



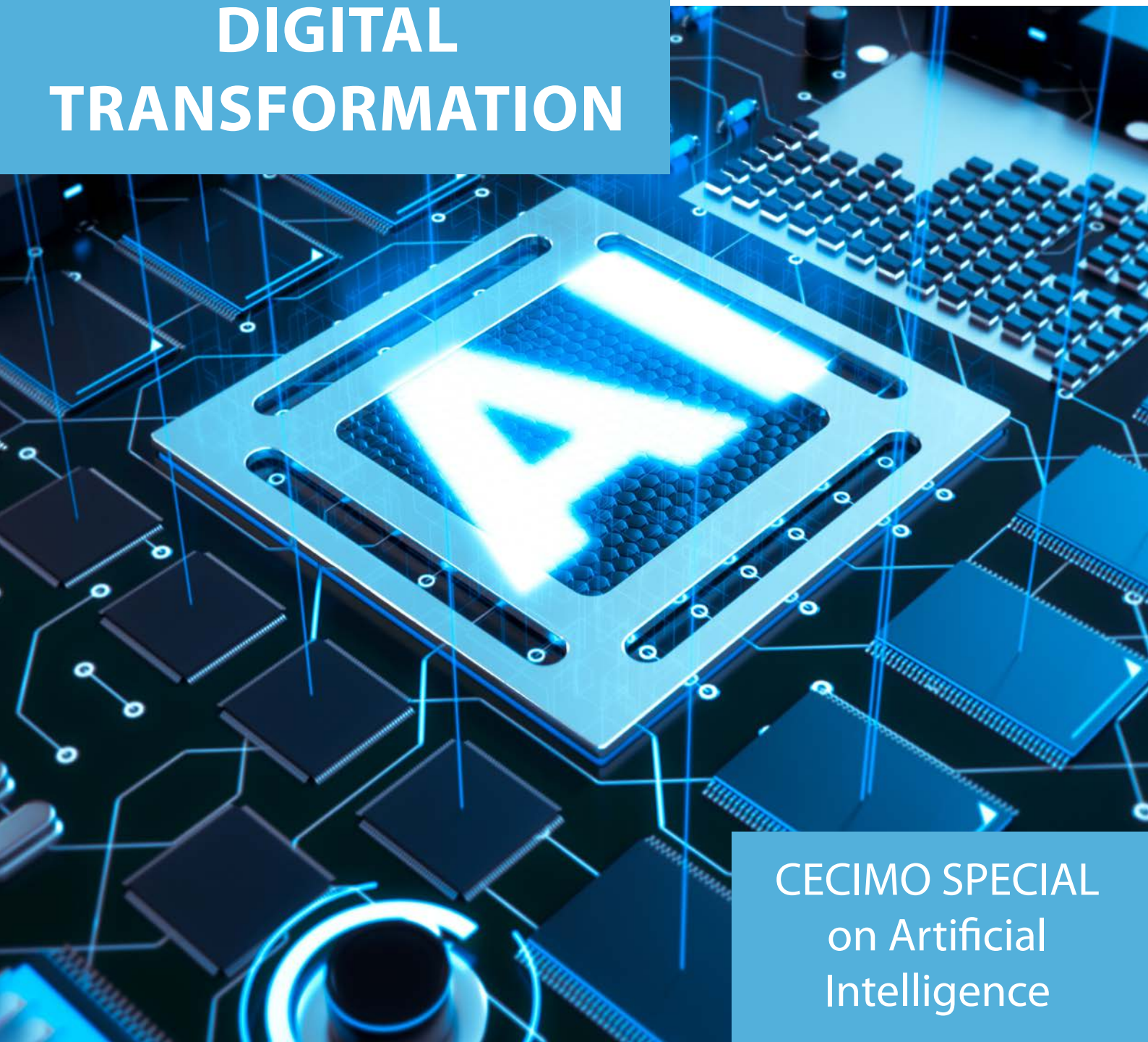
Spring 2018  
Issue #12

# cecimo

*Where manufacturing begins*

magazine

## DIGITAL TRANSFORMATION



CECIMO SPECIAL  
on Artificial  
Intelligence

### Artificial Intelligence

From science fiction to  
the factory floor. How  
do we deploy AI?



### Filling the skills' gap

How do we develop  
the right skills to drive  
innovation?



### New CECIMO President

CECIMO's priorities  
by Dr Roland Feichtl,  
new CECIMO President



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# Director General's Foreword



Dear readers,

We are on the verge of the next production revolution as advanced manufacturing is experiencing major technological changes. With technology changing at a fast pace, the concept of a future-proof factory floor may seem an unattainable goal. For manufacturers to future proof their factories, technology, processes and people should be equipped and empowered to face the upcoming challenges and stay ahead of the competition. Therefore, in this edition of the magazine we have decided to take a deep dive into these three dimensions – technology, processes and people – with a special focus on artificial intelligence.

Business and politics are reflecting upon artificial intelligence and foresee a widespread disruption to the economy and society. At the CECIMO Fall Meetings, we had the honour of hosting Commissioner Bieńkowska, who gave us a glimpse of the European approach to Artificial Intelligence, which will be revealed in April 2018. Artificial intelligence and the future of work were key topics during the EU Industry Days held in Brussels on 22-23 February, as well as the topic of the CECIMO Spring Meetings in Mainz. In our view, the biggest manufacturing innovation, vital for the factory of the future, is the collaboration of robots with humans: they will learn to work side by side to make processes along the assembly line more efficient, safe and accurate. The future of work is not about replacing humans with robots - it is about collaboration of skills.

CECIMO's role in promoting the development of the necessary skills in the field of additive manufacturing was recognised by the European Commission in the latest Springer book on additive manufacturing. In the Magazine we feature the letter from Marianne Thyssen, European Commissioner for Employment, Social Affairs, Skills and Labour Mobility that congratulates CECIMO for being a strong ally in defending the added-value of EU-funded initiatives on education and training issues and developing vocational training and apprenticeships in additive manufacturing.

Furthermore, we have brought together industry experts, as well as representatives from the European Commission and the European Parliament, to address the policy aspects of the "next production revolution" looking into skills, industrial platforms, B2B data sharing and IoT, cybersecurity and trust. The magazine will give you a good overview of the future RD&I programme FP9 and the EU funded projects that CECIMO participates in, as well as updates on important issues and initiatives for our sector. Given the importance of our work on standards, we have decided to dedicate a special section in our magazine to the latest developments in the area of standardisation. Last but not least our Magazine features our newly elected President, Dr. Feichtl.

We believe CECIMO Magazine is an excellent tool to raise awareness on the key issues for our companies and communicate our priorities to various stakeholders at European and national level.

Have a nice reading!

Filip Geerts  
Director General

## IN THIS MAGAZINE

Dr. Roland Feichtl becomes President of CECIMO - *page 4*

### CECIMO SPECIAL

AI: the next frontier for European Industry- *page 5*

Towards a European AI plan - *page 7*

AI has reached a major tipping point- *page 8*

From Artificial Intelligence to machine learning - *page 10*

### POLICY AND LEGISLATION

New skills for the jobs of the future - *page 13*

Strengthening Europe's competitiveness through digital industrial platforms - *page 14*

Fostering data sharing between companies in Europe - *page 15*

IoT: focus on an increasing cybersecurity threat - *page 17*

Security, safety and trust - *page 19*

The impact of Brexit on European Manufacturing - *page 20*

EU sets an eye on new long-term R&D priorities - *page 22*

### STANDARDISATION

IT Security: next challenge for standardisation - *page 23*

New CEN-CENELEC Committee on Cybersecurity - *page 24*

CECIMO participates in new Working Group for Digitising European Industry - *page 25*

### RESEARCH AND TECHNOLOGY

Aidro Hydraulics wins with a design of 3D printed hydraulic manifold - *page 26*

Functionally integrated gear and shaft - *page 26*

METALS Project- *page 27*

AM-Motion Project - *page 28*

Kraken Project - *page 29*

3D Prism Project - *page 30*

### CECIMO NEWS

Industry4Europe Coalition and EU Industry Days - *page 31*

EMO, what a successful edition! - *page 33*

The European Machine Tool industry in 2017: figures and outlook - *page 34*

CECIMO partners with other associations to push new technologies forward - *page 36*

3rd AMEC - *page 37*

CECIMO: a steady presence at conferences on advanced manufacturing - *page 39*

### INSIDE CECIMO

Meet a CECIMO Delegate - *page 40*

SYMOP - *page 42*



# Dr Roland Feichtl becomes President of CECIMO

Dr Roland Feichtl took over from Mr Luigi Galdabini, the Managing Director at CESARE GALDABINI S.p.A., and is entrusted with the responsibility of leading the European Association that represents more than a third of world machine tool (MT) production.

During his Presidency, Mr Galdabini strongly addressed the issue of the investment gap. According to Mr Galdabini, corporate investments in Europe do not compensate for the rates of depreciation. The obsolescence of the machinery park risks dragging European industry into a downward spiral of low productivity - low value added - low profitability.

CECIMO President Dr Feichtl affirmed that, in line with the previous presidencies, he "will continue to promote the strategic importance of our industry towards European authorities and citizens". He added that he "will make sure that manufacturing and re-industrialisation remain on top of the EU policy priorities".

He underlined how in such a complex environment, businesses are faced with common grand challenges such as globalisation, climate change, resource efficiency, regulatory pressures, and the increasing weight of emerging economies. "A few decades ago, maybe it was possible for companies and countries or regions to solve all their problems on their own" he added. "This is not the case anymore. Machines, factories, companies and, yes, also countries are linked more than ever". CECIMO should help its members to tackle their challenges together.

During his presidency, he will closely follow the initiatives of the European Commission in the field of the Digital Single Market, which aims at achieving considerable benefits for the digital economy. Under his mandate, CECIMO will "develop industry information and expertise in new emerging areas of importance, e.g. Digitisation, Digital Platforms, industrial security and trust, as well as monitor new customer technologies, that change the workpieces to be machined like new drivetrain. CECIMO will look for

the support of European authorities to sustain the efforts of its member companies in providing machine tool solutions that improve the energy efficiency of combustion engines. Through this and similar actions, our industry contributes straightforwardly to the challenge of CO2 reduction for our society. "But we should compare the complete system of different solutions e.g. from production over use, till disposal of a car to help environment" says he. In a market-driven economy, authorities should only set targets, rather than select a special technology as the right one to solve complicated technical issues.

Dr Feichtl will "use the success of the Italian campaign for tax and other incentives to promote the modernisation of the machine tool infrastructure in the other CECIMO countries" and will push forward the discussion on the circular economy within our Association and with industry stakeholders in order to achieve our sustainability objectives.

Beside this, as President of CECIMO, he will continue to "explain to European authorities and citizens the strategic role our industry plays in boosting jobs, growth and investment across Europe, as well as the necessity to improve the business environment, in order to ensure the development of Europe's manufacturing base within its borders, maintain its competitiveness and ensure a level playing field for our industry".

## Who is Dr Roland Feichtl?

Born on 26 March 1957, Dr Roland Feichtl finished the Technical College HTL in Linz (Austria) with the degree of Engineer, and started his career in 1976 within VOEST-ALPINE Group. After the successful automation of their machine-tool programme e.g. the Millturn of today's WFL Linz, he became Vice-President, "Prokurist" as well as Head of the Business Unit "Assembly and Transport Systems", today TMS Linz, with products like Welding lines for car bodies, Assembly lines for powertrain, Automated guided vehicles AGVs and Monorails.



From 1978 on, he studied – beside his job at Johannes Kepler University in Linz. Graduated in 1982 with the Master degree "Diplom-Ingenieur", he finished his studies also at the Institute for Production Technology at the Technical University of Vienna, with a Doctorate in Technical Science.

Since 1993, Dr Feichtl is responsible for machine-tools and automation within the MTB-Group (1 billion revenue and 5500 employees), and Group CEO of several traditional machine-tool companies like, for example, 200 years' Mauser-Werke Oberndorf (Germany) or fineboring specialist Krauseco in Vienna (Austria) which has more than 100 years of experience. Here, Dr Feichtl developed Krause+Mauser Group to become the world market leader for connecting-rod machines and laser-cracking technology and a premium supplier of the international automotive industry.

Dr Feichtl is, among other things, co-owner and Chairman of the Supervisory Board of the company Feiba in Traun (Austria), specialised in Automation and Robot-Application. Since 2000, Dr Feichtl has been delegate of the National Association, "Metaltechnology Austria". For many years he was Chairman of Vienna's Industry and is the current Chairman of the Professional Body for Austrian Machine-Tools. Dr Feichtl joined CECIMO in 1999 as a Delegate, was Chairman of Technical Committee, CECIMO Vice-President and Board Member for the last 17 years.

# Artificial Intelligence: the next frontier for European industry

by Elżbieta Bieńkowska, European Commissioner for Internal Market, Industry, Entrepreneurship and SMEs



In the last fifty years artificial intelligence (AI) has moved from the pages of science fiction to the factory floor. If we get it right, the benefits of AI could be enormous. If we don't, well let's just hope those science fiction writers also got it wrong.

AI is a game changer, already transforming production, opening massive business opportunities and shifting industrial value chains. AI could contribute up to EUR 13.3 trillion to the global economy by 2030 and will have far-reaching consequences for our companies and societies.

AI is at the top of the industry and policy agendas around the globe. There is broad agreement that AI development should follow a human-centric, market-driven and multi-stakeholder approach. The challenge for policy makers, for us all, is to make that happen. In Brussels, we are working to develop a European approach to AI early this year.

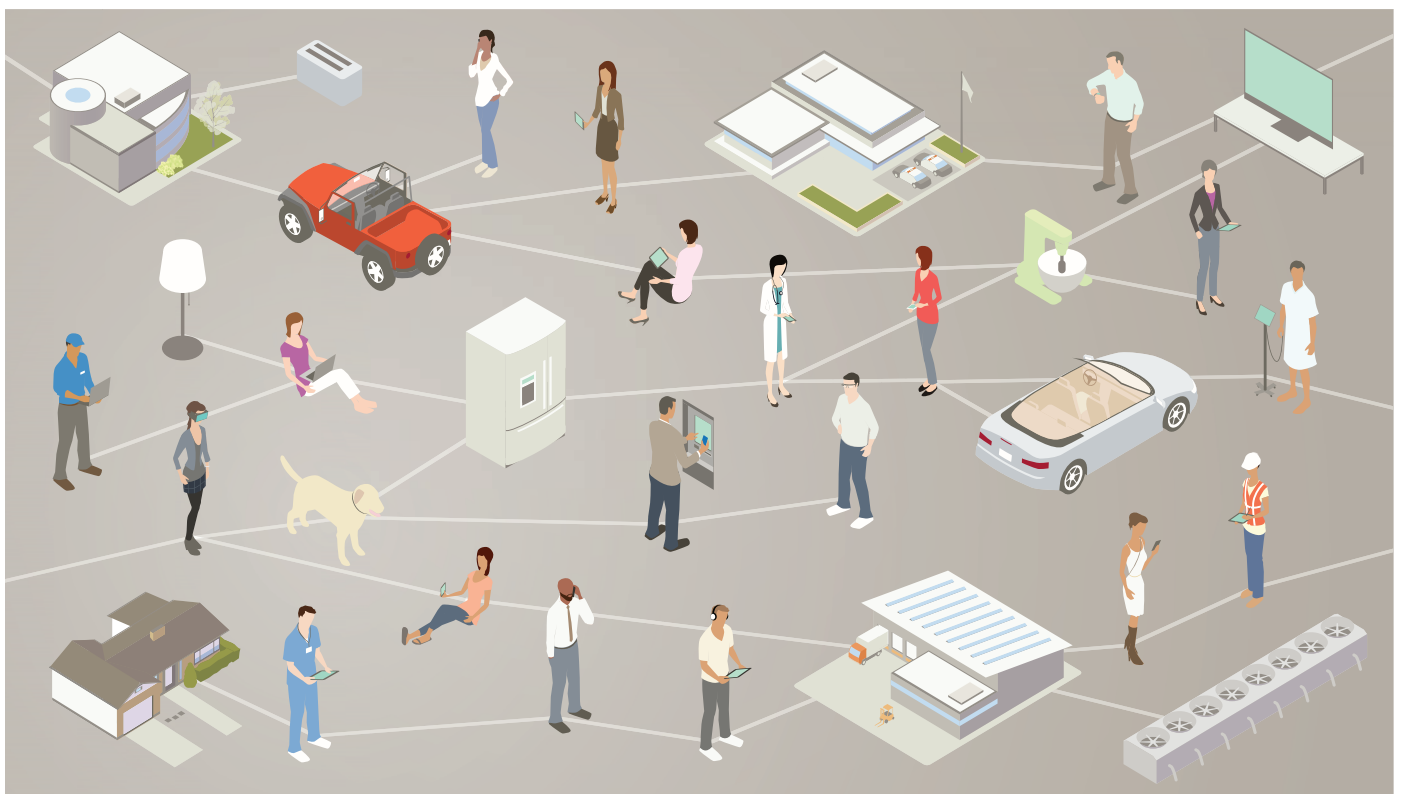
AI applications are opening up multiple opportunities for entrepreneurship, productivity, and the competitiveness of European industry, as well as supporting economic and social well-being. These will materialise if we manage to accelerate investment in AI while leveraging Europe's strong industrial leadership, scientific excellence and innovative start-up ecosystems. In particular, we need to help our SMEs to fully embrace the benefits of AI.

Europe will also need to address some new challenges that these developments create; we will need to closely monitor the development of AI; in this context, we should reflect on the current regulatory framework, as well as on the need for new standards. However, AI is not a European issue alone; we need to reinforce international cooperation, notably at G7 or G20 level.

We must also be sensitive to public perceptions of AI, and make sure that public debate is based on

To keep the EU at the forefront of AI development, investment is needed. The European Fund for Strategic Investment (EFSI) has already approved investments of €225 billion with an additional €16 billion coming from the Horizon 2020 programme. A large amount of this is going to big projects on AI and robotics. In parallel, the Commission is moving forward with ESCALAR, a European Venture Capital Fund of Funds, and supports

In this global race, business and politics have to work together and constantly ensure that our policy framework is fit for purpose. In this context, AI is an integral part of the EU's renewed industrial policy, and will be a key topic in the forthcoming European Industry Days in Brussels on 22-23 February 2018. This event will help gather input from the business community and steer the future direction of Europe's industrial policy. This is an open invitation to firms of all sizes to be actively involved and have their voices heard. ■



# Towards a European Artificial Intelligence plan

by Reinhard Bütikofer, Member of the European Parliament



**Reinhard Bütikofer**

We are on the verge of the next production revolution as described by the OECD. Advanced manufacturing, digitisation and resource efficiency are three major, transformative challenges for the European manufacturing industry. Industrial digitisation, as I have often advocated for, offers the opportunity to advance innovation, efficiency and sustainable technologies for a modern, green, and competitive EU industrial base.

Regulators play an important role when deciding on the future of EU industrial policy. In my view, an integrated approach should be sought, combining competitiveness and sustainability while safeguarding the European technological leadership in digital value chains and emerging technologies.

We will also have to safeguard our values. AI could be used to build a "brave new world". We'll have to stand tall against that.

The promises of artificial intelligence to create a new basis for economic growth and be a driver for jobs and growth are undeniable. Together with the speed of the developments in the field of automation, robotics and the application of artificial intelligence in production have brought those issues to the centre of public debate.

The European Parliament, in its resolution earlier this year, called on the European Commission to propose EU-wide liability rules on robotics and artificial intelligence. Rules are necessary in order to fully exploit the economic potential of those technologies and to guarantee a standard level of safety and security. Moreover, new questions are raised on testing conditions, transparency and accountability. Having said that, what can EU decision makers do to fuel and coordinate artificial intelligence adoption by European industry while taking into account the economic and social impacts of the technology?

Industry often opposes the adoption of so-called premature regulation in the area of artificial intelligence and, when it concerns

the establishment of EU-wide rules or standards, it stresses the importance of industry-led, voluntary and consensus-driven processes. I understand those concerns but I believe that we need to set up minimum rules to increase trust and legal certainty for producers and consumers across the European Union and boost competitiveness.

Transparency and trust go hand in hand. In the absence of an EU authority, which checks possible discrimination implied in some algorithms, namely the rationale behind the decisions taken with the aid of Artificial Intelligence, we would have to exclusively rely on the companies' goodwill to maintain their reputation and assume their responsibility, both in terms of contractual and non-contractual liability. Is that a safe enough ground to gain the trust of SMEs and citizens?

Thus, my main concern is linked to the risk of under-regulation. At the global level, we should not stand by to allow the development of business models to create "de facto" regulatory standards and technical specifications set by others like the U.S. or China.

Our actions will be decisive for the position of European industry vis-à-vis its global competitors in the next five to ten years. Hence, I am looking forward to the European Commission Communication on Artificial Intelligence in spring 2018. The European Commission should also ensure coherence between the new EU digital single market and its external policies by encouraging the use of advanced technologies, and developing and promoting Artificial Intelligence standards worldwide at G7 and G20 level.

A European Artificial Intelligence plan or R&D strategy, like the ones adopted by the U.S. and China, could have a critical role in accelerating the uptake of artificial intelligence by European industry. Early adopters will have maximum gains; therefore, we need to work together for a pan European policy on Artificial intelligence and EU standards. ■



by Serge Lhoste, Senior Partner, Roland Berger Brussels

AI will be used in tomorrow's manufacturing, being at the heart of the fourth industrial revolution. Based on data provided by sensors integrated in machines and industrial equipment, as well as external systems, AI-based systems will be capable of substantially improving manufacturing efficiency and effectiveness, improving OEE, yield and quality, reducing conversion costs, in particular maintenance, providing more tailored products to clients while limiting complexity costs and optimising capital



8 cecimo magazine | spring 2018



efficiency with improved inventory management based on more accurate forecasting capabilities. Machine tools will have to be integrated in this evolving ecosystem, being able to generate data, understand their environment and adapt their programs based on external inputs.

In parallel, AI offers the potential to accelerate the transformation of internal operations of machine tool sector companies.

On transactional tasks such as accounting or purchasing, AI offers the opportunity to substantially improve efficiency, beyond already existing Robotic Process Automation (RPA).

AI can also contribute to boosting innovation capabilities, enhancing technical roadmaps and developing new business models, in particular related to services.

Several companies are already experimenting with AI technologies, understanding potential use cases and how to generate a competitive advantage. This is true in data rich sectors such as financial services or media, but also in more industrial sectors like semiconductors and engineered products. The companies best capable to leveraging AI will become the leaders.

### **Moving forward to own the future with Artificial Intelligence**

To address the broad topic of AI, three dimensions should be considered. First, an adaptive

strategy needs to be defined, based on a robust understanding of potential impacts of AI on business models, client relationships and cost structures.

Second, companies need to review the impact on people and organisations, starting with building the required skills and culture. A specific focus should be put on reinforcing the capabilities around data as they provide the foundation for AI initiatives. For machine tool companies, this also means the need to further develop software engineering capabilities to be able to develop interfaces and integrate AI building blocks into machine and system design.

Finally, the readiness of IT infrastructure and systems to integrate AI technologies should be assessed.

Working with clients, we found that AI implementation requires an iterative, progressive and scalable approach to thinking, learning and doing. Launching first initiatives and putting in place the environment to learn from these first experiments is a good way to start. However, the ambition should go beyond evolution, to aim at a revolution of value proposition and operating models. ■



# From artificial intelligence to machine learning: how can we draw the next frontiers of European advanced manufacturing industry?

by Dimitra Vasilia, CECIMO EU Public Affairs Manager



Roland Feichtl (CECIMO), Commissioner Elżbieta Bieńkowska, Luigi Galdabini (CECIMO) and Filip Geerts (CECIMO).



Reinhard Bütikofer MEP

On 21 November 2017, CECIMO organised a high-level policy dinner debate on artificial intelligence and machine learning. The event brought together a selected audience of industrialists, MEPs, EU officials and other stakeholders to discuss the promises of Artificial Intelligence (AI) and machine learning for businesses, and the opportunities and challenges brought by AI solutions.

Commissioner **Elżbieta Bieńkowska** opened the debate, highlighting the timely organisation of the debate, ahead of the Commission proposal on artificial intelligence. She emphasised the important role of the European Commission in recognising the potential economic and societal benefits of such technology. "By putting a favourable and stable business environment in place", she said, "Europe can compete globally on both the development and uptake of AI solutions". Europe should be ready to act upon the new challenges, as they will affect different areas of our lives, from work to privacy, from governance to public research. In this context, the European Commission needs to mitigate the risks and prepare citizens for a smooth transition. Commissioner Bieńkowska went on by saying that "we need to avoid unnecessary anxiety based on far-fetched take-over scenarios that

could distort public perception of AI". She also encouraged companies and firms to get involved in the European Industrial Strategy.

**Reinhard Bütikofer** MEP, Rapporteur "Digitising Europe" and Member of the Industry, Research and Energy Committee (Greens/EFA, DE), moderated the discussions and together with **Luigi Galdabini**, President of CECIMO, welcomed all participants.

## Stay on top of AI technology and pursue an EU approach

Increased computing power, advances in machine learning and the availability of vast amounts of data have fuelled the progress of AI, which has become increasingly important for our economy and society, underlined **Juha Heikkilä**, Head of the Robotics & Artificial Intelligence unit in DG Connect at the European Commission. As AI is attracting a great deal of investment worldwide, Europe should maintain and strengthen its excellence in this area and also "democratise" access to AI technology to ensure that citizens and companies, as well as SMEs, could fully benefit from it. "The stakes are very high and we cannot afford to be left behind", he said, emphasising that if Europe wants to be a leading international player in AI, it is critical to pool our resources. Therefore,



Juha Heikkilä, European Commission





Max Andersson MEP

the European Commission is developing an EU approach to AI, which will be presented in 2018.

**Max Andersson MEP** (Greens/EFA, SE) drew attention to the importance of achieving inter-operability of standards, to encourage innovation. He also called for clear liability rules and for an EU Agency on Robotics and AI.

**Reinhard Bütikofer's** main concern was linked to the risk of under-regulation. He clarified that, at the global level, the EU should not stand by and allow the development of business models that create "de facto" regulatory standards and technical specifications set by others, like US or China.

#### Strike the right balance between innovation and safety

For **Felicia Stoica**, Policy Officer for the Machinery Directive at DG GROW of the European Commission, safety in digitisation must not be forgotten, being one of the main regulatory purposes of the European Commission. As an example, she mentioned the consultations on the evaluation of the Machinery Directive. Ms Stoica explained that the vast feedback from the stakeholders highlights that the Machinery Directive is fit for purpose of innovation. Technical details will continue to be left to standardisation bodies, where industry plays an important role.

**Jean-Camille Uring**, Executive Board Member at Fives Group, pointed out the increased availability of machine-generated data and AI's positive impact on customisation of products, safety and efficiency. For example, AI in additive manufacturing can help identify if something has gone wrong when the machine progressively adds material, layer by layer. Timely response is of utmost importance when considering

that additively manufactured parts could end up in planes or bodies. In this context AI can ensure, through quality and control processes, that fewer production hiccups are encountered along the way and thus contribute to increased safety.

#### Ensure coherence between the different EU policies and increase regulatory certainty

**Henna Virkkunen MEP** (EPP, FI) agreed on the need for European cooperation to bridge Europe's gap with US and China on AI. Currently, several Member States are working on their national strategies and Finland is among those mapping the future of AI in the country. According to a recent report, Europe is clearly lagging behind its international peers on AI, due to scattered data and inconsistent legislation. The European Parliament will work on effective data utilisation (free flow of non-personal data) in the EU for a faster adoption of AI.

**Julia Reda MEP** (Greens/EFA, DE) identified the proposed EU Directive on copyright in the Digital Single Market as a potential barrier to enabling AI and Machine Learning. She argued that, with the new exception to copyright for so-called "text and data mining", the European Commission may have brought an obstacle to AI development for companies.

According to **Thomas Runkler**, Researcher in Digitisation and Automation at Siemens, Siemens is investing a significant share into AI projects. He claimed that digitisation is quickly moving to the forefront of advanced manufacturing, and so are new business models enabled by it. Therefore, it remains important to focus on industrial platforms that represent a precondition for digitisation of manufacturing. For example, Siemens has carried out an IIoT project with the Spanish railways, which,



Felicia Stoica, European Commission



Henna Virkkunen MEP



Paul Rübig MEP



Jean-Camille Uring, Fives Group



Nicholas Hodac, IBM Europe

thanks to advanced data analysis, has dramatically curbed train delays.

**Andreas Rauch**, Head of Digital Transformation at GF Machining Solutions, illustrated the benefits of AI and machine learning in the machine tool sector. These technologies can support process monitoring and foster machine connectivity; a critical aspect for increased machine efficiency. There is an issue though with the regulatory aspects of machine connectivity: different applicable regulations contribute to an unclear picture when it comes to the ownership and resale of machine-generated data to customers, especially those located outside Europe.

#### **Unleash the full potential of AI and machine learning technologies**

**David Le Goff**, IoT Lead Architect and EMEA Manager at Hitachi Vantara, gave some examples of machine learning in manufacturing enabled by sensor data. Hitachi works on data visualisation, optimisation of factories and machines, and predictive maintenance. Machine learning algorithms are used to bring about anomaly deduction. Hitachi has run a collaboration with a car maker, where machine learning helped in detecting anomalies during milling or forming operations.

**Nicholas Hodac**, Government and Regulatory Affairs Executive at IBM Europe, explained that at IBM they

are guided by the term “augmented intelligence” rather than “artificial intelligence”. The focus is on practical AI applications that enhance and scale human expertise. IBM principles for the cognitive era are algorithm transparency, data responsibility and humans to be always in control. In his view, there is no need to tax robots or further regulate AI.

#### **Invest in digital skills to prepare the workforce for automation and AI**

Panelists raised the importance of skills for the development of AI technologies in Europe. To **Paul Rübiger MEP** (EPP, AT), if addressed properly, AI can bring a lot of benefits. Machine learning can allow for generalisation and customisation, according to the specific needs. Dr Rübiger also noted the relevance of skills, education and training to unleash the full potential of AI.

**Tomas Hedenborg**, Chief Executive Officer at Fastems, emphasised the changing skills landscape at global level, giving the example of China, where 1 out of 3 jobs could be automated. In the case of a Finnish car manufacturer, automation was a driver for job creation and economy growth; 600 robots work alongside humans. The boosted competitiveness through robots in specific activities has led to hiring 3000 additional human workers in others. He advocated that premature regulation on AI and machine learning should be avoided, especially in the B2B world. ■



Tomas Hedenborg, Fastems



Julia Reda MEP



David Le Goff, Hitachi Vantara



Thomas Runkler, Siemens



Andreas Rauch, GF Machining Solutions



# Commissioner congratulates CECIMO for filling skills' gap

by Marianne Thyssen, European Commissioner for Employment, Social Affairs, Skills and Labour Mobility



## What was said

**"Europe is a leader in delivering education and training. Nevertheless, new transversal skills are demanded more and more by the EU industry which combine different competences such as problem solving, leadership, adaptability, entrepreneurial skills etc. The biggest risk is that Europe will miss the speed of change and will not be able to provide the skills needed to enter the economy".**

Michael MERKLE  
CEO Agathon AG



## What was said

**"Upskilling and reskilling is an urgent business priority. Governments must invest more to education and training to prepare all workers for the new jobs in the future".**

Marc VAN OPSTAL  
Managing Director  
NEDSCHROEF HERENTALS N.V.



Technology is changing the way people live, work and do business. Digitalisation and automation are framing our future. This creates new and exciting opportunities, but at the same time challenges. Many of today's jobs did not exist a decade ago. New jobs in the future will require new skills. We need to ensure our workforce is ready to reap the benefits of change. Because our capacity to continue driving innovation in Europe will, to a great extent, be determined by how much we invest in people and their skills.

Today, more than 30 million workers form the backbone of the manufacturing industry in Europe. They make the world-class products that keep us ahead of other global competitors.

Manufacturing, together with other key sectors like renewables and green technology, have the potential to drive innovation. But in a fast-changing world, the question of which skills are relevant, and how to anticipate these skills needs is crucial. Without the people with the right skills they cannot reach their potential.

That's why, in 2016, I launched a "Blueprint for Sectoral Cooperation on Skills" under the new Skills Agenda for Europe. This initiative focuses on closing the skills gaps in key economic sectors. Industry-led partnerships will map skills needs and trends in their sector which are holding back growth. The idea is to develop new curricula that address gaps and ways to boost development of the skills needed.

Additive manufacturing and 3-D printing is one of the 11 sectors that we have identified to implement the Blueprint. This sector requires multidisciplinary teams formed by people with highly diverse backgrounds and skills sets that are

at the heart of the race for global competitiveness and leadership. Additive Manufacturing and 3D-Printing sector, one of the most disruptive advanced manufacturing technologies, is expected to have an economic impact up to €200-500 billion annually in 2025.

Setting up a sustainable Erasmus+ Alliance on skills development between key industry stakeholders in the sector and education & training will be an important step. We know from the past what difference European cooperation can make. European cooperation brings new ideas and approaches to national reform processes, not only at political but also at the grass-roots level. Business and industry, anyway, think in terms of transnational supply chains and not in national ones. European sectoral cooperation on skills can adjust education and training to this reality. Growing automation of manufacturing processes will require all industry workers to have increased technical skills. Workers will need to acquire skills in digital techniques, computing, analytical thinking, machine ergonomics and manufacturing methodologies. By educating and training our students and labour force we will ensure that Europe stays at the forefront of disruptive technologies.

I am pleased that CECIMO, the European association for the additive manufacturing industry, is a strong ally in defending the added-value of EU-funded initiatives on education and training issues by being actively involved in European-funded projects on entrepreneurial skills in the machine tool industry and developing vocational training and apprenticeships in 3D-Printing. ■

# Strengthening Europe's competitiveness through digital industrial platforms

by Max Lemke, Head of Unit "Technologies and Systems for Digitising Industry", DG CNECT, European Commission



Max Lemke

To strengthen Europe's competitiveness, we need both the digital technology building blocks – like smart sensors, robotic components, artificial intelligence, data analytics tools, the Internet of Things and mobile communication systems –, and at the same time the means to integrate those building blocks into applications and processes.

The European Commission, in line with the Digitising European Industry initiative and through Horizon 2020, strongly supports Public-Private Partnerships (PPPs) that develop the future digital technology building blocks. Under the EU's Horizon 2020 programme, there are PPPs in key digital technologies such as 5G, data value, High Performance Computing, cybersecurity, photonics, robotics and electronic components and systems. They are successful in joining efforts at European level for digital industrial innovations in different fields and in attracting investments by industry.

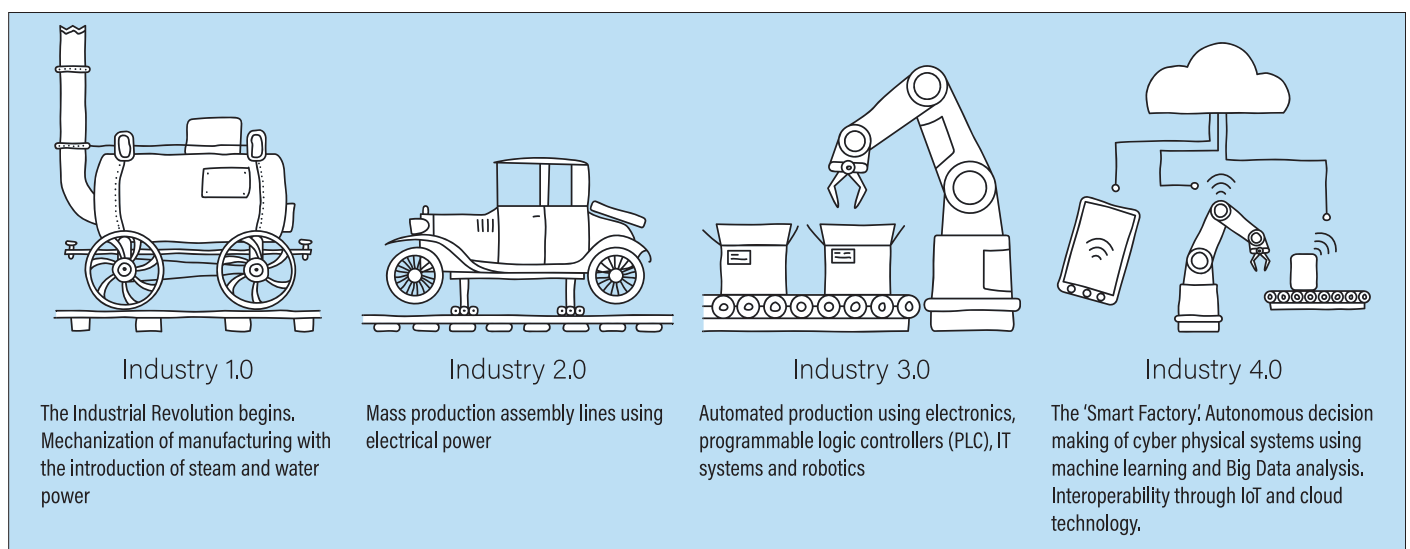
A very good example is the Electronic Components and Systems for European Leadership Joint Undertaking (ECSEL), a special type of PPP, which shows that alignment of regional, national and EU strategies is feasible and that they can draw considerable private investments and achieve a ground-breaking impact on competitiveness. ECSEL has aligned national and EU industrial strategies beyond research and innovation and contributed significantly to reversing the decline in production of digital components and embedded software in Europe.

## Fostering innovation in sector-specific digital industrial platforms

In addition to the technology-oriented PPPs, other partnerships and collaborations focus on the application and integration of different technologies in specific industrial sectors. That is the case for the PPPs on Factories of the Future, on a Sustainable Process Industry, or for EU initiatives on connected and automated driving.

They underline the importance of the integration of key technologies into future sector-specific digital industrial platforms covering full value chains across the EU, and the integration of large-scale piloting and experimentation to gradually develop and mature those platforms. Digital industrial platforms combine various functions implemented by different technologies via clearly specified interfaces, and make data available for use by applications. For instance, in a smart factory, a platform could take data from the machines on a shop floor, make it accessible to monitoring and control applications, allow third-parties to develop applications based on that data, and also connect different stakeholders such as users and application developers or OEMs and suppliers.

Nowadays, no single company is able to cover the entire value chain on its own; it needs the products and services of other companies. Therefore, companies need to agree on how their technologies and systems in a certain sector can be integrated, what the interfaces are and how specified functions can be implemented. Within this context, reference architectures such



as Reference Architecture Model Industry 4.0 (RAMI 4.0) or Industrial Data Space (IDS) are key to facilitate the exchange and connection of machines and data between different companies within a secure business ecosystem.

These industry agreements on platforms are essential for creating new markets and opportunities for Europe. Good examples are the Connected Factories cluster of platform projects under the Factories of the Future PPP, and the ECSEL Lighthouse Initiative Industry 4.E, which was launched in 2017. The latter offers a "container" of coordinated projects in the ECSEL Joint Undertaking and beyond. Industry 4.E is starting from the new ECSEL project Productive 4.0 and is based on the previous successes of ARTEMIS projects Arrowhead and Crystal.

Equipped with appropriate business models, digital industrial platforms ultimately create ecosystems of different groups of market actors in a multi-sided marketplace. Similar in importance to online platforms in the consumer market, digital industrial platforms are key for placing Europe in the lead of the digital transformation.

#### **Investing in platforms and piloting in Horizon 2020**

For the period 2018 to 2020, the EU is investing more than €3 billion in public private partnerships

on digital technologies and digital transformation, roughly 2/3 on the development of digital technology building blocks and 1/3 on digital industrial platform building, large-scale piloting, pilot lines and related actions.

For example, the EU will invest €300 million in supporting strategic next-generation platform building and piloting through large-scale federating projects. The objective is to foster user-supplier co-operation and link Member States and industrial investments under common EU-wide strategies in areas such as digital manufacturing platforms for connected smart factories, agricultural digital integration platforms, smart hospital of the future, smart construction or big data solutions for energy. These projects will focus both on platform building as well as on large-scale piloting, ecosystem building and standardisation.

Europe's machine tool industry is an important actor in this ecosystem and the sector plays a key role in securing Europe's future welfare. I strongly encourage machine tool building companies of CECIMO and its associations to participate in related EU activities, so that we can join forces under large-scale federating projects that make a real impact for Europe. ■

## **Fostering data sharing between companies in Europe**

by Catarina Arnaut (everis), Marta Pont (everis), Arnaud Berghmans (everis) and Malte Beyer-Katzenberger (European Commission)



**Catarina Arnaut**

The European Commission is committed to building a European data economy that takes advantage of data to spur economic growth, create jobs, and promote societal progress. To this end, the European Commission has been working on developing and adjusting its policy and legal frameworks. Since 2014, several policies have been issued<sup>1</sup> and a very important piece of legislation<sup>2</sup> has been adopted to regulate and harmonise data protection across the European Economic Area (EEA). Ultimately, the European Commission is currently dedicated to creating clear and adapted policies and laws for the data economy<sup>3</sup>, removing obstacles to the movement of data, tackling legal uncertainties, fostering data sharing and re-use, and promoting new data business models.

In order to deepen its understanding in relation to distinct topics that are crucial for building the so-called 'European data economy', the European Commission has been funding a

number of studies. These studies support the European Commission in designing evidence-based and user-centric policies and legislation. Most recently, a study on data sharing between companies in Europe has been commissioned to everis (consulting company). This study runs from July 2017 to February 2018 and aims at: 1) estimating the quantitative dimension of data sharing and re-use between companies inside the EEA, 2) identifying missed business opportunities resulting from the lack of access to relevant data, 3) determining the obstacles to data sharing and re-use among companies, and 4) ascertaining success factors of data sharing among companies. This study targets 31 countries (28 EU Member States, Norway, Liechtenstein and Iceland) and companies with different sizes (from micro to large companies) operating in six specific sectors<sup>4</sup>, including manufacturing and processing.

To achieve the above-mentioned objectives, everis launched a survey targeting companies,





#### What was said

**“Trust on the quality of data and fear of data misuse are often seen as the biggest obstacles to B2B data sharing. Turning data into business applications and intelligence is one of the next challenges for the machine tool builders. Capturing the value of data is empowering OEMs to innovate”.**

Bruno CATHOMEN  
CEO Mikron Group

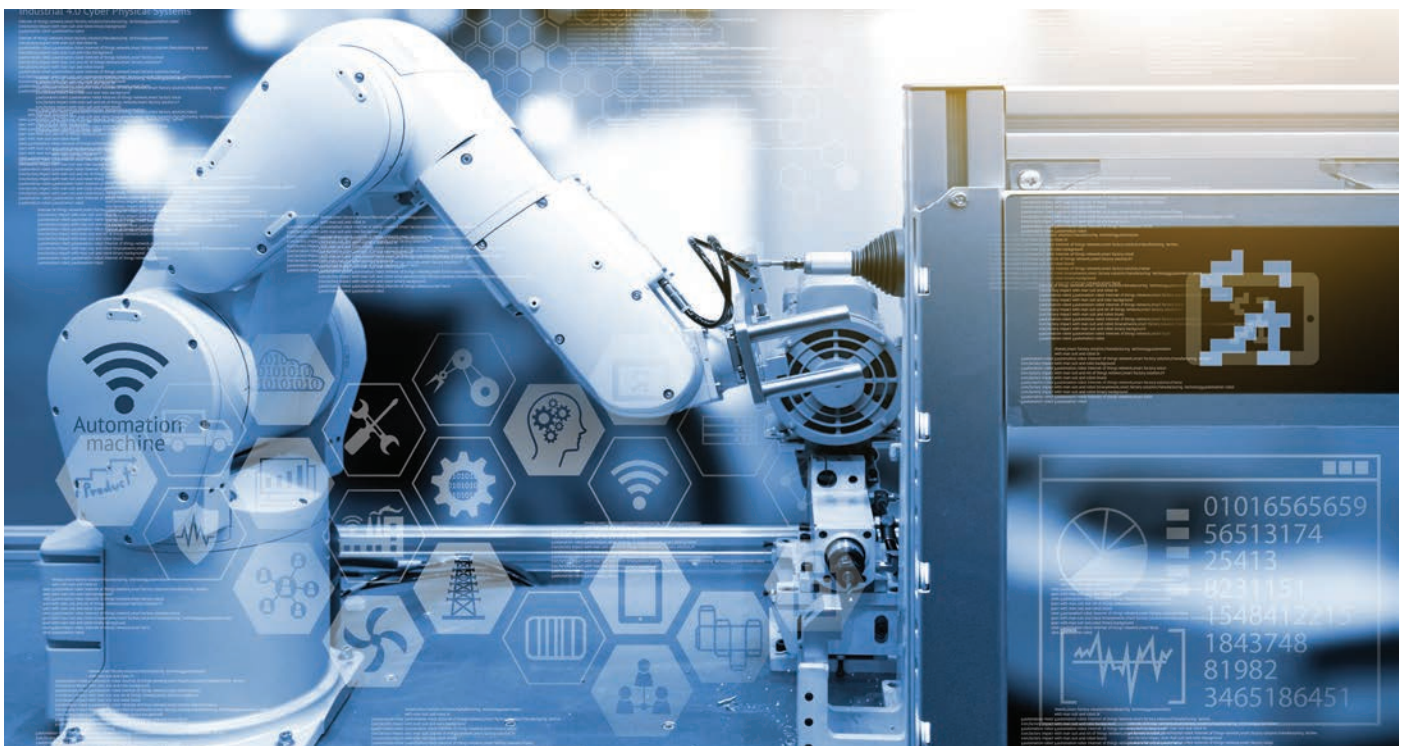
which ran from mid-August to end-November 2017, to collect information about data sharing and re-use in business-to-business (B2B) relations, as well as insights to estimate missed business opportunities resulting from the lack of access to relevant data from other companies. Simultaneously, everis identified and interviewed a limited number of companies from different countries, sizes and sectors to describe a set of inspiring case studies of B2B data sharing. Finally, a series of webinars were organised to showcase the experiences of some of these companies, discuss obstacles to and success factors for data sharing, and debate recommendations for future policies impacting on the European data economy.

everis is currently analysing the data and information collated through the survey, interviews and webinars. Therefore, the final results of the study cannot be disclosed at this point. A conference was organised in Brussels on 12 January 2018 to present the main findings of the study. Nevertheless, some issues can already be discussed based on existing studies and on insights gathered during the last months. First, there is not a common understanding of ‘data sharing’ in business-to-business relations. This concept is often regarded with suspicion and misinterpreted as sharing high volumes of different types of data for free that will negatively impact on businesses. Conversely, B2B data sharing actually offers the possibility to monetise a company’s data, but also to make data available for free or in exchange for other data or a service. Second, although the concept of ‘data sharing’ is rather new and unknown, there is evidence that companies have been sharing data among each others for several years now. There are different ways to securely share data between

companies. For instance, in the manufacturing sector, industrial data platforms are being created to enable an exchange of data that mutually benefits the companies joining such platforms. Finally, although companies are encouraged to share and re-use data among themselves, obstacles to data sharing still exist. As pointed out in previous studies<sup>5</sup>, legal barriers in terms of uncertainty about data ownership and usage rights, interoperability issues, lack of data skills, fear of losing competitive advantage, difficulties with estimating the value of datasets, or data restriction measures are amongst the most common cited obstacles to data sharing.

The study on data sharing between companies in Europe is expected to further contribute to policy-making in this area, to eliminate barriers, address legal constraints and raise awareness about the potential of B2B data sharing and re-use. ■

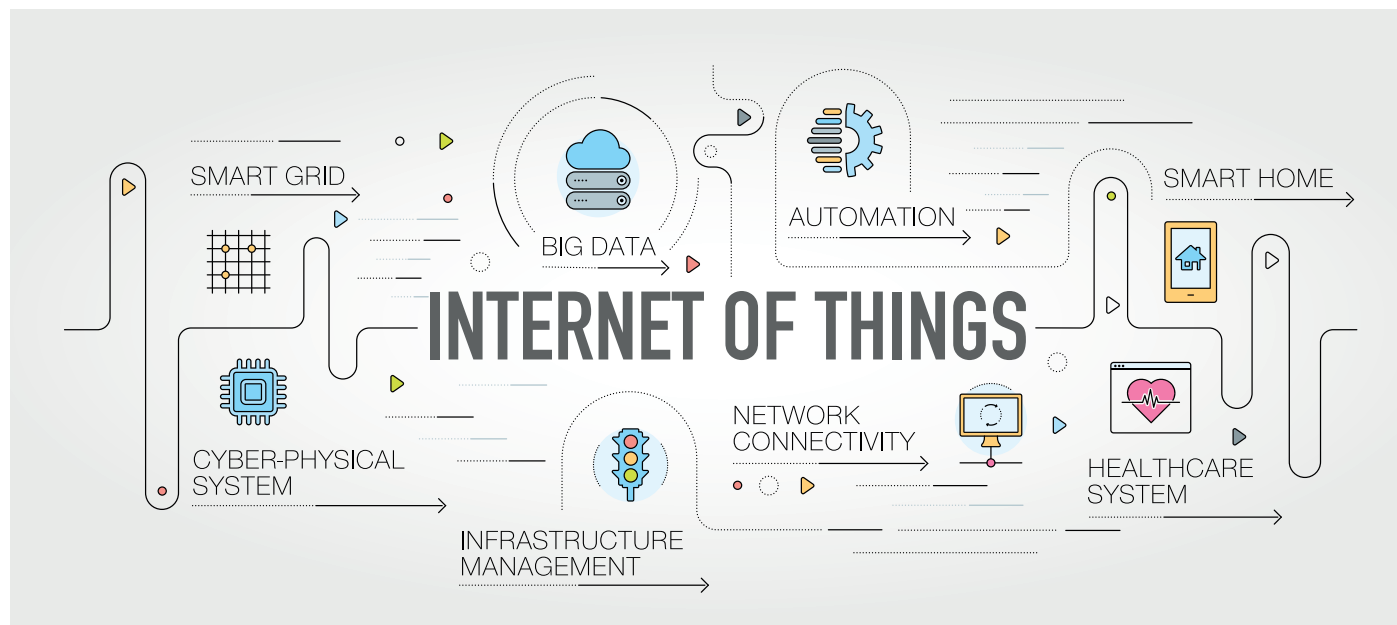
1. Read about the most recent policy developments at: <https://ec.europa.eu/digital-single-market/en/policies/building-european-data-economy>
2. Check out the EU General Data Protection Regulation at: <https://www.eugdpr.org/>
3. See, for example, the Proposal for a Regulation on a framework for the free flow of non-personal data in the European Union at: <https://ec.europa.eu/digital-single-market/en/free-flow-non-personal-data>
4. The complete list of targeted sectors include: agriculture, automotive and transport, energy and utilities, manufacturing and processing, telecommunications and smart homes.
5. See, for instance, the final report of the European Data Market Study (2017) at: <http://datalandscape.eu/study-reports>





# Internet of Things: focus on an increasing cybersecurity threat

by Symantec Corporation



The Internet and the exponential increase in use of mobile devices have changed the way businesses and users work, interact and access information. Over the past years, the Internet of Things, abbreviated IoT (meaning the ability of devices/ objects to connect and exchange data through an Internet connection), has evolved from a concept to a commonly-used feature in a hyper-connected world. Today, IoT is not only present in consumer's everyday life (i.e. people connecting their mobile devices to their home appliances such as alarm systems and thermostats, medical devices such as electrocardiograms or even connected cars), but is also used to run complex automation processes such as industrial control systems. Predictions show that by 2020 up to 20 billion devices will be connected to the Internet. And while IoT has become increasingly important to companies and citizens, the exponential increase of targeted attacks at IoT devices shows that manufacturers, operators and users often overlook the importance of cybersecurity capabilities of their Internet-connected devices, and that the consequences of an attack to such devices can often be critical.

As leading global cybersecurity solutions firm, Symantec has monitored and analysed these patterns, and provides solutions to detect and mitigate such threats. As stated in the Symantec'

2017 edition of the Internet Security Threat Report (ISRT), "while attacks against traditional desktops and servers have dominated the threat landscape in terms of numbers, other platforms such as technologies that enable IoT have become the new favorite target of attackers". Symantec warned about the insecurity of the Internet of Things already in 2015. However, it would have been hard to predict the level of attention IoT and its security, or lack thereof, would receive in the last quarter of 2016. The reason for such attention comes down to one word: Mirai. The Mirai botnet, which is made up of IoT devices, was used in a number of high-profile distributed denial of service (DDoS) attacks towards the end of 2016, with almost 50,000 unique IPs hosting Mirai-infected devices (mostly webcams) attempting to launch attacks on its network. One of these attacks, which hit the domain name system (DNS) infrastructure, brought down large, well-known (social) media and many other websites in Europe and US.

Symantec has deployed honeypots (intentionally vulnerable computer systems used as a decoy to attract hackers and track or identify malicious activities performed over the Internet) for the specific purpose of IoT vulnerabilities, and the figures have shown that attacks on such devices have almost doubled from January to December



#### What was said

**“Security and resilience of the entire Internet of Things ecosystem in industrial implementations is key for our industry. Nevertheless, we maintain that the EU cybersecurity certification scheme should remain voluntary and industry lead. A risk based approach for the proposed scheme is desirable considering that different IoT devices pose different risks”.**

Juha MÄKITALO  
President FINN POWER OY

2016. Furthermore, in 2016 IoT devices were responsible for the biggest DDoS attack ever seen, where an attack on a large Cloud provider peaked at 1 Tbps (Tera-bytes per second), was the largest DDoS attack ever recorded. It was primarily driven by the Mirai botnet.

The number of IoT devices will continue to grow and this may lead to increased calls for regulation of the IoT-related technologies as the only way to deal with the security of devices. Though there is not one way to fix a complex problem like this, risk-based baseline security standards are part of the solution. Other solutions could for instance include security by design, in particular where the IoT is used for critical purposes (i.e. industrial control systems used in nuclear power plants or electricity grids). Manufacturers should take the lead and the initiative in designing or adding cybersecurity solutions in the products that they are sending to market.

From the European perspective, the EU institutions strive to close the negotiations on a draft legislation called ‘the ePrivacy Regulation’, which will set new obligations for the confidentiality of electronic communications (that also covers metadata or data emitted by IoT devices) of both businesses and end users. While this file aims at regulating telecom and OTT (Over-The-Top) operators in its original proposal, it is also intended to cover machine-to-machine communications. Lawmakers need to ensure that the security industry can also rely on clear rules where access to the communications will be permitted for cybersecurity purposes. It is critical that such new legislation achieves a true single market promoting the use of IoT without hampering cybersecurity. ■



## Security, safety and trust

by Clare Miranda Moody, Member of the European Parliament



Clare Moody

Cybersecurity has to be at the forefront of actions taken by the EU, both for the security of our societies and, more specifically, for industry. Cyber-attacks are a global phenomenon and, as with so many other areas, we are more effective at combatting this international phenomenon if we work together across borders. We must continue to work across the EU to develop innovative ways to tackle the threats we face in this digital age; from delivering data security to monitoring terrorist activities, safety and trust across Europe depend upon continuing dialogue between manufacturers and EU legislators. Maintaining Europe's success as a manufacturing base rests on the way we innovate to respond to these 21st century threats. Our future lies in being a knowledge economy. I am pleased we are taking

steps at an EU level to deliver this, and believe that its impact upon how we approach security issues cannot be underestimated.

Horizon 2020 is the largest research area in the world and a key programme when looking at these security, safety and trust issues. The most advanced work in cyber security comes when the public sector works with the private sector to develop crucial tools for tackling attacks on our safety. Horizon 2020 contributes to the sharing of knowledge and the delivery of effective cybersecurity industry projects in a way that working in isolated silos wouldn't deliver, and I believe that this must continue and develop, providing added value for all Europeans. Whilst it is imperative that mainstream research funding is



#### What was said

**"Confidence in the security of networked systems is crucial for people, businesses and governments. There is need for increased cooperation between member States, business and other stakeholders to prevent and mitigate cyber-attack incidents and the creation of awareness and skills about this important topic".**

Massimo CARBONIERO  
Managing Director and  
Partner OMERA SRL

kept separate from defence funding, investment in research and innovation is integral for maintaining safety across Europe.

As our technological capabilities develop, for example with the rapid pace of Artificial Intelligence and machine learning development, we cannot lose sight of the importance of public trust. We must realise the need to allocate more resources to excellence-based research long into the future to ensure that we have the highest level of security for these systems, as well as an understanding of how people interact with them. As those wishing to create instability and terror increase in sophistication, we must match them with a considered pan-European response.

Unfortunately I cannot discuss European security without mentioning the problems brought about in this area by Brexit. The UK's withdrawal from the EU will present challenges to security both in Britain and in the EU. Up to now 28 countries, including the UK, have worked together to make our societies safer and we must now work together to ensure that we keep as much of that collaboration as possible. If the UK is to leave the EU, it is crucial that it continues to mirror EU security legislation, including the Directive on Network and Information Security (NIS), which forms the bedrock of commitments to the prevention of cyber-attacks. Similarly, we must persist in demanding the continuing compliance with EU data protection law in order

to keep consumers safe. I believe that we should be pushing for increased fines for those digital companies who do not protect their users, and this in turn would provide a further incentive for those companies to invest in cyber security innovation, which can only benefit European citizens. We cannot allow the digital economy to leave behind any citizens, and must work to ensure that it benefits all.

Furthermore, British manufacturers who will continue to operate across the EU after our withdrawal will need to adopt the EU's regulatory regime, which provides another compelling reason to mirror EU legislation as a reduction in bureaucracy for those British firms. We must continue to support manufacturers and digital firms, in part due to their pivotal role in the fight against cybercrime.

Much of the technology that we all now take for granted was developed with government support. The public private collaboration at an EU level gives us the scale to make sure that we continue to be at the forefront of the ongoing global technological revolution. Hand in hand with that work must go an unrelenting effort to keep these systems safe from the volume and increasing sophistication of cyber-attacks that we are witnessing. Together we can ensure that society benefits from a successful and safe manufacturing sector. ■



# The Impact of Brexit on European Manufacturing

by Filip Geerts, CECIMO Director General

When I speak with member companies in the UK about Brexit they focus on the potential business impact. They stress the importance of tariff-free access to the European single market, frictionless trade as part of the Customs Union and Regulatory equivalence.

Free movement of goods is of utmost importance for most of the UK machine tool builders, as approximately half of UK production is exported to the EU.

The UK is certainly a strong market for important sectors such as aerospace, automotive, energy and medical; however, the overall consumption of Machine Tools is about 2% of the European market. This means that the UK manufacturing technology providers consider Europe their "home" market.

The single market was established in 1992 and has been developing since then. It is no surprise that UK Machine Tool companies have embraced the opportunity of a local large homogeneous market and have also used the Customs Union to develop seamless logistics solutions for the distribution of completed machine tools across Europe, the

warehousing and distribution of spare parts and also to benefit from the European supply chain for key components and technologies. The harbours of Antwerp and Rotterdam are used extensively for shipping machines from the UK, and also for importing machine tools from other parts of the globe. The logistics models include use of bonded warehousing, simplified administration, tax and VAT arrangements and are all facilitated by the Single Market and Customs Union. Uniquely in 2016 the consumption of machine tools in Belgium was only 16% of imports, and 15% of exports; very different from the other EU countries and clearly illustrating the importance of Belgium as a trading hub for the industry.

The UK Government's objective is to negotiate a free trade deal with the rest of the EU to mitigate the effect of Brexit on goods manufacturer - something that the thriving automotive sector in the UK is demanding. However, should the negotiations result in additional bureaucracy and cost; then the UK manufacturers will be forced to look at their logistics models. In that respect the intention of both the UK and EU to agree transitional arrangements for a period of around two years is seen as critical in allowing companies



Press conference following the 5th round of Brexit negotiations: David Davis (left) and Michel Barnier (right).  
Picture © European Union 2018





Picture © European Union 2018

to adapt to any new arrangements with minimal disruption.

Based on my investigations, I have to admit that none of the companies I solicited plans to reduce its manufacturing capacity in the UK; however, there are concerns that if the final Brexit arrangements damage their competitiveness it may reduce the level of future investments.

It is important to note that a post-Brexit free trade deal may not cover all the complexities of manufacturing and supply chains, and each element must be carefully negotiated. Most companies will expect the free movement of engineers between the UK and Europe for short term visits (commercial and technical) even if rights of permanent residency are restricted. Another issue that must be specifically addressed is “rules of origin”, which may then be applied for exports to qualify as free and frictionless trade. Fortunately, the machine tool companies which already did an initial analysis, state that their machine tools will continue to be classified as “UK origin”, due to the significant local added value and content. However, a detailed analysis will need to be done by all UK manufacturers, as many UK suppliers are importing equipment from the EU with no added value.

On a different note, machine tools are classified as “dual use” goods, according to the International agreements on export control. Unless specifically dealt with in the Brexit process, there could be

an additional administrative burden to acquire export licenses for UK-built machines destined for the EU and vice versa.

The message I got from a UK business perspective is disappointment and concern about the British decision to leave the European Union. Mr. Marcus Burton, Yamazaki Mazak UK, told me: “The single market is effectively the “home” market for UK manufacturers. For UK machine tool builders, their UK manufacturing companies have a much bigger market as part of the EU, as opposed to the UK alone. This gives the critical mass for competitive manufacturing. With a common regulatory framework, they can supply goods as easily to Milan as Edinburgh. The expectation is that the arrangements agreed post-transition will preserve these benefits”.

All in all, as a governmental affairs guy and not a business man, I have to add that the UK government’s interpretation of the UK referendum result – meaning that the UK should leave the single market / customs union – was a political judgement with potential unintended consequences for manufacturers and supply chains that need to be mitigated. I very much hope that the UK will set out the kind of the future relationship our UK member companies want to have with the EU and that the necessary assurance will be provided to UK manufacturers to reduce uncertainty. ■

# The EU sets eyes on new long-term R&D priorities

by Vincenzo Renda, CECIMO Innovation Policy Officer



The benefits of collaborative EU-funded research are well-known: for example, opportunities to pool together know-how, group infrastructure capabilities under a common roof and curb the duplication of efforts.

In emerging areas like additive manufacturing (AM), also known as 3D printing, EU research projects are proving to be a valuable contribution to industry progresses. They are helping on the technical side, for example by addressing issues about AM feasibility for large-parts or multi-material production, like the KRAKEN Project. They are also contributing to the identification of market, business and regulatory bottlenecks that hinder the adoption of AM at a wider level, and proposing viable business models to bring up the technology in Europe, like in AM-Motion.

Certainly, a rise in EU funds for projects supported the growing use of AM applications in European industry. In its first two years of implementation and with a total budget of €95 million, Horizon 2020 dedicated to AM more than a half of the budget that its predecessor did between 2007-2013. The former, however, had a much higher figure compared to the budget of past programmes.

With Horizon 2020 ending in two years time, the EU agenda is focussing more and more on its successor. It is crucial that policy-makers continue this upward path on AM when it comes to EU funding, and, even more, it is fundamental to place this technology at the forefront of EU strategic approaches on research in the industrial field.

In recent talks about the planning of the next Framework Programme, Carlos Moedas, European Commissioner for Research, Science and

Innovation, referred to the so-called “missions” - actions focused on a specific number of research areas -, needs to allocate resources where truly needed and thus increase the chance for commercialization of EU R&D results.

Europe’s engineering strengths make it an important global hub for investments in and developments of AM, a thriving industry which grew world-wide at a rate of 17.4% in 2016. In order to keep such an advantage at the international level, it is fundamental to continue funding AM through EU R&D missions. Last December, China launched the Action Plan on Additive Manufacturing as part of its “Made in China 2025” long-term initiative. R&D plays a key role there in strengthening the country’s expertise on the technology, so, as to deploy it on a large scale across Chinese industry. Specific goals also included the establishment of new AM-related R&D centre, by encouraging foreign companies to invest in China. In the US, America Makes, the country’s public-private partnership on AM, has so far managed, in its five years of implementation, a portfolio of \$100 million for AM technology R&D and workforce.

Through the next EU long-term research programme kicking off in 2021, the EU is presented with a critical opportunity to bolster its efforts on AM and offer evident added value for companies and researchers across the continent. The route to such an achievement is clear: carve out a central role for AM in EU research “missions”, and expand financing for the AM sector in line with its continuous development. ■



## What was said

**" More than half of the total EU expenditure in research, development and innovation is funded by EU Industry. A strong industrial pillar in FP9 and an ambitious industrial strategy should go hand in hand to boost Europe’s future competitiveness".**

Franz-Xaver BERNHARD  
Member of the Board of  
Directors of Maschinenfabrik  
BERTHOLD HERMLE AG

# IT Security: the next challenge for standardisation

An interview with Orio Sargenti, Chair of the ISO/TC 39 Committee



**You have been working in the machine tool sector for most of your professional life and you have also been involved in standardisation at national, European and international level for many years now. How did you come into standardisation and why are standards important for machine tool companies?**

My first work in standardisation was related to specific standards for Electrical Discharge Machining (EDM), first on the Electromagnetic compatibility field, which resulted in the “special” table for radiated emission for the EDM machines, and then on the ISO 28881 EDM safety standard, managed by the ISO TC 39/SC 10/WG 5 (3 years ago I was nominated convener of the WG5).

Standards are very important for machine tool companies because they represent a well-defined, and internationally agreed, way to assess the performance of the product. At European level, because of the harmonized standards concept, standards are also good to assess conformity to the law. I am thinking, for example, about the Machinery or the Electromagnetic Compatibility Directives.

It is important that representatives from the machine tool industry participate in standardisation activities, while we, machine tool manufacturers, together with customers and authorities, are the final users of them and we must ensure that all viewpoints and opinions are considered.

**In January 2018, you became the new Chairman of the ISO/TC 39 on machine tools. What would you like to achieve during your time as ISO/TC 39 Chairman?**

First, I want to continue the work started by my predecessor, Dr. Wolfgang Knapp. During my first contacts with subcommittees and the “know how” transfer I had with Dr Knapp and with Technical Committee Secretary, Rolf Widmer, I realised that most of the work is advancing well thanks to the excellent group of Subcommittee Chairs, Working Group Conveners and experts.

In the long term, the new challenges such as Industry 4.0, Smart Machining or energy efficiency will require specific standardisation activities due to the complexity, and large diversity, of machine tools product (a good example is the long, and still without a solution, process of finding a way to assess conformity with the Ecodesign Directive for the machine tool industry).

Machine tools will be more integrated in networks and IT security will be one of the fields that our industry must address. Actually, it is probably too early to say if it will require standardisation activities from TC 39 but the machine tool industry will have to deal with it.

**CECIMO is actively following the standardisation activities relevant to the machine tool sector and has a liaison with ISO/TC 39 and its subcommittee 10 dealing with safety. In your opinion, how can CECIMO best support the development of standards needed by the sector?**

ISO and CEN, with the Vienna Agreement, decided to jointly develop new standards, preferably under the lead of ISO, to ensure their international relevance. This results in a parallel final formal acceptance voting process, which involves both ISO and CEN.



In the case of harmonised standards, independent consultants verify whether the proposed standard conforms with the requirements of the relevant EU Directive. In the past couple of years, we had some cases where the consultant blocked the standard, requiring formal changes too late in the standardisation process. This resulted in big delays on publication and, in the worst case scenario, to the non European harmonisation of a fully accepted ISO standard.

I think CECIMO can help to find a way together with CEN and the European Commission to improve the process for the development and referencing of harmonised standards.

CECIMO's contribution will also be important in "driving" the European Commission's decision on how to implement the Ecodesign Directive for the machine tool industry.

#### **What are the main priorities for ISO/TC 39 for the next three years?**

We have three major fields of activity that will be important for ISO/TC 39 in the next 3 years:

- Finishing the implementation of the Safety standards for all machine families represented by the different Working Groups inside Subcommittee 10;

- Finishing the development of the ISO 14555 family of standards related to the "Environmental evaluation of machine tools" which – I hope – can be a good base for the implementation of the Ecodesign Directive;
- Starting the work on the new version of the standard related to "Noise of machine tools" and managed by subcommittee 6.

But finally, the major goal will be to:

- finalise the work on the 31 standards currently under development;
- keep the 163 published ISO standards up to date. ■

*CECIMO funds the Secretariats of ISO/TC 39 'Machine tools' and CEN/TC 143 'Machine tools – Safety' and is in liaison with ISO/TC 39/SC6 on noise of machine tools, ISO/TC 39/SC10 on safety and ISO/TC 184/SC1 on physical device control.*

*In her position as CECIMO Manager Technical Regulations Maitane Olabarria actively monitors European and International standardisation developments relevant for the machine tool industry.*



## **New CEN-CENELEC Technical Committee on Cybersecurity and data protection**

As companies embark on digitisation and technologies, such as the Internet of Things or big data, the importance of security is increasing. This is also leading to a growing demand for standards in this area. Against this background, in June 2017, CEN and CENELEC decided to create a new Technical Committee on cybersecurity and data protection (CEN-CLC/TC 13).

The new technical committee will develop standards for data and information protection and security techniques with a specific focus on cybersecurity, covering aspects such as:

- organisational frameworks and methodologies, including ICT management systems;
- data protection and privacy guidelines;
- process and product evaluation schemes;
- ICT security and physical security technical guidelines;
- smart technology, connected objects, distributed computing devices and data services.

The technical committee is still discussing its priorities for the next few years but these will include the identification and possible adoption, as European standards, of standards developed by other standardisation bodies and industry fora, such as those on security and privacy aspects developed by ISO/IEC JTC1 'Information technology'. ■



# CECIMO participates in the new Commission Working Group about standardization for Digitising European Industry

by Maitane Olabarria, CECIMO Manager Technical Regulations



The European Commission launched the Digitising European Industry (DEI) initiative in April 2016. As part of the Digital Single Market strategy, the DEI initiative aims at building on and complementing the various national initiatives for digitising industry with the objective of helping European industry to benefit from digital technologies and innovation.

Following the "High-level Governance Meeting of the European Platform of National Initiatives on Digitising Industry" of November 2017, three Working Groups focusing on standardisation, Digital Innovation Hubs (DIHs) and Public Private Partnerships (PPPs) were created to further support the implementation of the DEI action plan.

CECIMO has been appointed as one of the 28 members of the working group on standardisation. The group reports to both the DEI High-level Governance Group and the Multi-Stakeholder Platform (MSP) for ICT Standardisation and will provide a series of recommendations by November 2018 to accelerate and synchronise the different standardisation activities in this area.

More concretely, the group will:

- Identify, as a starting point, the standardisation needs in the manufacturing sector.
- Map the ongoing activities carried out by different standard bodies for consortia and other groups that are relevant to the digitisation of European industry.
- Develop a model for the synchronisation of the various standardisation activities.
- Propose a first roadmap taking into account existing work and specifying concrete actions that may be included in the Rolling Plan for ICT standardisation.

It is planned to organise 2 open workshops, most probably in June and October 2018, where stakeholders will have the opportunity to provide their inputs in relation to the work carried out by this working group. ■

# Winner Designs of the Additive Manufacturing Challenge 2018



## Aidro Hydraulics wins with a design of 3D printed hydraulic manifold: a real application for Fluid Power.

by Valeria Tirelli, CEO, Aidro, Winner of the professional category of the Additive World Design for Additive Manufacturing Challenge

With over 35 years expertise in the field of fluid power, Aidro Hydraulics now uses Additive Manufacturing to create innovative hydraulic solutions with a high level of design freedom and complex shapes. Indeed, Valeria Tirelli, CEO at Aidro, said "we participated in the Additive World Design Challenge because we love the idea of realising the impossible thing and the previously unrealised projects, due to the limitations of traditional manufacturing processes. With additive manufacturing, we can create highly customised hydraulic components that are smaller, lighter, and often with higher efficiency or performance than those built using conventional techniques." This is the case of our winning design of hydraulic system for mobile application.

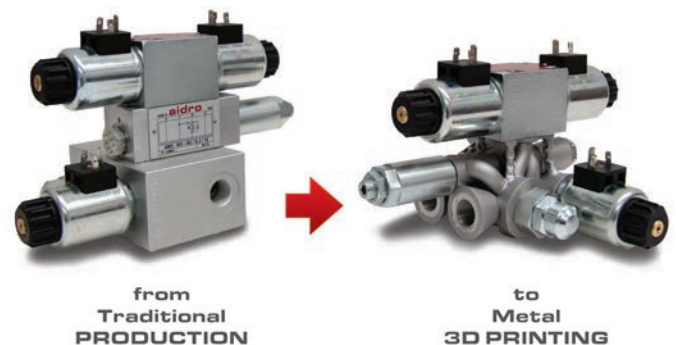
Aidro Hydraulics started the design for AM thinking about the functions of the hydraulic system and the working features, such as the pressure at 350 bar and the maximum oil flow of 60 lit/min. The traditional components have been completely redesigned to minimise weight and space, with a high level of design freedom. In fact, 3D printing overcomes the limitations of traditional manufacturing by positioning flow channels precisely where they are needed and in a variety of shapes and sizes.

Moreover, because of its ability to build internal features and passageways, additive manufacturing is well suited for the design and manufacturing of hydraulic systems. The internal channels of the hydraulic

manifold are optimised for greater flow within a smaller space. Furthermore, the potential for leaks is eliminated because auxiliary drillings (hole plugs) are not needed, as in the CNC milled hydraulics.

Compared to the conventional manifold, the new design has approximately 70% weight reduction and a smaller size (30% reduction), that make it suitable to be integrated into mobile systems.

Aidro Hydraulics won the jury over with the massive applicability and commercial viability of their design of a hydraulic system. ■

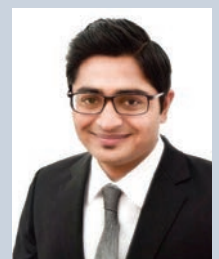


## FUNCTIONALLY INTEGRATED GEAR AND SHAFT

by Yogeshkumar Katrodiya, Student at the Fraunhofer Institute, Winner of the student category of the Additive World Design for Additive Manufacturing Challenge

For many years we have seen the same design of gear and shaft, which is one of most common industrial part for many sectors. But now it is possible to redesign every industrial product without compromising its functions and taking advantage of design freedom from Additive Manufacturing Technologies. In a gearbox, providing enough lubricant, which is used for cooling the gears, consumes a large amount of power. And also another limitation of the gearbox is heavy weight due to higher number of components.

To overcome this problem, Applying Topology optimisation approach on gear and shaft, with the help of SolidThinking Inspire software, makes the gear and shaft 50% lighter than the original weight. And for providing enough lubricant with low power consumption, the Helix shape of conformal cooling channels introduces into gear and shaft, which drawn fluid from one end of the shaft to the gear teeth. This unique shape of channels helps lubricant to spread around the channels' wall, while the gear and shaft are rotating. The complexity of this part shows what will be possible with Additive Manufacturing Technologies in the near future. ■



## METALS project develops curriculum for additive manufacturing

by Maitane Olabarria, CECIMO Manager Technical Regulations



METALS booth at the last edition of EMO Hannover.

METALS – Machine Tool Alliance for Skills – is a three-year EU funded project coordinated by CECIMO under the Erasmus+ programme. It aims at increasing the competitiveness of the European machine tool industry by providing the sector with the skills needed to benefit from new disruptive technologies.

Mid-2017, METALS' partners published the METALS skills panorama, offering an overview of the current skills' needs in the machine tool industry until 2025. Following the analysis of the results from surveys, workshops and interviews with experts, project partners concluded that additive manufacturing (AM) is a key area for training due to the potential impact of this technology on the sector.

In line with these findings, the METALS consortium has prepared a curriculum for an additive manufacturing operator. The curriculum is divided into three knowledge areas in accordance with different types of learning outcomes.

These three areas are:

- Additive manufacturing specific area;
- Work process oriented area, and;
- Entrepreneurship oriented area.

The curriculum offers a comprehensive approach to training. It describes learning units and formal learning outcomes and covers both technical and soft skills needs in AM. It is targeted at knowledge and skills needs at EQF (European Qualifications Framework) level 5.

The learning units described in the curriculum are the building blocks of an online AM learning course now under development. A first version of the online course will be available in the first quarter of 2018. Following a pilot test of the course the final version will be available on the METALS e-learning platform before the end of the project in October 2018.

For more info, visit [www.metalsalliance.eu](http://www.metalsalliance.eu). ■

This project is co-funded  
by the European Union





# AM-Motion gives a clear overview of gaps and opportunities in the European market

by Vincenzo Renda, CECIMO Innovation Policy Officer



AM-Motion, an EU research project led by Prointec and partnered by CECIMO, is identifying striking regulatory, business and technical obstacles for the industrialisation of additive manufacturing (AM) in Europe.

The project consortium mapped out the state of play in AM with regards to its main applications, the technology's maturity across industries as well as the geographical concentration of actors along the AM value chain.

It also finalised a detailed report listing:

- regulatory obstacles for the trade of AM machines in the EU Single Market;
- the IPR framework affecting AM in Europe;
- EU Health, Safety and Environmental legislation impacting on AM.

Project partners are completing a document that offers an overview on the current situation of AM standardisation in Europe. This document provides recommendations to standardisation committees and policy-makers for the development of standards in specific AM areas, such as design, equipment and products. Under CECIMO's leadership, AM-Motion also ran a survey to collect knowledgeable input from a large range of AM actors and end-users about AM skills supply in Europe. The findings will result in an educational implementation model led by CECIMO, to be published later this year.

In addition to the analysis of non-technological barriers for additive production, project partners investigated current developments in seven industrial

sectors with different degrees of AM technology's maturity.

The initiative has also worked on fostering networking and discussions between actors across the AM ecosystem, an important element for a value chain still regarded today as fragmented. CECIMO played a key role in the involvement of industrialists in five expert groups established in the project. Tasked with analysing different aspects of the AM landscape, these groups are providing precious input to the set of activities tackled by partners. ■

This project is co-funded  
by the European Union



# First KRAKEN project results presented during International Conference on Additive Manufacturing



by Maitane Olabarria, CECIMO Manager Technical Regulations

Additive manufacturing is a technology that offers many advantages and is revolutionising the way products are designed, developed, and manufactured. The interest in this technology is growing and we see an increasing number of applications in a broad range of sectors, such as the aerospace, healthcare, automotive or creative industries.

The "International Conference on Additive Manufacturing" aimed at presenting some of the most interesting advancements in relation to this fast-evolving technology, and to discuss solutions to accelerate the industrial adoption of additive manufacturing and most promising markets for the near future. The conference took place on 21 September 2017 during EMO Hannover 2017 and gathered 130 participants. Among the speakers there were high-level experts from world-leading producers of additive manufacturing machines, CAD-CAM software providers, research and development centres and representatives from European initiatives.

The International Conference dedicated an important part of its programme to the presentation of the KRAKEN project, which also supported the organisation of the event.

The project aims at developing an automated machine for hybrid multi-material manufacturing, combining both subtractive and novel additive manufacturing technologies. The aim is to be able to produce large parts up to 20m long with high accuracy and quality in aluminium, thermoset or a combination of both materials.

José Antonio Dieste, Head of the Mechatronic Department at AITIIP and KRAKEN coordinator, presented the project and explained that the consortium has developed new thermoset resin materials, and a novel technology that allows printing parts with deposition rates around 1kg per minute. The project also creates new metal interface layers that will enable the development of hybrid material (polymer-metal) printing in the future. This new development will be the first step for metal additive manufacturing on free form base supports and will enable the production of large dimension components. Mr Dieste also took part in the final discussion panel on the industrialization of additive technologies, together with other leading actors in the industry.

Steve Youngs, Development Director at Vero Software, another partner in KRAKEN, focused on the challenges for CAM software

in hybrid manufacturing, where additive and subtractive operations are integrated in a single machine. As the process' complexity increases, innovative CAM solutions should be able to guarantee ease of use and correctness by ensuring a common workflow and solid computer-based simulation.

The conference was moderated Christian-Friedrich Lindemann, Managing Director at Direct Manufacturing Research Center (DRMC) of Paderborn University and also included the participation of the following speakers: Güngör Kara (Director of Global Application and Consulting at EOS), Marc Saunders (Director of Global Solutions Centres at Renishaw), Daniel Lichtenstein (Head of Market Development Additive Manufacturing at TRUMPF) and Coen De Graaf (Project Leader of Vanguard Project for South Netherlands).

Moreover, KRAKEN partners exhibited the latest developments at the EU Industry Days on 22 and 23 February 2018 in Brussels. To know more about it, read the article on pages 31 and 32.

More info: [www.krakenproject.eu](http://www.krakenproject.eu) . ■

This project is co-funded by the European Union



Presentation of Kraken Project during the International Conference on Additive Manufacturing at EMO 2017.



# 3D printing skills in Europe: 3D PRISM project comes to a successful end

by Vincenzo Renda, CECIMO Innovation Policy Officer



Launched in November 2015 by CECIMO and its project partners and coordinated by University of Sheffield, the 3D-PRISM project came to an end in January 2018.

During the project implementation, partners took a series of valuable activities which have profoundly improved the existing knowledge of the training for additive manufacturing (AM) technologies.

With the objective of aligning educational methodologies and concepts with current developments in AM, the 3D PRISM consortium addressed existing gaps in the EU ESCO taxonomy, which provides a European classification for Skills, Competences, Qualifications and Occupations. Through extensive industry surveys and workshops across Italy, UK and Spain, it identified new occupational profiles in the field of AM, detailing their related

tasks as well as the specific skills needed. On the back of the job profiles obtained, 3D PRISM partners then developed a guide with the descriptions of courses for those profiles. The guide detailed specific aspects like requirements, competences and learning objectives, training activities and assessment methods for each of the courses. On top of that, the consortium produced guidelines for a hands-on training methodology, which illustrates a step-by-step approach to learning and evaluation methods for competences required to produce components with AM. The guidelines included suggestions for software and hardware equipment and, most importantly, gave an overview about existing bottlenecks in training on AM technologies, offering solutions to pre-emptively avoid obstacles incurred by trainers.

The concluding period of the project focused on the successful development of a freely accessible MOOC on AM skills, which was presented in a series of events held by 3D PRISM partners, including EMO 2017 trade fair in Hannover, the largest metalworking trade show in the world, organised by CECIMO.

CECIMO played an important role in promoting awareness of 3D PRISM results among EU policy-makers, thanks to its vast network of relevant actors across Europe.

For further details of the 3DPRISM project, please visit our website at <http://3dprism.eu> . ■



# Our commitment to an EU Industrial Policy: Industry4Europe Coalition and EU Industry Days

At the European level, 126 associations, including CECIMO, joined forces to promote an EU Industrial Strategy that reaches the target of 20% of GDP from industry and tackles the challenges that the industrial sectors are facing. In March 2017 these manufacturing associations signed a Joint Declaration, which we published in the previous edition of the CECIMO Magazine, and launched the Industry4Europe Coalition.

The Coalition has so far gained a great deal of momentum. At the request of the Trio of Council Presidencies, it will contribute to the related work of the Council High Level Group on Competitiveness and Growth, defining priorities for future actions and headline indicators for the EU industrial strategy. Such a recognition came after months of committed promotion among EU representatives.

On 11 July 2017, Filip Geerts joined a delegation from the Industry4Europe Coalition to meet relevant MEPs, such as Jerzy Buzek, Martina Werner, Patrizia Toia and Massimiliano Salini, and hand over the declaration. The delegation also targeted the Estonian Presidency and met Ms Kadri Simson, Estonian Minister of Economic Affairs and Infrastructure. Vincenzo Renda,

Innovation Policy Officer at CECIMO, together with other associations, had the opportunity to present the Joint Reaction Paper to the Consultative Commission on Industrial Change (CCMI) of the European Economic and Social Committee (EESC) on the 21 December 2017 and to highlight our priorities. On 24 January, the Coalition met with Commissioner Elżbieta Bieńkowska and handed over the Joint Reaction Paper, that sums up the main actions to be taken in crucial area, such as skills and trade.

The document was also distributed during the second edition of the European Industry Days in Brussels on 22 and 23 February organised by the Directorate General for Internal Market, Industry, Entrepreneurship and SMEs. The EU Industry Days provided an open forum for organisations, industrialists, companies and public authorities across Europe to contribute to the implementation and monitoring of EU industrial policy.

During the European Industry Days, the High Level Industrial Roundtable "Industry 2030" had its first meeting. This expert group consists of 20 members, and is chaired by Jurki Katainen, Commission Vice-President responsible for Jobs,



**"We are very pleased to participate in the Industry4Europe Coalition for an ambitious industrial strategy for Europe. We are committed to make the industrial transition to a digital, low-carbon global economy a success. We can be a key driver for development of sectoral skills for the jobs of the future and we are investing substantially to ensure the EU leadership in key enabling technologies".**

Roland HAAS  
General Manager  
framag Industrieranlagenbau GmbH



Industry4Europe delegation with Commissioner Elżbieta Bieńkowska.



Industry4Europe delegation with MEPs Jerzy Buzek and Martina Werner.



Tomas Hedenborg speaking at the EU Industry Days.

**“Industry is already in transformation. We need to look at the bigger picture in order to help industry to take advantage of the global mega trends. An EU Industrial policy should focus on a stable long-term vision that brings value to society and generates growth for all”.**

Tomas HEDENBORG  
Group CEO  
FASTEMS OY AB



EU Industry Days' exhibition. From left to right, José Antonio Dieste (AITIP), Commissioner Elżbieta Bieńkowska and Maitane Olabarria (CECIMO).

Growth, Investment and Competitiveness, and sees Elżbieta Bieńkowska, Commissioner for Internal Market, Industry, Entrepreneurship and SMEs, as Vice Chair of the expert group. The main aims of the group are to advise the Commission on the implementation of the renewed EU Industrial Policy Strategy, monitor its progress at different levels and to provide feedback on the Commission's initiatives and actions for a smart, innovative and sustainable industry.

During the EU Industry Days, selected members of the High Level Industrial Roundtable had the possibility to present different elements of the road to 2030 and the vision of EU industry in the global economy: from Industry 4.0 and digital innovation hubs, to artificial intelligence and technologies of the future, and from clean energy to skills. The Industry4Europe Coalition, together with the Committee of the Regions, organised one of the workshops and focussed it on the partnership between regions and industry for growth and jobs.

On the same days, selected EU-funded projects showcased their products and results at the EC

premises. The European Commission gave only two spots to Additive Manufacturing projects and KRAKEN was one of them. CECIMO, together with another partner, welcomed visitors and explained the benefits of hybrid manufacturing. Commissioner Bieńkowska and officials of the European Commission were interested in learning how a machine can combine additive with subtractive manufacturing and can produce parts up to 20m long. During his closing remarks of the EU Industry Days, Carlos Moedas, Commissioner for Research, Science and Innovation, referred to Kraken as the perfect example of a successful EU-funded project, which citizens should know of, and a reason to keep funding research and industry.

But our work on European Industrial Policy is not over. We are still contributing to the Industry4Europe Coalition - we just produced a Joint Paper on “Setting indicators for an ambitious EU Industrial Strategy” - and we continue to advocate for the machine tool industry at the European level. ■



# EMO Hannover

18-23.9.2017  
The world of metalworking

## What a successful edition!



From left to right: Luigi Galdabini (CECIMO President), Stephan Weil (Prime Minister of Lower Saxony), Frank-Walter Steinmeier (Federal President of the Federal Republic of Germany), Carl Martin Welcker (General Commissioner of EMO Hannover) and Stefan Schostok (Mayor and CEO of the City of Hannover).

EMO Hannover took place from 18 to 23 September 2017 and it was a great success: 2,200 international manufacturers of production technology exhibited their varied range of products and ended the week in a hopeful and confident mood. According to an EMO survey, "visitors indicated their intent to invest a total of over 20 billion euros in production technology over the course of the next 24 months" and, already at EMO, deals worth 8 billion euros were sealed.

Around 130,000 attendees visited EMO. Half of them came from abroad and 70% of foreign visitors originated from Europe. In particular, attendance from Asia rose sharply. "Foreign visitors were keenly interested in seeing how the market leaders are leveraging digitisation to benefit the various process chains. They were also eager to see how new business models are growing up out of all the harvested data," explained Welcker.

According to the EMO visitor survey, nearly 60 percent of the show's attendees were of managerial status, while more than half were found to play a decisive role in their organisations' purchasing decisions.

CECIMO, owning EMO's registered trademark, organised different meetings and event during these six days. We hold different bilateral meetings with our international counterparts (IMTMA, AMT,

CMTBA and JMTBA) to discuss with them bilateral relations and the international situation for our industry.

As a leading promoter of the machine tool industry at the European level, we organised a couple of tours for EU representatives. On 18 September Mr Reinhardt Bütikofer, Member of the European Parliament and Rapporteur for Digitising European Industry, had the chance to spend the whole day in the fairground and talk directly to CEOs of industries about the challenges they incur. On 20 September, CECIMO was glad to welcome representatives of the European Commission. They discussed digitisation, trade, R&D, skills & education practices and solutions for energy-efficiency with European machine tool builders in the morning, while in the afternoon visited the stands of companies.

We also organised the International Conference for Additive Manufacturing, gathering more than 130 participants and drawing attention to the challenges of additive manufacturing. Last but not least, we showcased EU-funded projects at our booth, explaining how the Kraken Project is trying to build a machine that can produce parts up to 20 mt combining additive and subtractive technologies, and how 3D Prism fills the knowledge gap in AM. You can read more about it in the article "First KRAKEN project results presented during International Conference on Additive Manufacturing" on page 29. ■



# The European Machine Tool industry in 2017: figures and outlook

by Olga Chilat, EU Public Affairs Economist

**Forecasts for Europe predict further growth, supported by improving labour markets, high economic sentiment and favourable conditions for investment.**

Our industry marched confidently into 2018. The Purchasing Managers index at the beginning of the year marked a fourth consecutive year of global economic expansion, although at a slower pace towards the end of the first quarter. The business confidence and economic sentiment indicators, reaching their highest levels at the end of 2017, equally suggest a strengthening economic context for machine tool builders – all clear signs that the economic recovery is turning into a solid and lasting expansion.

Based on the preliminary data for the past year, CECIMO-based machine tool production reached about €25.8 billion worth of machine tools – 6% higher than the previous year. Overall, this accounts for 37% of the global output. CECIMO has consistently improved its production market share by one percentage point for the last 3 years, regardless of the feeble economic context in 2016, when the world machine tool production dropped by -2.4%.

Based on our estimations, in 2017, European companies exported around €19.8 billion in machine tools – 8% more than in 2016. 99% of the export volume originates from CECIMO countries.

Our total exports over 2017 increased by 9% compared to 2016. The Asian export market share expanded by 11%, as currently a quarter of our exported machine tools target an Asian country destination. So far, China remains the main consumer of European machine tools, together with India, Japan and South Korea to a lesser extent. Nevertheless, CECIMO trade is largely intra-European. Around half of the machines exported

by a CECIMO machine tool builder, in absolute value terms, end up in another European country, which makes our trade flows more resilient. Our exports to Russia have started to recover, as well.

On the imports side, our total imports increased by an annual rate of 4%. Last year, we imported 19% more from Asia and the Americas – slightly increasing the import share with respect to 2016. The same applies to other regional import origins, except Russia and former Soviet countries, from which we imported considerably lower volumes in 2017 than in the year before.

Consequently, our consumption increased by 4% over 2017, keeping the share in global consumption steady at 23%. According to our forecasts, CECIMO's share is likely to increase to 24% in 2018 and secure it up to the year 2021 – assuming no major economic distresses any time soon.

Geopolitical tensions and uncertainties over the outcome of the Brexit negotiations are potential risks to European economic growth. However, forecasts predict further growth, supported by improving labour markets, high economic sentiment and favourable conditions for investment. The downside is that maintaining the growth momentum might be challenging for certain regions, as 2017 has already marked an exceptionally high pickup. Moreover, Chinese financial fragility, poverty and pollution can also hinder the global economy. So it is safe to expect slower growth for 2018. ■

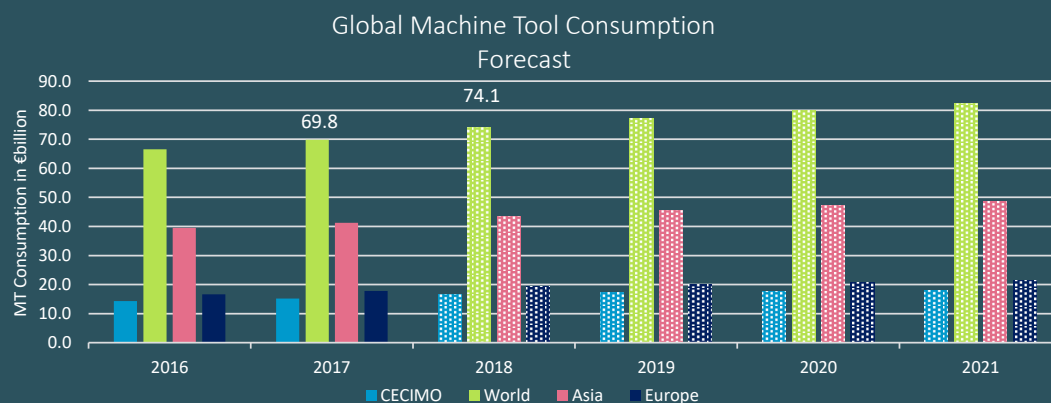
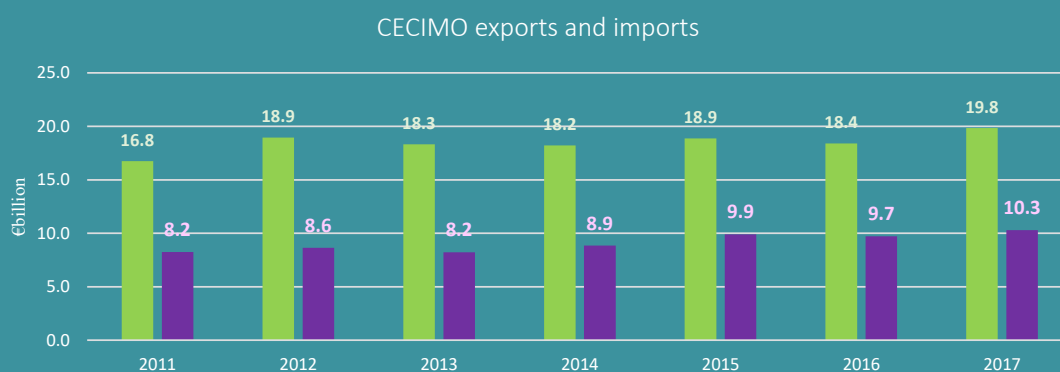
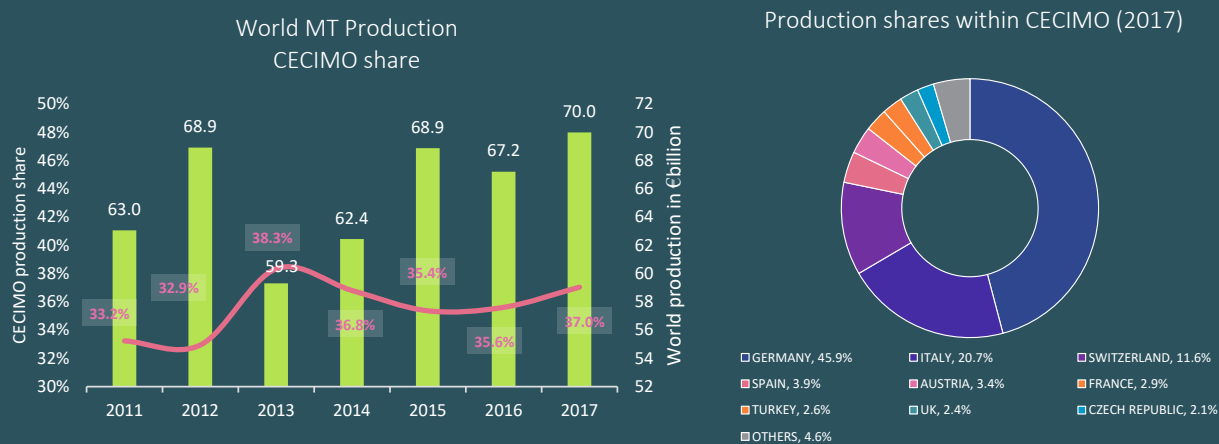
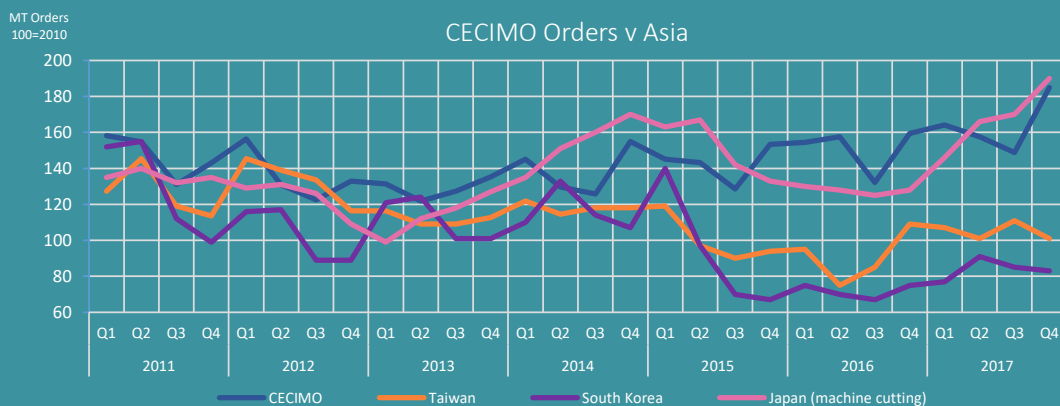


## What was said:

**“European machine tool builders are world leaders in digitisation and new technologies. To preserve the competitiveness of the sector, we need to ensure a fair and open trade, a market attractive for foreign investment and high-tech innovation.”**

Marcus BURTON  
Chairman of CECIMO Economic Committee and  
non-executive Director of Yamazaki Mazak UK Ltd

## The European Machine Tool Industry Figures for 2017



# CECIMO partners with other associations to push new technologies forward

CECIMO partnered with selected organisations to push AM further into the mainstream. Through these partnerships, we will exchange information on AM-related advocacy activities, EU project proposals in AM as well as creating joint working groups to develop areas of mutual interest.

We have recently signed two Memorandums of Understanding, one with EWF, the European Welding Federation, and one with EPMA, the European Association for powder metallurgy industry (including powder for metal AM).

EWF manages a harmonised system for the qualification and certification of companies and

of personnel working in the welding sector. It also develops the qualifications required to get professionals ready for new technologies, such as AM. Through this specific partnership, we ensure that business and industrial advances are matched and not hindered by the qualifications of professionals to operate AM machines, neither by regulatory nor policy conditions.

EPMA promotes powder metallurgy technology in Europe, represents the European powder metallurgy industry within Europe and internationally, and develops the future of powder metallurgy. ■



## What was said:

**“CECIMO partnerships with EPMA and EWF are a very important step to enhance cooperation on AM related advocacy activities in the value chain and to empower the metal AM industry for the further development of this technology in the future.”**

George BLAHA  
*Chairman of CECIMO Communication Committee and General Manager Schneeberger Mineralgusstechnik*





# 3rd Additive Manufacturing European Conference

The 3rd edition of the Additive Manufacturing European Conference (AMEC) took place in the European Parliament on 7 June 2017. The event brought together 100 participants from the AM industry, authorities and academia, and strengthened CECIMO's position as representatives of the needs of AM companies in Europe. It also confirmed firms' interest in the EU institutions as a critical interlocutor to support the industrialisation of additive technologies across the continent.

Co-hosted by the Members of the European Parliament (MEPs) Brando Benifei (S&D, IT), Anthea McIntyre (ECR, UK) and Cora van Nieuwenhuizen (ALDE, NL), the conference was divided into two panels: one on the challenges for the industrial deployment of AM and one on skills for the sector. Discussions were moderated by Bernhard Langefeld, Partner at Roland Berger and Onno Ponfoort, Practice Leader 3D Printing at Berenschot Consulting.

## Integrate AM into the existing production environments

Far from being a standalone solution, AM must be treated as complementary to conventional industrial processes. The industrialisation of AM is about integrating additive machines into processes together with milling, EDM, heat treatment machines and others. Today, AM adds value to the components produced, but, in such an integrated context, it is also able to foster the emergence of new business models in the near term.

For Pascal Boillat, Head at GF Machining Solutions, *"we need a smooth exchange of data between additive and traditional machines to achieve a fully automated production chain"*. Mr Boillat predicted that the interaction of the two types of machines will be a key area for the industry over the next two/three years.

Cora van Nieuwenhuizen, too, noted that connectivity is fundamental to foster machine-to-machine communication and improve simulations. Improving connectivity is indeed a key driver to scale up AM in the European industrial field. *"For all your AM processes, you need proper digital infrastructure"*, Ms van Nieuwenhuizen underlined.

## Streamline standardisation and certification efforts

The uptake of industrial AM needs a more efficient approach to standards' development. According to Nikolai Zaepernick, Senior Vice President Central Europe at EOS GmbH, *"if we look*

*at the subtractive world, we see that everything is quite defined and regulated. Standards also help in streamlining R&D and avoiding multiple uncoordinated directions. They really help to keep R&D to the point"*.

Standardisation activities are plenty in the additive space, both at national and European level, but there is a need to centralise them and keep them more pertinent. However, Jon Porter, Business Development Manager at Renishaw, reckoned that some standardisation activities around the world are focusing on the same issue, potentially drawing time and attention away from other AM aspects.

The standardisation process was also subject to comments from the EU authorities on stage. Peter Dröll, Director for Key Enabling Technologies DG Research & Innovation at the European Commission, explained how in the 2018-2020 period the EU Horizon 2020 programme will invest €1.6 billion in industrial technologies, including additive technologies. Among the others, this money will go into the development of certification standards and processes. *"We will invest substantially"*, Dr. Dröll announced.

## Build a joint approach to tackle the disconnection between education and workforce

The short supply of AM competences was clearly highlighted by several panelists and the digital aspect of AM captured great attention.

For Ulli Klenk, Principal Key Expert for Additive Manufacturing at Siemens Power and Gas, a concerted action must be the way forward: *"It is not an either/or choice (...). I really see in the joint approach of authorities, educators and private companies a way to enhance competences and improve curricula in the education systems"*.

On the issue of a broader engagement in shaping curricula, Marcus Burton, Director at Yamazaki Mazak UK Ltd, explained that *"industry should be involved in curriculum development. Our experience in the UK is that curriculum development can be sluggish. We are now in game-changing technologies and I think industry has got to work very closely to make sure the curriculum is kept up-to-date"*. He also considered helpful joint efforts at European level, where best national initiatives on skills are shared.

## Do not underestimate the added value of retraining existing workers

Key for the deployment of additive methods in Europe is not only teaching AM skills in the



### What was said:

**"Engineers are not the exclusive target of AM training strategies. Authorities have a clear role in supporting training for this technology, including for technicians and operators already working in the manufacturing environment."**

Jean-Camille URING  
Chairman AddUp and  
CECIMO Past President



Picture © European Parliament

educational context, but also re-focusing skills of existing workers. This should be done at all levels and through targeted trainings, including on-site activities and digital tools.

Daan A.J. Kersten, Co-founder & CEO at Additive Industries, noted the benefits of addressing the lack of AM awareness among the technology's potential end-users. Indeed, *"most of the technology is developed in Europe, but the applications are largely found in the US. We should wonder how that has developed"*.

Jean-Camille Uring, CECIMO's former President and Chairman of AddUp, emphasized that AM is a complex process, where different physical aspects interrelate with one another. *"You cannot just take somebody trained for milling, turning or any other machining process"*, said Mr. Uring while describing the specificities of the metallurgical and digital process in AM.

EU policy-makers showed their readiness to take action to upgrade the competences of existing workers. Kirsi Ekroth-Manssila, Head of Unit at the European Commission, DG Internal Market, Industry, Entrepreneurship and SMEs, emphasised the impact of technology on human capital. *"The modern economy and the modern industry call for a very wide range of new skills, and this is especially true for AM"*, she said before reinvigorating the commitment of the EU authorities. Ms. Ekroth-Manssila then described specific funding initiatives: among these, the Blueprint for Sectorial Cooperation on Skills.

#### **Invest in software solutions and expertise to maintain competitiveness**

Panelists raised the importance of software for the further industrialisation of AM in Europe. EU funding support for software development was deemed essential to enable a fully digital value chain.

*"European shortages are on the skills side and especially on the software side"*, said Alexander Oster, Director of Additive Manufacturing at

Autodesk, after describing the links between AM and digital manufacturing. He explained how new engineering software solutions have propelled design into the era of connection. Advanced sensors make possible that *"a product never ends, but self-evolves"*.

#### **Guarantee significant EU R&D funding in the long-term to strategic European sector like AM**

In an evolving industrial landscape, EU research funding must be put at the disposal of AM, a technology where Europe enjoys a prominent position.

Filip Geerts, CECIMO's Director General, saw in EU research tools a way to tackle outstanding AM issues such as part quality. EU decision-makers must demonstrate a long-term funding commitment to AM. This is particularly needed now that the next R&D programme is being discussed. He noted that we have to think strategically about AM when we elaborate FP9, the multiannual research programme that will replace Horizon 2020 in about three years from now.

For Ms. McIntyre, it is a matter of guaranteeing technology developments to reach the market. She drew attention to grants that should not just go to blue skies research, but should also be channeled towards projects for practical applications of the technology. This would be beneficial, in particular, to those SMEs interested in AM, but without the resources to invest in multiple basic research fronts. *"They need to be able to test the new technologies while they continue to conduct their core business"*, she said.

At a time of profound digital-driven innovations, Mr. Benifei stressed too the importance of supporting R&D investments in AM. For him, it is critical that grants from the EU budget are allocated to innovative sectors, among which he saw AM as a priority.

To know more about AM and the 4th edition of AMEC, visit our website [www.cecimo.eu](http://www.cecimo.eu). ■

# CECIMO: a steady presence at conferences on advanced manufacturing

CECIMO participates in conferences around Europe to promote the Machine Tool Industry and our view on issues such as digitisation, cybersecurity and additive manufacturing.

**Inside 3DPrinting** (Dusseldorf, 2-3 February 2017)

**ISTMA-EUROPE COMMITTEE N° 52** (Marinha Grande, 7 March 2017)

**European Commission Workshop on skills gaps in Additive Manufacturing** (Brussels, 13 March 2017)

**Additive World Conference** (Eindhoven, 14-15 March 2017)

**CEN - CENELEC Industry Engagement workshop on Functional Safety & Cybersecurity** (Brussels, 16 March 2017)

**Global Smart Manufacturing conference** (Frankfurt, 29-31 March 2017)

**Annual Smart Manufacturing Summit** (Prague, 6-7 April 2017)

**Materialise World Summit** (Brussels, 20-21 April 2017)

**Manufacturing Performance Days** (Tampere, 29-31 May 2017)

**AddFab 3D printing business show** (Paris, 1 June 2017)

**"Futuring European Industry" workshop** (Brussels, 13 June 2017)

**IIoTTalk - Digitizing the Industrial Value Chain** (Berlin, 27-28 June 2018)

**International Conference on Additive Manufacturing** (Hannover, 21 September 2017)

**TCT Awards 2017** (Birmingham, 27 September 2017)

**IN(3D)USTRY conference** (Barcelona, 2-5 October 2017)



**Manufuture 2017** (Tallin, 23-26 October 2017)

**Europe's manufacturing transformation week** (Lisbon, 13-17 November 2017)

**ManuTalk. Excellence in Manufacturing & Innovative Technologies** (Berlin, 6-7 December 2017)

**Mini hearing on: Investing in a smart, innovative and sustainable Industry** (Brussels, 21 December 2017)

**Internet of Manufacturing** (Munich, 6-8 February 2018)

**Cyber Security for Critical Manufacturing Summit** (Munich, 7-8 February 2018)

**Smart Manufacturing Leaders Summit 2018** (Munich, 27-28 February 2018)

**Inside 3D Printing** (Dusseldorf, 21-22 February 2018)

**Additive Manufacturing Forum** (Berlin, 5-6 March 2018)

**Additive World Conference 2018** (Eindhoven, 14-15 March 2018)

**Digitalization in Manufacturing** (Prague, 15-16 March 2018)

**Antwerp INDUSTRY SUMMIT** (Anwerp, 19 April 2018)

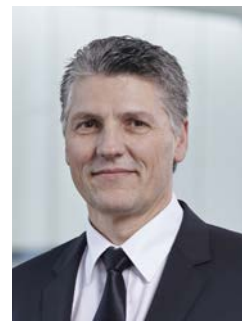
**International VDI Conference - Additive Manufacturing** (Amsterdam, 25-26 April 2018)



## What was said:

**"CECIMO is advocating for additive manufacturing to become a mainstream technology in industry and increase its market uptake. To this end, we have been voicing our issues and concerns vis a vis the EU decision makers and we have been actively engaged in a number of EU funded projects on AM for the promotion and dissemination of additive manufacturing technologies in Europe."**

Stewart LANE  
Director, Group Sales  
Development RENISHAW PLC



## What was said:

**"Industrial processes and technologies are constantly evolving and MT companies need to stay up to date and ahead of the curve. Thus, it is of utmost importance that our sector speaks and takes the lead in Industry 4.0 and the digitisation of manufacturing together with senior executives across Ops Tech, Info Tech and Digital business functions from the leading manufacturing companies in Europe."**

Michael HAUSER  
CEO Tornos S.A.



# Meet a CECIMO Delegate

An interview with Dr. Heinz-Jürgen Prokop, Executive Manager of TRUMPF Werkzeugmaschinen GmbH + Co. KG and President of VDW.



## **What are your reasons for being a CECIMO delegate and, in particular, what are the benefits involved?**

Europeans have to invest heavily in research projects, especially in times of difficult economic circumstances, as is the case nowadays. Research and innovation incentives will provide best-practice examples for the machine tool sector, and will help to highlight and promote new solutions for the machine tool industry that render it competitive in a worldwide market. As a CECIMO delegate, I have a chance to present to politicians our needs and the opportunities for our sector. CECIMO has, for example, contributed to EU directives such as the Energy-Related Products (ErP) Directive or the Machinery Directive, which focuses on the safety of machine tools. As a CECIMO delegate, I also exert influence in the sense of a rapid digitisation of the machine tool industry in order to keep it fit for competition.

## **What are the new challenges entailed by digitisation? How do you think the European Commission can help the machine tool industry in coping with it?**

The European machine tool industry faces several challenges regarding digitisation. The interconnectivity of machines, processes and companies at an international level requires a harmonised European cybersecurity strategy, because for many companies data security is a vital precondition for investing in digitisation. This strategy should not be treated as a national issue, as value chains will be more and more global in the future. The decision of the European Commission to invest €1.8 billion in cybersecurity is therefore a first step in the right direction.

In addition, Europe has to improve its support, especially for small and medium-sized companies (SMEs). About 80 percent of the European machine tool industry is composed of SMEs but they are still too rarely benefiting from financial

and infrastructural support. The lack of money and know-how results in delays for digital transformation. But a wait-and-see attitude towards digital transformation is a risk for the competitiveness of the whole sector. That is why we need innovation incentives at different levels that are more accessible to SMEs and those located in the countryside need a high-performance infrastructure.

Last but not least, politicians could progress digital solutions for the manufacturing industry by forming special clusters of machine tool manufacturers and representatives of the ICT industry.

### How do you attract young talents to your company and what are the skill gaps you face when recruiting?

We offer young people an environment in which they can shape the future by bringing in and implementing brave ideas. That is attractive, especially to engineers. In addition, we have developed flexible working time models which allow our employees to work, for example, on a mobile basis.

We participate in dual study programs which make it possible for students to combine practical experience within the company with their studies

at university, and therefore to start their working life smoothly.

Of course, it is a challenge to attract employees who possess the necessary know-how from the IT sector and other interdisciplinary skills. Here, we try to address the potential employees via the appropriate channels. We have established good contacts with universities and schools to raise interest in engineering for students and pupils at an early stage. We also support initiatives for strengthening what are called MINT subjects (Mathematics, Informatics, Natural Science and Technology). The extensive internal training programme we offer is another means of developing the skills needed.

### How do you see the development of the machine tool sector in the years ahead and how can CECIMO contribute to it?

We are optimistic that the machine tool industry in Europe can take advantage of the enormous changes it faces. If we manage to include SMEs in the digital transformation, we will be capable of further expanding our lead in the area of Industry 4.0. New business models will enable the sector to position itself as a leading provider of real-time teleservice or predictive maintenance, for example, on the international market. ■



# SYMOP, the professional association for creators of manufacturing solutions

## The manufacturing industry in France

The manufacturing industry accounts for 10% of France's Gross Domestic Product (GDP), compared to Germany's 20.3% and the United Kingdom's 8.7%. It generates some €870 billion in pre-tax revenues and directly employs 2.7 million people in more than 235,000 companies.

Manufacturers spend €28.5 billion on capital investment each year, an investment ratio of 13.2%.

## Creators of manufacturing solutions

With manufacturing processes changing, and an optimised, connected, creative industry emerging, 270 creative manufacturing solutions' providers have come together at Symop to advocate for productive investment in France. It represents 16,500 employees and €2 billion in revenues in cross-sector and complementary activities such as digital tools, production machinery and technology, equipment, components, tooling, and quality/control instruments.

## Building tomorrow's industry

Since its formation in 1907, Symop has devoted itself to promoting an understanding of the strategic role that each of its members plays in boosting manufacturing competitiveness. Symop is a member of the Federation of Mechanical Engineering Industries (FIM) and a founding member of the Alliance for the Industry of the Future (AIF) which organises and coordinates, at national level, the initiatives, projects and practices that are modernising and transforming industry, by making people once again central in factory processes.

Symop has a dual goal, which is to promote manufacturing markets, and to raise awareness among French public authorities of manufacturing challenges such as productivity, innovation and the attractiveness of manufacturing careers.

- In 2005, Symop launched the "Robocaliser" initiative to "Automate, not relocate".
- In 2017, it launched the "Boost Productivity" programme to "Reindustrialise through production machinery and technology".
- From 2013 to 2017, Symop was actively involved in the "ROBOT Start PME" project to support SMEs introducing automation for the first time, as part

of the government's "France Robots Initiatives" plan.

- In 2015, Symop was instrumental in launching the initiative to permit "overdepreciation", a way of claiming exceptional depreciation, which has contributed to the sharp growth in machinery sales in France in the past two years.
- In 2016, it published its Manifesto for Productive Investment, and approached public authorities on five issues central to imagining and building the industry of tomorrow.
- In 2018, Symop's goal is to boost the rollout of new additive manufacturing technologies at SMEs and to help structure product offerings in France via the "3D Start PME" which helps SMEs to start up additive manufacturing processes.

## Symop at Global Industrie

Symop is a partner of Global Industrie Expo this year, and is once again helping to organise a number of events.

Industry Lab is an event focused on themes central to the Industry of the Future. It features emerging technologies that will be competitiveness levers in the transition to tomorrow's factories.

Connected Plant, showcasing manufacturing technologies, solutions and know-how, will take visitors through

1,000 m<sup>2</sup> of every stage in the design, production and delivery of a product. Some 20 Symop member companies will be present at this event, together constituting an operating production chain.

At its stand, Symop will be presenting the "Creative Manufacturing" 3D demonstrator. It is a digital mock-up designed to help businesses, particularly SMEs, to understand 3D tools and measure the benefits of incorporating digitisation into their manufacturing processes. It will also use the show to launch the new platform [www.la-fabrication-additive.com](http://www.la-fabrication-additive.com) designed to highlight and clarify additive manufacturing industry in France. It is a hub for providers (French and importers) across the entire value chain and includes educational content, case studies, and personal accounts.

Lastly, Symop will be taking part in numerous conferences on collaborative robotics, additive manufacturing, and feedback from the Robot Start PME programme. These conferences are essential for technological and strategic monitoring, for anyone managing a service or business wanting to anticipate upcoming developments in manufacturing and technology. ■

**"After 20 years of manufacturing being relegated to second-class importance, France is now talking about it again in a positive way. At various levels, central and regional authorities are implementing public policies that are more favourable to productive investment to help manufacturers incorporate robotics, collaborative robotics, digital technology, additive manufacturing (3D printing), etc... The major players in France in aeronautics, automobiles, health and agri-food, are leading their sectors on the path to modernisation. There is still a long way to go, and 2018 will be a very important year for manufacturing in France. A founding member of the Alliance for the Industry of the Future (AIF), Symop is recognised as a major influencer with public authorities as it represents "solutions providers". Its actions must, more than ever, be focused to promote the attractiveness of its business operations. And it cannot succeed without the powerful support of European institutions. Germany, Italy, Spain, Switzerland and Austria are leading the way in connected factories. It is through the union of all European industries that we can develop standards and norms to permit the emergence of a manufacturing economy and technological revolutions such as additive manufacturing, in the face of Asian and American momentum."**

Olivier DARIO  
General Manager, SYMOP





## Joined CECIMO in 2017-2018

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### FRENCH DELEGATION



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Manager

## NEWS FROM BRUSSELS

CECIMO would like to take the opportunity to thank Mr Adrian Harris who stepped down as Director General of Orgalime, for his devotion and commitment for over 20 years in growing the profile of the European engineering industries in the EU. We would like to thank him also for the great cooperation with CECIMO for all those years. CECIMO strongly believes that the different sectorial associations especially in the mechanical engineering industry need a close collaboration and even ad hoc coalitions if needed.



## Upcoming Events

**Additive Manufacturing European Conference**  
21 June 2018 - Brussels

**CECIMO 2018 Spring General Assembly**  
2-5 June 2018 - Mainz, Germany

**CECIMO 2018 Fall General Assembly**  
23-24 November 2018 - Barcelona, Spain

## Erratum

*Issue #11, page 29.*

The quote is from Marcus Burton, not Micheal. Apologies to Mr Burton.



# cecimo

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the Machine Tool Industries

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**Austria: Metaltechnology Austria**  
Die Metalltechnische Industrie  
[www.metalltechnischeindustrie.at/en](http://www.metalltechnischeindustrie.at/en)

**Belgium: AGORIA**  
Federatie van de Technologische  
Industrie  
[www.agoria.be](http://www.agoria.be)

**Czech Republic: SST**  
Svazu Strojírenské Technologie  
[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: Technology Industries of  
Finland**  
[www.teknologiateollisuus.fi](http://www.teknologiateollisuus.fi)

**France: SYMOP**  
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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  
di macchine utensili robot e  
automazione  
[www.ucimu.it](http://www.ucimu.it)

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

**Portugal: AIMMAP**  
Associação dos Industriais  
Metalúrgicos, Metalomecânicos e  
Afins de Portugal  
[www.aimmap.pt](http://www.aimmap.pt)

**Spain: AFM - Advanced Manufacturing  
Technologies**  
Asociación española de fabricantes  
de máquinas-herramienta, accesorios,  
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-  
und Metall-Industrie  
[www.swissmem.ch](http://www.swissmem.ch)

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

**United Kingdom: MTA**  
The Manufacturing Technologies  
Association  
[www.mta.org.uk](http://www.mta.org.uk)

**cecimo** is the European Association representing the common interests of the Machine Tool Industries globally and at EU level. We bring together 15 National Associations of machine tool builders, which represent approximately 1500 industrial enterprises in Europe (EU + EFTA + Turkey), over 80% of which are SMEs. CECIMO covers more than 97% of total machine tool production in Europe and more than one third worldwide. CECIMO assumes a key role in determining the strategic direction of the European machine tool industry and promotes the development of the sector in the fields of economy, technology and science.