networking of industrial manufacturing processes will not merely change value chains.

It will also create **new business models**, for example in terms of managing and processing the sheer volume of data, as well as new prospects for employees.

Umsetzung von Industrie 4.0

German industry is the backbone of the German economy and is currently enjoying worldwide success.

It is built on solid foundations: some 15 million jobs depend directly and indirectly on the goods-producing sector.

The digitisation of industrial production processes and the emergence of disruptive technologies will **blur the boundaries between traditional sectors**. Value chains will change, and **global market shares will shift**.

For a strong manufacturing country like Germany, the digitisation of the economy is therefore a **key policy issue for the coming years**.

This is **equally true of companies, employees, consumers and policymakers**.

I believe t**he successful implementation** of *Industrie 4.0* will depend on **six** different factors:

Firstly, we need a well developed digital infrastructure. Over the next few years, the amount of data that is exchanged will increase exponentially.

Secondly, the number of connected devices will drastically increase as digitisation and the networking of production processes continues.

There are currently around 3 billion **connected devices** around the world. Only seven years from now, this figure will reach 25 billion.

[Schätzungen Marktforschung Gartner]

Thirdly, we need to achieve a **high degree of openness** to digital solutions in **company management**, in the **workforce**, and in the **general public**. New business models and work patterns can only be successfully introduced if there is a **consensus between companies and their employees**.

Fourthly, we must **reach out to and mobilise our SMEs across the board**. *Industrie 4.0* must reach the **companies in the regions** and become a **firm element of their business models**.

Fifthly, the level of training among our employees will play a major role.

Our **dual system of vocational training will have to keep pace with the new challenges faced.** And we also need to make sure that people whose experience becomes outdated are given the **extra training** they need.

Compared to countries like the USA and France, Germany has an advantage. **Our dual system not only focuses on imparting knowledge**, but also trains the necessary **practical skills**.

That Korea is as well interested in learning more about our dual system shows the fact that we today will sign a cooperation agreement between the German chamber of commerce and the Human Resources Development Service of Korea on working together in this area.

Lastly, we must press ahead with **international cooperation**.

As a **major exporter** and a supplier of factory equipment to companies around the world, we need international cooperation and coordinated solutions,

especially regarding standards (e.g. a uniform interface for digital communications), with **leading industrial regions in Europe, North America and Asia**.

We have already started acting on this.

We have begun to expand the relevant infrastructure as part of the Digital Agenda.

In addition, the re-launch of the national *Industrie 4.0* platform in April has ensured that **government, commerce, academia and trade unions** will all pull in the **same direction**.

This is the only way in which we can cover **all the aspects** of *Industrie 4.0*, from technical issues regarding standards, to questions of the right legal framework, data security in connected systems and needs-based training for the workforce.

The platform aims to develop a **common understanding** of *Industrie 4.0,* to draft **recommendations** for the various fields of action, and to present **100 successful examples** of *Industrie 4.0* in action at our IT Summit on 19 November 2015.

The intention will mainly be to **motivate our SMEs** to push forward with implementing digital technology in industrial production more quickly.

Sicherheit vernetzter Systeme

One key issue is the security of data in interconnected systems. This is particularly a challenge for SMEs.

We try therefore to develop a short set of guidelines for SMEs that will help them implement IT-security across the company.

Additionally, we will also develop specifications on the skills needed by members of the workforce who will apply IT security at their companies.

Standards und Normen

The issue of standards will be also of key importance as these are needed for machines to be able to communicate with one another.

We will only be able to harness the potential of *Industrie 4.0* – the idea of customised production, the potential for reducing costs, and the opportunities for new fields of business – if all those components and

companies involved become digitally integrated along the value chain.

In a digitalised value chain, individual parts ‘know’ what they are, how they need to be processed, where they belong, and can coordinate with the production systems.

The plant decides by itself what work is to be undertaken, in what time frame, and assigns priorities accordingly.

Standards enable communication to take place within *Industrie 4.0*.

They decide who can speak with whom, and who is understood.

At an international level, standards also determine who will supply equipment to factories around the world, for example.

In order for *Industrie 4.0* to be implemented in German industry as soon as possible, we need a standardisation process that is based on consensus and supports research and development.

The *Industrie 4.0* platform sets out to establish such a process.

The first proposal for a reference architecture model – ‘RAMI 4.0’ (Reference Architecture Model Industry 4.0) – has now been presented.

e need to localise existing standards within RAMI 4.0 in order to gain a clear overview of the existing methods and approaches used in standardisation processes.

Then we need to check the extent to which they are compatible with ‘RAMI 4.0’. This means answering questions such as: where do existing standards overlap and where do gaps still exist?

As a third step, recommendations for preferred solutions will be developed.

The Standardisation Working Group that is part of the *Industrie 4.0* platform will pay particular attention to minimising the number of standards to be used.

Finally, the platform will be used for coordinating activities in the area of standardisation at national level.

Ultimately, we need to look beyond Europe, to the rest of the world and especially to Asia, which indeed we are doing. And we are already in contact on this issue with your country, too.

We are actually looking for further international partnerships in the area of *Industrie 4.0*, if it serves our mutual advantage and if companies from both countries express an interest in cooperation on Industrie 4.0.

Ladies and gentlemen,
companies need a business environment in which they can take long-term investment decisions.

Some 95% of German industrial companies state that digitisation has an impact on their business and work processes. However, only 3% believe that they have reached their full digital potential.

It is therefore necessary for us to provide the right stimulus for the investments that are needed.

Thank you for your attention.