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Cutting-edge technologies and cooperation as the key to digital transformation of the midmarket sector

- **Reaching the next level of digital transformation involves cutting-edge technologies such as Edge and cloud computing as well as artificial intelligence**
- **These technologies can be used to analyze data more comprehensively and in more depth than was previously the case. The owner of this data retains control over it at all times.**
- **Targeted patent strategies help the midmarket sector protect its innovations in the area of Industry 4.0 and tap new sales opportunities.**

Cutting-edge technologies and the protection of intellectual property are a vital lever for advancing competitiveness and for opening up new business opportunities for medium-sized companies in the process and manufacturing industries. This was the message given by Klaus Helmrich, Member of the Managing Board of Siemens AG and CEO Siemens Digital Industries, as he addressed the "Forum of German SME" ("Forum Deutscher Mittelstand") in Stuttgart, southern Germany. The Forum was attended by 500 representatives from numerous well-known German companies in mechanical and plant engineering in order to debate digital strategies and future technologies for small and medium-sized companies. "The midmarket sector has always been characterized by its innovative force. We now need to protect these innovations with new approaches to patenting software and applications, for example," Klaus Helmrich explained.

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Cutting-edge technologies for data utilization

Cutting-edge technologies will have an influential role to play in the next stage of the digital transformation process since they allow data to be evaluated more comprehensively and in more depth than was previously the case: Users can now collect and view data on cloud platforms and are able to analyze it using artificial intelligence algorithms, and learn how they can make their production processes even more efficient, for example by developing and using new quality management and test methods. One such cloud platform is MindSphere, the open, cloud-based IoT operating system from Siemens. With this operating system, the data solely belong to the user companies that generate this data: The decision as to who has access to this data is theirs alone. "Companies of every size and from a wide range of industries can utilize MindSphere – from automobile to beverage producers, and from small and medium-sized companies to large corporations," according to Helmrich.

In order to use existing data and data pools, users must be able to develop applications simply and efficiently. Siemens offers the Mendix low code platform which is also available on MindSphere. The integrated solution makes the development of industrial IoT applications significantly easier and up to ten times quicker.

In order to drive the development of the ecosystem around MindSphere together with users, over 100 members have joined up to form one of the global user associations known as "MindSphere World". The German association alone has around 60 members, including numerous renowned medium-sized companies. MindSphere World provides a forum for all users of the MindSphere ecosystem. The association aims to support individual members in developing and optimizing IoT solutions on MindSphere, as well as tap into new markets in the digital economy. MindSphere World is a prime example of new ways of working together in the era of Industry 4.0.

Cloud and edge synergy

Artificial intelligence can not only be found in the cloud. Thanks to ever more powerful computing capabilities, it can also perform distributed data evaluations directly on the machine and suggest suitable courses of action. Edge computing thus complements automation platforms with data processing capabilities. The machine data can now be analyzed instantaneously without lengthy transmission

paths and saved on the shop floor which increases performance and productivity. Siemens already offers such a solution, known as Industrial Edge: The owner of the data retains control over it at all times and decides who will be authorized to access this data.
Cloud technologies are suitable for applications where data is administered centrally, or there are large quantities requiring evaluation, such as in the provision of apps and updated software versions, or when generating long-term statistics. Edge computing, on the other hand, is useful when analyzing data locally with short transmission paths, virtually on a real-time basis. Depending on the requirement, the user can decide how and when to use and combine the two technologies. "With this successful interplay of Industrial Edge, cloud technologies and existing automation solutions, we are seeing a renaissance on the shop floor characterized by a new dimension of versatility, scalability and security in data processing. This synergy is paving the way for entirely new business models," enthused Helmrich.

Safeguarding competitiveness with patents

When innovations and inventive business models arise on the basis of digital data, it is important that these new developments are protected. However, most Industry 4.0 patent applications at the European Patent Office are still registered by major companies, with small and medium-sized companies (SMEs) being strongly underrepresented. According to the European Union Intellectual Property Office (2015), small and medium-sized companies that own intellectual property rights have over 30 percent more sales per employee. "It is imperative for SMEs to develop and identify software solutions that are suitable for patenting," says Helmrich. The focus these days is no longer just on pure technology, but on customer benefits and new business models. Inventions suitable for patenting are no longer only to be found in development departments, but also in marketing and sales, for example. Workshops to be held on the subject and networking with qualified patent attorneys will help to identify inventions within the companies.

Klaus Helmrich, CEO Siemens Digital Industries, at the "Forum of German SME" in Stuttgart

More information: www.forumdeutschermittelstand.de

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Siemens AG (Berlin and Munich) is a global technology powerhouse that has stood for engineering excellence, innovation, quality, reliability and internationality for more than 170 years. The company is active around the globe, focusing on the areas of power generation and distribution, intelligent infrastructure for buildings and distributed energy systems, and automation and digitalization in the process and manufacturing industries. Through the separately managed company Siemens Mobility, a leading supplier of smart mobility solutions for rail and road transport, Siemens is shaping the world market for passenger and freight services. Due to its majority stakes in the publicly listed companies Siemens Healthineers AG and Siemens Gamesa Renewable Energy, Siemens is also a world-leading supplier of medical technology and digital healthcare services as well as environmentally friendly solutions for onshore and offshore wind power generation. In fiscal 2018, which ended on September 30, 2018, Siemens generated revenue of €83.0 billion and net income of €6.1 billion. At the end of September 2018, the company had around 379,000 employees worldwide. Further information is available on the Internet at www.siemens.com.