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# cecimo

*Where manufacturing begins*

special report

## **Paving the way for digital transformation in the European machine tool industry**



## **CECIMO Report: Digitisation in the European machine tool industry**

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# A few words from the President of CECIMO



The advanced manufacturing business is changing. Machines, systems and factories are getting connected across borders. By analysing industrial data available along the global value chain, manufacturers improve the performance, energy- and resource-efficiency as well as safety of their products. New service-oriented business models are emerging with the aim of providing greater value for end-users. Large ICT companies invest more in the industrial internet, redrawing the boundaries of the manufacturing sector. To remain in the driver's seat and keep its technological leadership, European machine tool

builders have to think about their business strategy and adapt it to the new rules of manufacturing business.

At the CECIMO Spring Meetings 2016 (Fuschl-am-See, 18-21 June), Europe's leading machine tool businesses as well as national associations addressed business and policy issues pertaining to digitisation and exchanged views on the challenges and opportunities specific to the machine tool sector in the digital era. The CECIMO delegation looked for answers to the following questions: i) **what does digitisation entail for the European machine tool industry?** ii) **how can machine tool builders tap into new business opportunities?** and iii) **what are the policy needs underpinning the competitiveness of the European machine tool sector?**

To remain competitive, European machine tool builders should not delay developing their digital strategy. The European machine tool sector is very heterogeneous, so each business will need to think about their individual strategy based on their own strengths. What is clear is that acting alone in the digital era yields no results. To generate the products and services that customers are ready to pay for, machine tool builders need to team-up with key suppliers, and get closer than ever to end-users. They should bear in mind that digitisation is not a revolutionary event but an evolutionary process. European machine tool builders, therefore, should thoroughly investigate new avenues of growth and gradually invest in innovative business models. They should also invest in new skills and technical capabilities. Information and communication technologies are often beyond the expertise of machine tool builders. This implies that our businesses need to take the steps to transform our human resources in line with the digital need. Policy-wise, the industry should closely follow and get involved in the key policy debates. Policy-makers should refrain from intervening too early, as premature regulations put severe barriers to Europe's advanced manufacturing's growth, where innovation cycles are getting shorter as an answer to changing customer demands.

This report provides a summary of the debates conducted during the CECIMO Spring Meetings. Our discussions focused on new business models, relations with suppliers and end-users, data management, regulatory issues, skills, R&D and SMEs, among others. We believe that the views presented in this report will be useful for both machine tool builders and policy-makers, and our industry will live up to the new challenges in the digital era.

A handwritten signature in black ink, which appears to read 'Luigi Galdabini'.

Luigi Galdabini  
President

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## 1) What does digitisation entail for the European machine tool industry?

The advanced manufacturing industry is in constant evolution. Large ICT companies around the world with very high technical capabilities and bargaining power are increasingly developing solutions for traditional manufactures and connecting capital goods across borders. The competitiveness in the manufacturing sector is gradually pushed from “producing goods with certain functions” to “generating systems that increase performance and create

value”. Besides hardware, the added value of manufacturing also comes from software and services. In the era of digitisation, actors that work on the connectivity of machines and creation of systems are likely to define the new rules of competitiveness. On the flip side, manufactures that fail to follow the digital trend may face serious obstacles and become commodity providers under the control of system designers.

### Keys to digitisation in the European machine tool industry



## New business models are emerging for machine tool builders

The changing patterns in the manufacturing industry imply that European machine tool builders, too, design and implement a new growth strategy ensuring their competitiveness in the digital era. The digital shift is likely to change the perception of end-users about who is a machine tool builder and what solutions they have for customers. To keep benefiting from the added value of advanced manufacturing, machine tool companies will need to adapt to the new normal and develop new products with more digital features and services with a focus on “benefits” for end-users. To avoid becoming a mere commodity provider in the long run, the European machine tool industry should position itself as a world-class supplier of machine tools combined with digital solutions facilitating customers’ lives by exploiting the data coming from the machine tools used all around the world.

European machine tool companies have traditionally generated revenue by building and selling sophisticated capital goods and providing after-sales services to end-users from across the world. Nevertheless, as the manufacturing industry is becoming digitized and more service-oriented, the machine tool sector needs to think more than ever of ways to incorporate new service-oriented business models such as “product-as-a-service” or “knowledge-as-a-service” (PaaS and KaaS) which involve selling benefits, rather than selling machines and providing after-sale services. In such new business models, for instance, a machine tool builder can still be the owner of the machine used by a customer and the revenue may be generated by machining

uptime (e.g. power by the hour) or by the workpiece produced by the machine tool user. In addition, services such as predictive maintenance may be one of the major areas of growth for machine tool builders. With the help of data collected by machines used by its customers, machine tool builders can prevent upcoming problems and intervene before the brake-down occurs or have spare parts delivered to customers, reducing or eliminating the machine downtime. Other business models could include the development of digital machine tool platforms providing anonymous data on numerous machine and system performance that can be used as input for further improvement machine tool technologies. Surely, other business models of the digital economy, such as online machine tool user communities exchanging information on machines and processes as well as sales platforms are also expected to increasingly develop in the machine tool industry, helping to boost connectivity in the sector.

Nevertheless, the transition to the digital economy requires the development of sophisticated business strategies and investment in new technologies. In order to enable new business models, machine tools need to integrate more sensors to collect and channel data in real-time on their use and performance, their energy, resources and material consumption as well as possible maintenance requirement. The data also needs to be stored safely, analysed with the help of new software and used as input for making further improvements in machine tools, which altogether require more investment and new skills, while the European machine tool sector is already facing cost pressures. Most importantly, machine tool builders will need to understand what their customers demand from them in the digital era.



**“Closeness to the customer is at the heart of our industry. That’s why as customer demands are evolving, we must embrace digital evolution and the opportunities it opens up. With tools such as big data analytics, we can make big inroads into service provision and enhance the customer experience. A multitude of different business models lie ahead for machine tool builders.”**  
**Juha Mäkitalo, President, Finn Power OY (Primapower)**



## II) How can machine tool builders tap into new business opportunities?



***“The implementation of ICT systems certainly is not a low-hanging fruit in the machine tool industry. Firms will be required to devote considerable time to craft the best strategy, and changes will not happen overnight. But the long-term gains of deploying ICT solutions in the industry more than compensate for the immediate costs. Teaming up with ICT firms allows us to better grasp the shifting conditions in the value chain.”***

***Michael Merkle, CEO,  
Agathon AG***

### **Get closer than ever to customers**

Although the European machine tool industry possesses world-class skills and knowledge for generating the most innovative production technologies, digital connectivity between systems is often not the machine tool builders’ core business. To make the digital transition, machine tool companies should first develop a thorough understanding of their customers’ needs. Machine tool users will only accept to pay for additional digital features if they are convinced that these will increase their productivity and generate additional value for their business. Taking into account this business reality, a machine tool company should start by identifying the digital solutions generating real value for customers. This surely requires close partnerships with each customer and joint-projects aiming at developing the solutions each user’s needs. That being said, European machine tool builders have built their reputation on personalized products and services, which gives them a strong starting position as they already have close ties with customers. The industry now needs to apply its partnership-based business model in a new field, digitisation.

### **Develop long-term partnership with ICT suppliers**

In order to remain at the forefront and not to lose control of the market, machine tool builders will need to develop new partnership avenues with suppliers, including ICT companies, software providers, control system producers and alike. In fact, in the new era, machine tool builders will need to map the new manufacturing supply chain which may be different than the current one, and develop a new ecosystem where the machine tool industry holds a key position. To this end, teaming up with young, small and agile ICT providers with a specific expertise on a market already offering cloud products, high-performance applications and ready-to-use data analytics can help traditional manufacturing companies accelerate the development of new digital business models for end-users.

It is important for machine tool builders to bear in mind that new business models are not achieved with short term goals, and developing digital solutions providing value to customers requires long-term commitment. In other words, digitisation should not be considered as

a revolutionary event but an evolutionary process. Machine tool companies need to go step by step in their digitisation journey and invest in the solutions needed by customers gradually. The core technologies behind the digital evolution may derive from beyond the current boundaries of the manufacturing industry. Collaboration, therefore, is the key to going digital and acting alone is no more useful in the era of digital transformation.

### Invest in mastering industrial data

Collecting, analysing and using data is essential to tap into new business opportunities but this comes with its own complexities. Machine tool companies that aim at collecting advanced data from machines need technical capabilities that are often not available within traditional capital goods manufactures. The investment cost in data analytics may be high. Companies will also need to investigate what kind of data and data management would create value for end-users. Thanks to sensors and other data capturing devices, the type of data that can be used in the manufacturing value chain is extended and includes, but is not limited to, the use of energy and resources, machine performance, timing, workpiece delivered, consumption of other materials, and so on.

Data management also includes great privacy matters, as customers need to be ensured that their data is stored and treated with the highest level of security.

Companies need to develop extensive risk mitigation strategies for data leakage as sensitive data will bring risks and require heavy security procedures. Businesses will need to make important choices about embedding features directly in machine tools or investing more in cloud-based applications. In the manufacturing sector, both options have their pros and cons and depend on customer needs such as response time needed, confidentiality level and interface complexity. For example, while developing cloud-based applications might allow machine tool builders to upgrade software and other changes easily, embedding software in machine tools would be a safer option when it comes to data privacy.

As for data ownership, it must be defined by contractual agreements with suppliers and end-users. For instance, although a machine tool builder is the one that produces the capital good, it is used by a customer. Making agreements on the rights to own or share data is therefore a necessity. It is clear that if Europe wants a thriving data-driven manufacturing base, the machine tool industry will need access to the data deriving from the machines used by various customers along the value chain. To this end, machine tool builders need to develop communication campaigns towards machine tool users and other stakeholders showing the clear benefits of data co-ownership, including increased productivity, continuous innovation and energy-efficiency.



***“Digitisation also entails the management of an increasing amount of data gathered by sensors or other data capturing devices. Companies must ensure that the best solutions are put in place to collect, store and analyse relevant type of data. The final step is the preparation of appropriate risk mitigation strategies to prevent any leakage that could put in jeopardy the manufacturer and his clients.” Bastiaan Clement, Managing Director, Style CNC Machines BV***

### Takeaways for machine tool builders:

- The next generation of customers might demand more of the ‘product-as-a-service’ models instead of buying and owning products. Think how your company can provide benefits for customers rather than selling products only.
- Understand the digital solutions your customers actually need. End-users will only pay for the solutions that generate value for them.
- Be patient. Digitisation is a long journey and requires extensive collaboration. To start, team up with young and agile ICT providers that have the expertise needed.
- Collecting, storing and analysing industrial data is a complex business. It requires specialization in certain data types as well as extensive technical capabilities.



***“An important aspect of digitisation is building the appropriate ICT structures and coupling them with the creation of production technology teams. Such a hybrid will be able to initiate the necessary changes towards developing new business models. It will have to cooperate with the design, production, sales and aftersales departments so they can get the full picture and propose comprehensive solutions.”***  
***Berndt-Thomas Krafft,  
General Manager, FMMI***

### **Takeaways for machine tool builders:**

- Internet technologies may be beyond the expertise of the current machine tool workforce. Attract, hire and retrain ICT specialists, it is more important than ever.
- Start with building small teams having both ICT specialists and production technologists, working on specific projects.
- As a long-term skills strategy, build bridges with software, telecommunication, computer and information systems engineering departments of your academic and VET partners as well as ICT research institutions.

### **Acquire the skills needed in new business models**

Generating new digital business models requires for machine tool builders to set up the cyber-physical environment connecting machines and systems by merging production technologies with ICT. To this end, in addition to its existing expertise of production technologies, the industry needs to increase its in-house digital capacity with the help of software developers, big data analysts, system designers, and cyber security and cloud computing specialists. In parallel, the production technologists of the sector will need to learn to interpret the data collected from machines in real time to make the right decisions and perform their duties effectively in complex situations. For example, in the field of predictive maintenance, a technician should be able to remotely monitor data from machines, detect problems before they occur and order replacement parts in advance, preventing machine downtime and generating value for the customer. The industry will also need to raise a new type of sales engineers whose awareness

and expertise is not limited to selling machines. With the help of data analytics, the new machine tool sales force should sell outcomes, rather than machines, by providing clear insights on how products and services create value for customers. At the management level, companies will need to develop an e-leadership vision. This includes recognizing, understanding and developing new digital business opportunities, and commercialization of digital ideas.

Nevertheless, this human resources transformation in the machine tool industry can be challenging. The machine tool sector's workforce is traditionally composed of mechanical engineers, and the internet technologies now changing the advanced manufacturing sector are generally beyond the current skills pool. The work culture in the manufacturing business is quite different than the working environment in the ICT, and the industry considers this difference as a challenge when trying to attract software developers to their companies. Due to the involvement of large digital technology companies in the manufacturing business, machine tool builders may have difficulties integrating young and talented ICT professionals, who would rather work for giant technology players. The transformation of the manufacturing sector and its business models is also likely to face internal resistance as senior staff members are not necessarily familiar with new digital technologies.



### Build small ICT & production technology teams

The digital challenge pushes European machine tool companies to come up with a new skills strategy. Setting up a small team composed of ICT specialists and production technologists working on the development of new business models for machine tool builders could be a good starting point. This hybrid team should be well-integrated into the company, and close links with other departments such as design, production, sales and after-sales, should be established to ensure that new digital solutions and business models are fully aligned with company's overall product and service offerings. Such teams should have clearly defined expected outcomes rather than defining functions and tasks.

Building new teams will require machine tool builders to also re-think about their skills pipeline. The industry will need to strengthen its relations with academia and students in the fields of software, telecommunication, and computer and information systems in order to attract new graduates. The machine tool industry's strong apprenticeship practices should also include partnerships with ICT-related vocational education and training providers. For the recruitment of experienced ICT specialists, machine tool builders might benefit from the global talent pool. Many Member States have

introduced programmes to facilitate ICT specialist recruitment due to the widening skills imbalance in Europe in this field. The recent Blue Card scheme by the EU (similar to American Green Card) is one of the measures that machine tool builders might consider in this regard.

### The future of employment in the machine tool industry

One of the key topics brought by digitisation is its impact on the workforce and employment. In the machine tool industry, despite the fact that many jobs have been recently automated and the industry is expected to see more of this trend, technology is not likely to replace in the near future today's non-structured tasks, including building and managing multi-cultural teams effectively, listening and understanding customer needs, offering tailor-made solutions, training customers in the machine tool business. Due to introduction of new technologies, one can expect that while some low-skilled occupations will lose their importance or disappear, other high-value occupations demanding more sophisticated knowledge and skills will be increasingly important on the labour market. For instance, structured jobs mostly based on physical activities can be done more effectively by a machine and will be more and more automated. On the other hand, this will bring new opportunities for those who possess the right technical and transversal skills needed for automation, computerization and digitisation of structured tasks. The machine tool industry is a high-technology sector, and continuous innovation is part of the business. This, however, does not mean that technology will replace human intervention which is essential for the competitiveness and sustainability of the sector. The success of the sector will rely on offering personalized solutions to each customer.

### III) What are the policy instruments needed to underpin the competitiveness of the machine tool sector?



***“We should be very conscious about the rising importance of cybersecurity for machine tool builders. With smarter manufacturing comes a greater need for security systems that protect sensitive data. With 1.8 bn EUR of investment planned by 2020, the European Commission’s cybersecurity PPP is a move in the right direction, so is a new sharper EU focus on network and information security legislation. The hope is that this will lead to more action in the near future.”***  
***Tomas Hedenborg,  
Group CEO, Fastems OY AB***



#### **Machine tool builders must be involved in policy debates on digitisation**

As digitisation gains importance in the policy agenda at the EU and national levels, high-level roundtable groups are established with the aim of bringing policy-makers and industry together and designing the policies needed for the uptake of digital technologies in Europe. The European machine tool sector welcomes this practice but is concerned that from the business side, the priority is often given to large ICT actors instead of involving various companies from the manufacturing sector. The manufacturing industry, including the machine tool sector, is one of the largest fields where new digital business models developed by the ICT sector are applied and commercialized. It is becoming a top priority that advanced manufacturing companies as well as the associations voicing their needs participate in high-level roundtables.

#### **Cybersecurity and an excellent digital infrastructure are a must for a data-driven manufacturing industry in Europe**

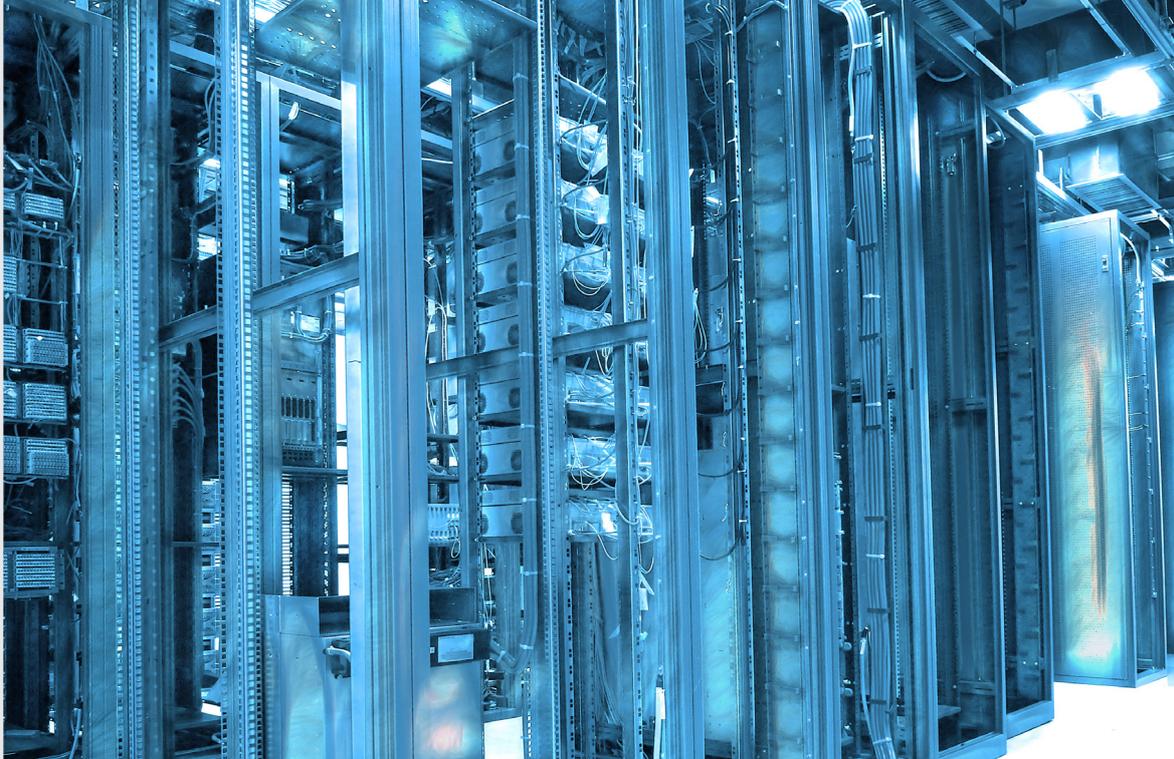
Digitisation comes with some security concerns over cyberspace where critical data are stored and sensitive information is exchanged among businesses along the value chain. Before making any investment in digital and data-driven business models, machine tool builders will need to ensure that they have the full control over their own trade secrets and that no company- or product-specific information will be transmitted to another entity in a way they are not aware of.

***“Interconnectivity of machines and processes will require a safe ICT infrastructure. Exchange of information will be happening on various levels, internally in the company and externally with suppliers and customers. More and more data will be exchanged, stored and managed, consequently its security has to be considered as a top priority by public authorities.”***  
***Bruno Cathomen, CEO Mikron Group, Mikron SA Agno***

For many manufactures, therefore, issues surrounding data security come as a condition for investing in digital technologies. Taking into account the fact that the future of Europe’s manufacturing competitiveness will derive from connectivity among systems, the EU should assure that the cyberspace available for the use of businesses is fully secure. The implementation of principles such as “data protection by design and by default” and data anonymization or pseudonymization at EU level are essential to establish trust among manufacturers and bring them to further invest in new business models in the advanced manufacturing sector.

As more and more machines are connected at transnational level and efforts on data protection by single Member States will lead to varying security procedures in Europe, the industry needs a comprehensive EU-level and harmonized secure cyberspace strategy that considers future business models instead of taking into account current practices.

The availability of digital infrastructure allowing high-speed data flow is another precondition for a data-driven European manufacturing industry. Most of the European machine tool builders are located far from city centres and need high-speed internet infrastructure enabling fast response time and effective communication between machines as well as systems. According to different sources, the network of physical objects at global level via embedded devices that collect and/or transmit information will include up to 200 billion objects by 2020, hinting at the increasing importance of the high-speed internet infrastructure in Europe.



### Early intervention by policy-makers can put severe barriers against new business models

The existing EU regulation on data ownership has focused on personal information protection relevant for B2C sectors and does not address the many complexities of advanced manufacturers in B2B sectors. Given that, in the manufacturing sector, the right to own and use data has mainly been defined by individual contracts between companies. Although in the future the amount and type of data will increase along the manufacturing value chain, and policy debates are likely to arise on the ownership of new data, contractual agreements between companies have so far been effective to provide the necessary freedom and flexibility to the different players. At this point, as the manufacturing business and technical capabilities are rapidly transformed, having a short-sighted strict regulatory approach would not be supporting European business growth and competitiveness in the long run. If any, future European regulations on data ownership should only provide a general framework with clear objectives and principles without any detailed measures so that they remain future-proof and technology-neutral, and support the evolutionary growth of the manufacturing industry. European policy-makers should keep in mind that strict and prematurely introduced regulations may put severe barriers against new business models in

the advanced manufacturing sector, where innovation cycles are getting shorter as an answer to changing customer demands.

Given the rigid framework that can come from new regulations, the industry would prefer working on the development of new standards pertaining to industrial data ownership. Open standards have proved to be effective tools to develop the manufacturing industry both in Europe and in export countries. That being said, building openly developed standards needs a considerable amount of preparatory work and collaboration by industrial stakeholders so that it facilitates the interoperability between components, machines and systems along the value chain at transnational level. While developing new standards, specific attention should be paid to the fact that the manufacturing value chain has become extremely global and therefore new standards should be globally applicable as well.

### Machine tool builders need a pan-European innovation policy that helps commercialize research

The European machine tool sector has the world-class expertise and innovation capabilities needed to develop and sell production technologies. Nevertheless, the ICTs shaping the future of manufacturing may be beyond their



***“In Europe, innovation in machine tool building will occur intermittently if we adopt a patchwork R&D strategy. The need to strengthen the European research dimension becomes all the more compelling, especially in uncertain economic times. It is EU funding that allows small and mid-sized projects to get off the ground, and we still have room for deepening this dimension in the near term. More resources and attention should be given to close-to-market and easily manageable projects.”*** Roland Haas, General Manager, framag Industrienlagenbau GmbH



***“The education policies in Europe should encourage more time spent in industry as, in the manufacturing sector, learning is best achieved in the real working environment. Also, our industry is gradually going through a digital transformation and, if the upcoming workforce should already be familiar with existing business models, it should also be prepared to support future new models brought by digitisation. This can be only achieved if the European education providers are brought closer to the industry through comprehensive apprenticeship and traineeship programmes as well as industrial post-graduate degrees.”***  
**George Blaha, General Manager, Schneeberger Mineralgusstechnik s.r.o.**

expertise and mostly originating from the US that has been investing in space, telecommunication and micro- and nano-electronic industries for decades. Today, Europe faces a situation where it has a strong academic background in internet technologies but the commercialization of research and industrial applications remain too scarce with negative outcomes on the manufacturing industry. Furthermore, various public authorities at national level have developed and implemented policies and initiatives aiming at boosting digital business models in the manufacturing industry. Yet, with its value chain including both SMEs and global players widely distributed across Europe’s regions, cross-border issues brought by digitisation in the manufacturing industry cannot be tackled by a single EU Member State.

To overcome this gap, the EU should urgently accelerate efforts to develop and implement pan-European pilot projects. Public-private-partnerships with simple rules and several access points that pool diverse resources and know-how under common goals would put together ICT, manufacturing companies and technology centres, creating a new European digital manufacturing ecosystem. This way, Europe would also be able to cope with the competitive pressures from regions such as North America and Asia where public authorities also make efforts to consolidate nation-wide resources.

In parallel, Europe should also ensure that the financial sector is ready to finance high-TRL (Technology Readiness Level) manufacturing projects. The

European financial sector faces difficulty to understand the new manufacturing industry, its new business models and its globalized markets, which delays much need investment by advanced manufacturers. To overcome this lack of understanding, Europe needs to develop a mechanism bringing financial actors and manufacturers closer and developing financial tools ready to be used by manufacturers.

### **Work-based learning and continuous education are the key to adaptation**

Manufacturing companies are increasingly facing difficulty in finding the young workforce possessing the practical ICT and production technology skills needed for the development of new business models. In order to tackle this increasingly pressing challenge, public authorities at national and regional levels should invest more in the design and implementation of work-based education as, in the manufacturing sector, learning is best done in the real working environment. Work-based education both in the ICT and manufacturing sectors has already proven its success in Europe by providing learners with better employment opportunities and, at the same time, employers with the skilled workforce they need. Since Europe already has a strong heritage in work-based education underpinned by apprenticeship and traineeship programmes, it should make further efforts to incorporate this successful model to tertiary-level education as well and make it the base of



## Recommendations for policy-makers:

- Bear in mind that the manufacturing industry is one of the largest platforms where new business models are tested and commercialized.
- Ensure that the policy-making process considers the view of advanced manufacturers along with the ICT industry.
- Do not intervene too early. Future regulations dealing with the manufacturing industry, if any, should provide a general framework rather than detailed measures, so that they are future-proof and technology neutral. The manufacturing sector is under a rapid transformation and innovation cycles are getting shorter.
- Support industry-led standards, that have proved their excellence for the manufacturing sector both in Europe and on foreign markets.
- Keep investing in the European digital infrastructure. Manufacturers are located far from city centres and scattered all around Europe. They all need access to high-speed internet connections to tap into new business opportunities.
- Efforts towards data protection at national level would lead to uneven security and privacy procedures in Europe. We need to have a comprehensive EU-level cybersecurity plan.
- Promote work-based learning and continuous education to close the “knowledge and awareness gap” between education providers and industry.
- Prioritize the digital transformation of manufacturing SMEs. They are vulnerable to the complexities of digital technologies although they constitute the backbone of the European manufacturing industry.
- Pool R&D funding and support large-scale pilot projects with the involvement of ICT suppliers, advanced manufacturers and end-user industries, contributing to the creation of new value chains and a digital manufacturing ecosystem in Europe.

digital manufacturing training across the continent.

The work-based model also includes experienced workforce’s up-skilling through continuous education programmes. Advanced manufacturers can only cope with changing technology and new skill needs by launching continuous education programmes also addressing its experienced workforce. This, however, requires further funding from the government side as manufacturers already take the large share of the burden by delivering training to young employees who otherwise would not be operational. In addition, the rising complexity of technology and integration of ICT solutions increases the training cost in the manufacturing sector, making necessary the involvement of governments at European and national level.

### SMEs need policy makers’ particular attention

Digitisation brings specific challenges for the manufacturing SMEs. While SMEs have limited financial resources and knowledge, making them vulnerable to the complexities, costs and risks of digital transformation, developing digital business models require considerable financial resources and human capital. The misalignment between the broad requirements of digitisation and limited resources prevent SMEs from investing more and creating solid business cases, as the potential return on investment would be too low. Furthermore, large ICT actors with abundant financial resources, extensive technical capabilities as well as high bargaining power are more and more providing solutions for the manufacturing industry, which limits SMEs’ playing field.



***“Small and medium machine tool companies are presented with a more tortuous digitisation path than their bigger peers. If they lag behind in forging new business models, it will be the competitiveness of the whole industry that will be hurt. European decision-makers should strike the right balance between demand and supply of key-enabling-technology services. Estimates put at 60% the share of European advanced manufacturing firms that aren’t likely to find the technology services they need.” James Selka, CEO, The Manufacturing Technologies Association (MTA)***



***“We need to increase the awareness of our sector on new business models emerging in the digital era. To this end, a compendium showing best practices would play an instrumental role in disseminating new business models from forerunner machine tool builders in Europe. This Pan-European communication action would also promote new solutions to end-user industries and could help policy-makers understand the digital transformation happening in our sector.” Wilfried Schäfer, Executive Director, VDW***

All things considered, public policies pertaining to digitisation need to be designed with specific attention to SMEs, since they are the backbone of Europe’s manufacturing (for instance, 80% of the European machine tool industry is composed of SMEs). Research and innovation incentives at different levels should be more accessible to SMEs. Those are located away from city centres should be provided with the high-performance infrastructure needed to carry data between machines, factories and systems.

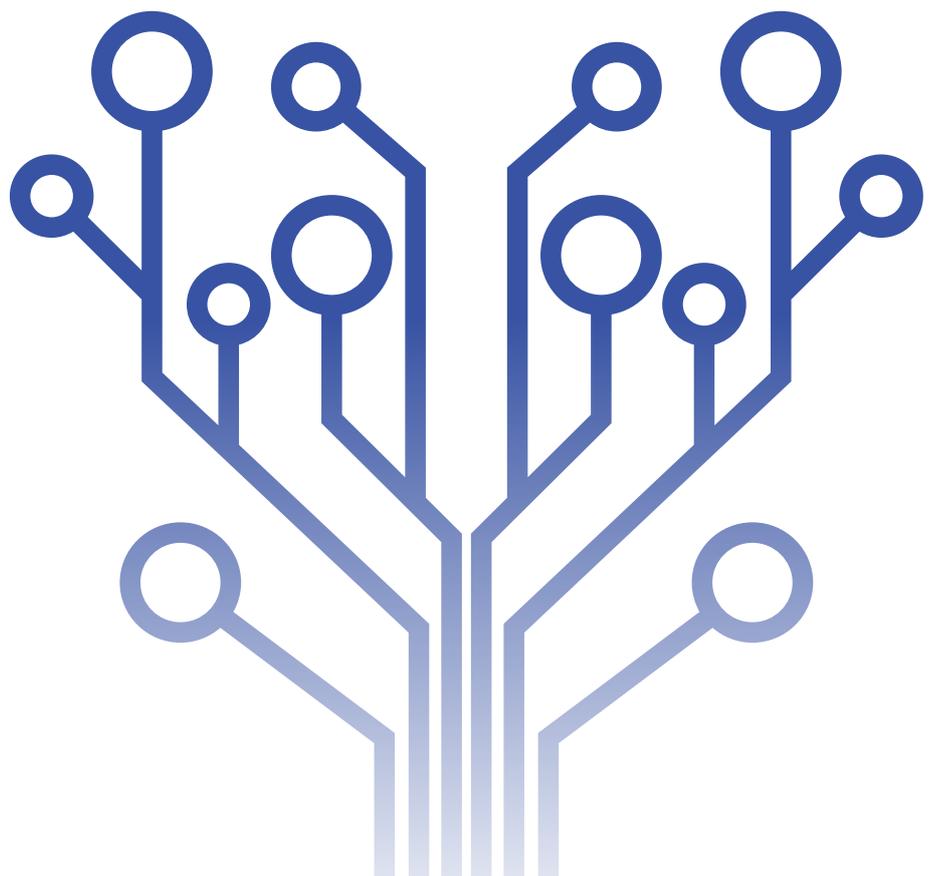
In addition to financial and infrastructure support, building special clusters to bring ICT and manufacturing SMEs closer, and enabling these clusters to develop new digital solutions would be an important policy element. Also, as some manufacturing SMEs cannot follow the recent digital trends, they require practical guidelines, training as well as exchange of best practices to facilities their involvement in the new business models.

Last but not least, the narrow SME definition based on staff headcount and either annual turnover or annual balance sheet total used in Europe prevent some businesses from benefiting from incentives and financial tools provided to SMEs. In the heterogeneous sector of

advanced manufacturing, companies that are actually small according to market conditions are not considered as an SME by definition so they are bound by the rules that also apply to gigantic businesses.

### **Public authorities should support the exchange of digitisation practices among manufacturers**

In order to support the uptake of digital manufacturing best practices, the development of a compendium identifying forerunner companies, promoting best practises from the European machine tool industry and showing the added value of investing in digitisation should be supported by public authorities, with the involvement of sectorial representatives. This database would also help highlight that digitisation is about individualization and each company needs to build its own digital path, especially in a heterogeneous sector like the machine tool industry. The best practice collection can also help the machine tool industry promote its emerging image, blending high-performing and reliable products with digital features and services.



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## Member Associations

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[www.sst.cz](http://www.sst.cz)

**Denmark: The Manufacturing  
Industry**  
a part of the Confederation of Danish  
Industry  
[ff.di.dk](http://ff.di.dk)

**Finland: Federation of Finnish  
Technology Industries**  
[www.teknologiateollisuus.fi](http://www.teknologiateollisuus.fi)

**France: SYMOP**  
Syndicat des Entreprises de  
Technologies de Production  
[www.symop.com/fr](http://www.symop.com/fr)

**Germany: VDW**  
Verein Deutscher  
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[www.vdw.de](http://www.vdw.de)

**Italy: UCIMU**  
Associazione dei costruttori Italiani  
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[www.ucimu.it](http://www.ucimu.it)

**Netherlands: VIMAG**  
Federatie Productie Technologie /  
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[www.ftp-vimag.nl](http://www.ftp-vimag.nl)

**Portugal: AIMMAP**  
Associação dos Industriais  
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**Spain: AFM - Advanced  
Manufacturing Technologies**  
Asociación española de fabricantes  
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componentes y herramientas  
[www.afm.es](http://www.afm.es)

**Sweden: MTAS**  
Machine and Tool Association of  
Sweden  
[www.mtas.se](http://www.mtas.se)

**Switzerland: SWISSMEM**  
Die Schweizer Maschinen-, Elektro-  
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[www.swissmem.ch](http://www.swissmem.ch)

**Turkey: MIB**  
Makina Imalatçilari Birliği  
[www.mib.org.tr](http://www.mib.org.tr)

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The Manufacturing Technologies  
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