



**FROM HIGH-TECH R&D TO CUTTING EDGE INFRASTRUCTURES IN THE MFF:
“HOW HORIZONEUROPE, CEF & OTHER INSTRUMENTS CAN DRIVE EU COMPETITIVENESS”**

*18h30-22h00 Dinner Debate Roundtable
Wednesday 26 September 2018*

European Parliament



Christian EHLER MEP, (EPP, Germany), Industry, Research & Energy Committee, (ITRE) Rapporteur, Specific Programme Implementing HorizonEurope Framework Programme for Research and Innovation 2021-2027

He welcomed the participants to the European Forum for Manufacturing Roundtable Dinner Debate in the European Parliament which was supported by Orgalime.



SESSION 1: MAKING THE MFF WORK FOR THE TECHNOLOGY INDUSTRIES OF THE FUTURE

In the main points of his presentation, Christian Ehler highlighted:

- in reality the budget of €94bn would be the same as last time
- industry has been supportive of the Parliament's call for an increase to €120bn
- the need was now for manufacturers to talk to their Members' States governments at the highest level to ensure that Council did not reduce the amount
- the future of Europe is what will be decided here.

Hans Olofsson, SCANIA, Senior Adviser Global Industrial Development

- Success happens through collaboration. Scania is a globally leading company in sustainable transport solutions. Our success is built through collaborations nationally and across borders.



Our main products are heavy trucks, buses and industrial and marine engines. We are present on markets all over the world, but see Europe as our home market.

We have 50,000 direct employees and another 100,000 (rough estimate) are working at our suppliers. We have European industrial presence in Sweden, Netherlands, France, Finland and Poland. Our supplier base is mainly in Europe with focus on Sweden and Germany.

- Research and technological development are core for Scania. We have 4000 people employed in our R&D-department. This forms the basis for our development but to accelerate this we cooperate with universities and research institutes. We invest heavily in these collaborations. As an example we have taken the initiative to start a science-park in Södertälje (hometown of Scania). The other parties in the science-park are Södertälje municipality, AstraZeneca (pharmaceutical company), the royal Institute of Technology (KTH) and some SMEs. The aim is to educate engineers in sustainable production.

For higher education the partners have decided to employ PhD-students in threes (one at KTH, one at Scania and one at AstraZeneca). The PhD-students will work together although they are coming from different industries. From an industrial point of view, we have found more similarities than differences when it comes to sustainable production. To make this kind of initiatives across companies and academia successful, the funding is essential.

It is therefore essential that the next framework programme, HorizonEurope continues to support industrial collaborative research. Industry's need for cutting edge technologies, new knowledge and competences must be priority with sufficient resources allocated.



HorizonEurope has to be a programme that attracts and engages industry, clearly supporting our challenges and opportunities.

- The fast development in the area of ICT and digitalization is challenging, at the same time as it opens up totally new avenues for businesses and solutions to the global challenges. To utilize the power of the new digital tools we need to reeducate our workforce. This means that we have huge challenge in front of us. The big companies will probably manage but SME:s will have big problems to find time and suitable competencies. We therefore advocate a digitalization-education programme at European level.
- As a company providing transport solutions, modern high-tech infrastructures are crucial. To lower emissions and to cope with the ever increasing need for transport, the transport sector is standing before a big change, electrification

Electrification will drive the need for big infrastructure changes. Today we and our colleagues in the business are testing different ways to convey power to the moving vehicles. The need for applied research in this area is huge. Here we see HorizonEurope as an important tool.

We also have set standards on how this is done in the best way. We do not want to end up with different track gauges (distance between the rails) as we did when railways were built in Europe some 150 years ago.

Huge investments are needed in the new infrastructure, today and even more in the future. Therefore, we welcome the stronger focus on support for the Single Market, Innovation and Digital in the next MFF.

Eddy Roelants, SIEMENS, Vice President R&D, Innovation & IPR Policy

Introduction

- A stronger European Union indeed needs to be equipped with appropriate financial means, and this applies in particular to investments in Europe's future.
- We welcome especially the focus of the MFF on new challenges like Cyber-Security and the continuation of the emphasis on low-carbon energy infrastructures (generation, transmission, distribution).
- It is crucial that the next MFF guarantees an ambitious R&D&I budget, so we can finally meet the 3% target in Europe. The currently proposed budget of €120bn may seem ambitious, but is actually a modest figure in view of the international race for R&D&I leadership.



How HorizonEurope (HEU) can become a successful building block of the MFF

- In the proposed HEU Siemens will mainly focus on pillar 2 as this pillar is well fitting to our R&D activity fields, clustered in our so-called Company Core Technologies (like eg. Cyber security, Digital Twin, Distributed energy systems, AI & Data analytics)
- We call for splitting the cluster Inclusive and Secure Society into two separate clusters because



the addressees, research goals, and support mechanisms and instruments of social, economic, and humanity sciences, in comparison to security research, are clearly fundamentally different

- We also call for the separation of the mobility priority from the Climate, Energy & Mobility cluster. An independent mobility cluster will better help to develop new solutions in important technology and application fields of mobility research
- We welcome the introduction of Missions, but advise
 - o to start with a few to learn
 - o to let them be technology neutral
 - o to involve European industry in the Mission design processes
 - o foresee at least one member from industry in the planned Mission Boards.

KETs (Key Enabling Technologies) must present the technology basis for the Clusters and the Missions.

- We recommend to more explicitly use the KETs in the structure of the whole Pillar 2. As KETs cut across topical areas, they should not be limited to one cluster only. (eg. Advanced materials are also KETs for Climate, Energy & Transport!)
 - o Of course, in the digitalization age we welcome “Artificial Intelligence”, “Digital Security” and Connectivity as new KETs but we are missing the digital KETs “Modelling, simulation & Digital Twin” and “Software Systems & Processes”
 - o Especially “Modelling, Simulation & Digital Twins” is gaining enormous importance in all domains of technology and society, as it presents one of the few key technology fields where Europe could take globally a leading position. Ideally this KET should even get a dedicated ETP (European Technology Platform) or even a Partnership instrument like a PPP (or JTI) due to its broad cross-sector application characteristics
 - o Unfortunately, some very important KETs related to Energy seem to be forgotten: Distributed Energy Systems, Energy Storage and Power Electronics to name the most important
- The future of the partnerships is still unclear to us. We strongly advise to give industry’s expertise in the current partnerships (PPPs & JTIs) a central role in this review and to use well-functioning partnerships, of all sorts, as benchmarks
- Budget: We call on the European Parliament and the Council to scale-up the overall budget to at least €120bn, allocate at least 60 % to pillar 2 – a strong Pillar 2 is needed, with special budgetary attention to AI and Cybersecurity. In our view €4bn instead of €3bn for the EIT KICs, including 2 new ones, seems to be the minimum
- Rules for Participation must be made more industry friendly:
 - o Support an efficient exploitation of results taking into account justified interests of consortium parties, including the exploitation within all legal (also non-EU) entities affiliated to projects’ participants
 - o Protect appropriately the intellectual property of the consortium partners, also when an Open Access policy is fostered
 - o No mandatory “deploy in EU first” policy! A “reasonable effort” policy is a much better way to get global players involved in HEU.



- o Access to research data must strictly follow the principle 'as open as possible, as closed as necessary'
 - o Further simplification of the reimbursement of personnel cost (allow “usual accounting principle”) on basis of H2020 is welcomed; we deplore that the H2020 article on Annual Productive Hours (APH) has not been included in the HEU rules
 - o Regarding the audit system, we would appreciate a balanced approach between trust and control
- To conclude:
To make the MFF work for the technology industries of the future, a future proof, ambitious and above all, industry-friendly HorizonEurope Program must lay the foundations; we call upon the EU decision makers to jointly design content and rules for the next R&D framework program with all participants, public & private, small & large.



Jordi SOLÉ MEP, (GREEN/EFA, Spain), Budgets Committee

The Manufacturing Industry at the Basis of the Recovery of the Catalan Economy

The Catalan economy has a great industrial tradition.

Catalonia was the only Mediterranean region among the early followers of the British Industrial Revolution in the second third of the nineteenth century. The roots of this industrialisation process can be traced back to the seventeenth and eighteenth centuries when the Catalan economy became successfully integrated in international trade and the region enjoyed an intensification of its agrarian and proto-industrial activities.

The textile industry and the railroad were the key in Catalonia’s industrialisation. The factories of the Catalan textile industry incorporated the machines that were used in Great Britain and, especially, the steam engine fed with coal. Catalonia did not have sufficiently productive coal deposits or the necessary quality. For that reason, the coal had to be taken from the Asturian mining basins and also had to be imported from England. For this reason, many of these industries were established near the port of Barcelona, or in nearby towns with communication by rail. The industrial colonies however used the hydraulic energy that provided the rivers; So, they did not depend on coal and could lower costs. That is why we find important colonies along the Llobregat and the Ter rivers.

The share of the industrial sector in the gross value added of the economy was 21.4% in 2017, a higher share than the Spanish average (18.1%) and higher than in most of the important economies of the eurozone.

Catalonia accounts for 23.4% of the total industry in Spain. The weight of Catalonia in branches such as pharmaceuticals and chemistry, the supply of water and sanitation, and the textile, clothing, leather and footwear are especially significant.

The industrial sector was strongly hit by the last economic and financial crisis. The weight of the industrial sector on the total of the Gross Added Value was 26.9% in 2000, with a decline of down to 20.3% in 2008 and 21.7% 2017, which indicates the recovery of the sector.



The most important branches in the Catalan industrial sector are food, beverages and tobacco (13.8%), petroleum chemistry and refining (13.8%), metallurgy and metal products manufacturing (8.2%), transport material (7.7%) and pharmaceutical products (7.6%).

The branches that have gained more share in the industrial structure since 2000 are energy, sanitation and waste management, pharmaceuticals and food while those that have lost more weight are the textile industry and the transport materials.

There is a need to increase the productivity specifically in the manufacturing sector and the industry in general.

Catalonia has 40.4% of its workers in the manufacturing sector in low-tech industries, while it has only 32.6% in mid or high-tech industries. Many factories in Catalonia had to close during the economic crisis due to low productivity levels and an excess of production capacity. Thus there is a great margin to improve on research, innovation, productivity increase and sustainable development.

Moreover, according to Global Entrepreneurship Monitor (GEM) for 2016, the rate of entrepreneurial activity (TEA) of the resident population in Catalonia stands at 7%, exceeding those of countries such as Finland (6.7%), Germany (4.6%) and Italy (4.4%).

If we combine the high entrepreneurship level in Catalonia with the need for innovation, it makes a great scenario to support and enhance the Catalan manufacturing sector through EU programmes like H2020, Connecting Europe Facility (CEF) or SMEs instruments.

Innovation In Catalonia

Innovation is important, as it results not only in new products and services, but also generates, as a fundamental externality, new knowledge and skills, which are available to face new challenges in the future. It is essential for citizens to have new products and services, to corporations in order to increase productivity and also to economy by establishing a sustainable development.

Innovation and exports are two key factors that have been key to many Catalan companies to overcome the economic and financial crisis.

According to ACCIO, the Catalan agency for business competitiveness, Catalonia is the region that absorbed the most European innovation funds for SMEs. Moreover, 45% of Catalan companies are expected to increase their turnover and 21% to create new workplaces thanks to innovation, as stated in the Catalan Innovation Barometer 2017.

HORIZON 2020

Catalan participation in H2020 is very remarkable and shows the competitiveness and the excellence of Catalan institutions and researchers. Catalan allocation of funds of H2020 is €848m, meaning 2.68% of EU-28 and 29.29% of Spain.

H2020 Projects

Smartive is a Catalan company within the renewable energy technology sector that develops intelligent platforms (Internet of things and cloud computing) for the improvement of the efficiency and operability of the energy market, in particular the wind power.

The DOSAVINA application, created by the Polytechnic University of Catalonia (UPC), offers farmers a practical guide to calculate the optimal quantity of phytosanitary products that must be



applied to the vineyards when they are treated. This app seeks to reduce the risk of pollution in compliance with the provisions of the European Directive on plant protection products.

The goal of the EUCLID project is to help ensure the production of food for an increasingly large population throughout the world, while developing sustainable production approaches that will be used in European and Chinese agriculture. The Catalan participation is made up by the entities of the University of Lleida and the Institute of Food Technology and Research (IRTA).

The aim of the ANIMA project is to identify and disseminate best practices to reduce the noise nuisance experienced by communities living near airports. Catalan participation is represented by the councils of Gavà and El Prat del Llobregat, the Generalitat de Catalunya and Barcelona Regional through their participation in the Airport Regions Conference (ARC) network.

Connecting Europe Facility

The CEF Programme provides financial assistance to the Trans-European Networks in order to support projects of common interest in the transport, telecommunications and energy infrastructure sectors.

CEF Projects

The Midcat project will help increase the existing interconnection capacity between the French and Spanish gas systems and enable further bi-directional gas flows between the two countries. As a result, this will ensure market integration of the Iberian Peninsula with the rest of Europe.

The SMEeTOOLS project aims to support the implementation, in SMEs, of the new European standard for electronic invoicing in public procurement, which will enter into force in April 2019. Catalan participants are Chamber of Commerce Barcelona, as the project leader and Invinet Sistemes.

CEF has financed 30% of the work on the creation of rail accesses to the Port of Barcelona. The objective of this project is to connect the south extension zone of the port complex with the railway network, and improve the connection with the Can Tunis terminal.



GESINE MEISSNER MEP, (ALDE, Germany), Industry, Research & Energy Committee

The ocean is the largest ecosystem on Earth and one of the Earth's most valuable resources. Nevertheless, more than 80% of it remains unexplored, unmapped and unobserved. It is imperative to safeguard the future of our oceans with the appropriate technologies and increase our knowledge through research and exploration. Maritime technological development is not only vital to facilitate marine conservation, but indispensable to making sustainable use of our ocean resources. The ocean can provide us with oxygen, renewable energy, raw materials, medicine, food and blue biotechnology. Consequently, maritime research and innovation require increased funding.

Marine-based energy productions through wind, wave, tides and algal biofuel can lead the way in the transition from non-renewable energy to sustainable energy. At European level, things have already been moving in the right direction. Since 2014, the Commission has invested €150m in ocean energy through Horizon2020 - but we need further investment for the research,



development and testing of blue energy. The concluded legislative package ‘Clean Energy Package for all Europeans’, sets a renewable energy target for the EU for 2030 of 32%. This is also a chance for ocean energy to contribute to achieving our climate goals, especially as ocean energy can work as a grid stabilizer in combination with other renewable energies. Nevertheless, these technologies are at early stages of development and require more research in order to determine their effectiveness, cost and their direct environmental effects on ecosystems.

The ocean is also increasingly important for the medicinal field - microbes are becoming increasingly immune to antibiotics, thus scientists are turning to the ocean to develop drug research. The ocean and its vast biodiversity offer additional organisms, substances and chemicals that could help us develop new medicines. Marine nucleosides that come from the Caribbean sponge *Cryptotethya crypta* hinder DNA polymerase and are employed in the treatment of cancer and viruses, such as hepatitis B and HIV. Tubeworms, bacterial mats and bivalves that reside near deep-sea hydrothermal vents without access to sunlight, present another possibility for the production of new compounds that can be utilized in the pharmaceutical world. Nevertheless, additional research is required to fully examine and understand the diversity of microbial life and its usages.

Billions of people depend on the ocean as a source of food and employment. Consequently, it is vital that its resources are protected and used sustainably. Technological advances are crucial in achieving this - for example, they allow for the monitoring and sustainable management of fish stocks. These technologies can observe fish migration patterns and can link their changes to variations in the Earth’s climate. However, fish stock monitoring technologies are limited due to their high costs and the difficulties faced by sharing vast amounts of data among fisheries management authorities. The limited number of people trained to use these tools also poses a great hindrance.

Due to the increased prevalence of digital technologies in our everyday life, the demand for minerals has increased. Consequently, scientists are now looking towards the seabed, where polymetallic nodules are scattered across one million square miles of abyssal plain. Polymetallic nodules are mineral deposits in the shape of a potato, rich in manganese, iron, nickel, copper and cobalt. Nevertheless, the extraction of nodules pose environmental concerns as it can damage habitats and create sediment plumes, which could inhibit life on the seafloor. The effects of deep-sea mining remain unexplored, because the reality is that there is not enough knowledge about the deep sea and its species. More research and exploration of the deepest parts of our ocean, could determine whether ocean resources can be utilized without harming the ecosystem, its services and its species.

The new EU research framework programme HorizonEurope needs to secure continuous funding and needs to ensure that our oceans receive more attention. This is why I am actively pushing for ocean research to remain a central element in the new research program HorizonEurope with the “Mission: Clean and Productive Seas and Oceans”. However, the real obstacle to the sustainable usage of ocean resources and the success of ocean energy is the lack of visibility at the political level - and this despite the EU being a leader in this field. We need to make sure this changes.



Günther OETTINGER, EUROPEAN COMMISSION, Commissioner Budget and Human Resources

Commissioner Oettinger gave an informal briefing to the European Forum for Manufacturing.

The proposed HorizonEurope programme totalling 100 million euros is the most ambitious research & innovation programme so far.

There will also be a European Innovation Council to help Europe to become a front runner in market creating innovation.

Connected European Facilities will support investments in infrastructure networks:

- for transport 30.6 million euros proposed
- for energy 8.7 million euros
- for digital 3 million euros

The programme is going to be of utmost importance therefore to manufacturing companies across Europe.



Klas Wählberg, TEKNIKFÖRETAGEN, CEO, ORGALIME, Board Member

Introduction

- It is the perfect time to have this discussion
- The European Commission published in May its MFF proposal. Since then, everyone has been working hard and fast.
 - o In the past two days, the opinions on the sector-specific proposals establishing the EU's operational spending programmes for the period 2021-2027 were presented in the Budget Committee meeting of 24-26 September.
 - o On 13 September, the ITRE Committee received amendments on its MFF opinion.
 - o More than 3,000 amendments have been submitted on the HorizonEurope Rapporteurs' opinions. Christian Ehler MEP and Dan Nica MEP worked very intensely to meet the deadlines.
- Also, the Competition Council is taking place in the next two days, debating competitiveness and research.
- There is an extremely high interest in the subjects discussed tonight.
- The European Technology Industries employ nearly 11 million people in the EU and account for some €2,000bn of output.
- The industries represent over a quarter of the output of manufactured products and over





a third of the manufactured exports of the European Union.

- Europe's technology industries grew at an impressive rate of 5% in 2018 - and have created 350,000 jobs in the last 5 years.
- I am saying this not only to impress you but also to show you the link between Europe and our industry.
- Currently, industry is changing, society is changing. With a smooth yet bold change in industry, we can make a difference in society. A strong united Europe will only happen with a healthy, competitive, future-facing industry.
- European Technology Industries are key not only to productivity and competitiveness, but also to cleaner factories and cities; they also enable other industries to thrive, helping e-mobility grow and building grid solutions that manage new energy sources.
- The MFF therefore has a central role to play for a progressive, forward looking industrial strategy, which supports sustainable future growth, innovation and investment in Europe as well as global competitiveness.
- Having companies focus on technological progress does not mean we are blindsided. To be competitive today companies must basically focus on developing their business, technologies and science base, all the while finding environmental and social sustainability. Plus, they need to engage in new business models and embrace the opportunities which the digital revolution is offering.
- All this is hard work and requires constant investment in Research, Development and Innovation. We need such investments at single company level, at regional/cluster level, at national level and at European level.
- Orgalime welcomes the European Commission's support to competitiveness.
 - o For Research, Development and Innovation. The proposed budget allocation of €100bn for 2021-2027 is a sign that Europe is building a strong future.
 - Collaborative industrial research and Public Private Partnerships are key elements that must be defended in HorizonEurope. We appreciate very much the €52.7bn allocated to Pillar II and warn against any budget cuts in this future growth generating pillar.
 - Ecosystems need to play a role in all activities, no matter which Pillar the activity is in. Ecosystems are a key element of industry's competitiveness.
 - o For Connecting Europe Facility 2021-2027, a budget of €42.3bn is proposed to support investments in European infrastructure.
 - High tech infrastructures are a prerequisite for bringing the benefits of the ongoing digital, energy and circular transformations to citizens.
 - The modernisation of essential high-tech infrastructures and the development of business ecosystems should in our view be a priority in EU financing tools.
- Concentrating on innovative areas that provide real European added value, is in our view, critical to deliver on the things that matter for Europeans.
- Supporting European competitiveness is a real long-time investment that will benefit our



European society and its citizens. Technological companies, which will get stronger and more knowledgeable when engaging with partners all over Europe, contribute to society's long-term benefits.

SESSION 2: STIMULATING LONG-TERM GROWTH THROUGH APPLIED RESEARCH SUPPORTED BY HORIZONEUROPE

Thierry Tingaud, STMICROELECTRONICS FRANCE, President & CEO

FIEEC, the French Federation for Electrical, Electronic and Digital Industries, an Orgalime member, represents:

- 22 trade association members gathering 3,000 companies, out of which 87% are SMEs,
- 420,000 employees,
- and an aggregate turnover of €100bn.
- FIEEC sectors are very involved in R&D and innovation in our country and in Europe:



R&D represents in France 8% of the turnover, 16% of employees, and more than 30,000 researchers.

Our industries provide innovative solutions, which are key to answering current and coming societal challenges such as how to build and manage smart cities, enhance mobility, ensure digital confidence, implement e-health and take care of an ageing population.

For these reasons, the research, development and innovation policy of the EU constitutes a very important issue for all our member companies. As it is a central lever of competitiveness in the global competition, this highly contributes to a dynamic industrial sector in Europe, for the benefits of growth and jobs in our economies.

In this context and as the continuation of Horizon 2020, FIEEC welcomes the proposal for a policy review of the European Commission on HorizonEurope, which aims to put the R&D&I programme at the top of the European agenda for the next mandate.

Let me please share now with you what we consider the main conditions for success of this future EU policy.

The Commission proposal suggests a budget of €100bn for the 2021-2027 period: this is an improvement compared to the Horizon 2020 budget of around €80bn. Nevertheless, we look with interest at the proposal of the ITRE Committee of the European Parliament to increase the budget to €120bn, in order to maximize the impact of HorizonEurope on the European economy. We believe that this would be an important pre-requisite to reach the goals of the R&D policy defined at the European level, particularly with regards to the new ongoing innovation.

Within this global budget, we take note of the three-pillar structure which is proposed by the Commission. The second pillar dedicated to Global Challenges and Industrial Competitiveness should play a great role in the overall architecture of the program, with a special focus on competitiveness.



First, we consider the €52bn target budget for this pillar as a positive signal.

Second, the main clusters which are identified in this second pillar – especially health, safe society, digital and industry, climate, energy and mobility – could contribute to foster innovation in key domains for our economies. Specifically, the digital transformation cluster could be a great opportunity for most economic sectors due to the pervasive role of electronic and digital solutions. From that perspective and with regards to the Lamy report we would welcome the doubling of the budget of ESCEL, as recommended by the Electronic Leaders Group (ELG) report “Boosting Electronic Value Chain in Europe” presented to Commissioner Mariya Gabriel in June 2018.

I don't know how much China is spending on agriculture but you probably know that they disclosed their intention to spend on electronic components / Nanoelectronics around \$160bn, again \$160bn just to catch up.

Third, we need to focus on and support key vertical markets for Europe: assisted and autonomous driving and the electrification of mobility platforms, Industry 4.0, the Internet of Things, e-Health, and Artificial Intelligence should be the major focused programs. We should also not forget to support a sovereignty strategic program for aerospace and defence, but as well for security of supply with regards to global political environment.

To conclude, I would like to underline two other important issues for the future EU R&D&I framework.

1. To succeed in reinforcing the European innovation policy, our Federation considers that a close partnership between private and public stakeholders is highly needed, as we have witnessed in the High Level Group on Key Enabling Technologies. The continuation of Public Private Partnerships under HorizonEurope is definitively key.
2. Finally, one of the main condition for success remains of course simplicity in the management of the different programs, which is of course also key for our member companies.

We remain at your disposal to further share with you our views and work implementing the EU innovation policy.



Urban Wass, VOLVO GROUP, Senior Vice President Research & Innovation Policy

The Volvo Group has 11 brands, around 100,000 employees, is active on 190 markets and has production facilities in 18 countries. We produce trucks, buses, construction equipment and marine and industrial engines and we have complete solutions for financing and service.

The automotive industry is a growth engine for European economy, with a turnover that represents roughly 7% of the EU's GDP. Commercial vehicles are the backbone of Europe's economy, transporting 75% of all land-carried goods and 90% of value transported.

It is a well-known fact that investment in research and innovation (R&I) stimulates growth. According to a report from the Commission (*The Economic rationale for public R&I funding and its impact*, March 2017, DG Research and Innovation) two-thirds of economic growth in Europe derives from R&I. There seems to be broad consensus that HorizonEurope should support applied research. So the question for this session is how this can be done in practice to stimulate growth in a longer perspective.



Growth comes from customer demand, and requires competitive products and services on the market. If applied research is to stimulate long-term growth, someone has to turn research results into commercially available innovations. In the automotive industry it is not unusual that for each euro spent on research, you need to spend ten euros on ensuring that the new concept will work in practice (so-called advanced engineering), and then a hundred euros to make it ready for mass production. It is therefore not surprising that research results generated through collaborative projects involving industry have a high probability of implementation.

If you want growth, involve industry to get relevant results and accelerate innovation. And in order to attract industry to projects and partnerships, HorizonEurope needs to have the appropriate instruments and calls.

The EU accounts for more than three quarters of the Volvo Group's investments in Research and Development. This figure has gradually increased over the last five to ten years, and one factor contributing to this has been European R&I programmes. They have provided a stable research and innovation ecosystem, allowing different actors to meet, analyse the state of affairs, identify research needs and co-finance joint R&I projects. The Volvo Group has been actively involved in European projects since 1984. They have allowed us to conduct more research and to bring new solutions to market more rapidly. Moreover, HorizonEurope needs to be set up in such a way that it provides a research and innovation ecosystem that is stable over time and includes all relevant stakeholders.

For HorizonEurope, build on the experiences from Horizon 2020 and keep funding schemes that have proven their value - in particular collaborative projects and contractual public private partnerships (cPPPs). The excellence principle should be maintained.

The European automotive industry is in a good position to continue contributing to societal, environmental, and economic welfare, job creation and European growth. However, it is important to realize that there are also threats to such a positive scenario. Regions and players outside the traditional set of automotive actors (such as tech companies and venture capital players) are gaining momentum, and the core competencies required to remain successful are changing rapidly.

For the Volvo Group this means that we need to invest in research and innovation in areas like:

- Connected and automated vehicles
- Electrification and affordable zero emission vehicles
- Smart, safe and secure mobility solutions ("digital and green")
- Digital breakthrough of automotive development and manufacturing
- Smart and efficient automotive factories with a high degree of flexibility

Advanced manufacturing is crucial for jobs and growth in Europe, but there will be no manufacturing without competitive products. When it comes to the Volvo Group, we need to improve our products, services and industrial system in parallel, and to carry out relevant parts of the work in collaboration with others under HorizonEurope. We need to focus on both breakthrough and incremental innovation. We need to develop solutions that can be exported globally and thus contribute to the positioning of Europe as a world leader in innovation, production and services.

To promote growth, focus on finding solutions to key societal and industrial challenges. Pillar 2 "Global Challenges and Industrial Competitiveness" needs to be prioritized in HorizonEurope.

For the Volvo Group, the "Climate, Energy and Mobility" cluster will be of particular importance, but we also expect to participate under the "Digital and Industry" heading. Moreover, access to competence is an important driver for collaborative research. There has already been a change in



the core competences in automotive engineering, and this trend will only become stronger. One example is an increase in the importance of automotive electronics and software. As a curiosity, it can be noted that the average truck or passenger car has around 15 times more lines of code than a Boeing 787.

Everybody in the world depends on transportation, and there are some real challenges ahead when it comes to transport solutions and technology. Europe urgently needs a cleaner, safer, more efficient and sustainable transport system. This means there are problems that demand real answers – answers that often have to be addressed from a systems perspective. In light of this, HorizonEurope needs to support actions such as large-scale demonstrations of mobility solutions or high-tech pilot lines in factories.

Dedicated “missions” might be one way of addressing complex issues such as how to create an efficient and fossil-free transport system (“clean and safe mobility”). However, they must not replace well-functioning instruments in Horizon 2020 such as cPPPs.

A careful test period for the implementation of “missions” might be needed at the beginning of HorizonEurope to validate this new instrument. If proven useful, funds for “missions” can then gradually be increased over the years.

Moreover, “missions” should not be allowed to impact the administration or individual programming needs of each cluster in the Global Challenges and Industrial Competitiveness pillar, but rather be seen as a “strategic programming instrument” located outside of the five clusters.

Applied research under HorizonEurope will definitely be able to stimulate long-term growth, provided the level of funding is sufficient, and provided the general setup favours collaboration between the relevant stakeholders, including industry.

Jan Post, PHILIPS, Head Strategic Partnerships

In my presentation, I would like to emphasise:

- The importance of digitalization for Philips
- The importance of digitalization for industry in innovation and manufacturing
- Show how these two worlds are connected
- The importance of European cooperation in reaching Industrial Maturity in digitalization
- The relation of a local ecosystem to the EU environment
- As a member of the EFFRA: how the Factory of the future Public Private Partnership is helping to achieve this digitalization in Industry and create Industrial maturity.



Let me first frame our discussion with a brief overview of how digitization, data and connectivity is changing the way the world, literally, works. Consider this:

- The Mail online - the world’s most-read English language “newspaper” has no paper
- Amazon - the world’s most valuable retailer has no shops



- Uber - the world's largest taxi firm has no vehicles
- Airbnb - the world's biggest provider of accommodation owns no bed and no property

Digitalization is changing the world and is doing this fast and continuous but we are still in the beginning. These digital transformation changes will come and change our environment and the way that we are living today.

For the future of Philips, Digitalization in Health, is an extremely important issue, when we talk within Philips about health we mean the Health continuum: Starting with Healthy living and prevention. Diagnosis and treatment when we become ill and Homecare when we become older or as a part of an after treatment. In the future of this Health continuum there will remain of course a lot of traditional products but the Innovation will be dominated by the digital domain leading to more and more knowledge. Not about the health in general but the health of an individual leading to a much more personal, customized approach and treatment.

The new approach will be based on IOT (internet of things), AI (Artificial Intelligence), Information based on MSBE (Model Based System Engineering) Data analyses, and complex sensor systems to measure a variety of human properties, and of course security. All this information will be stored in a digital representation of a person, a so called 'digital Twin'. This Twin will be autonomous and personal and will help to keep the individual healthy and suggest treatment whenever necessary. It will make healthcare better, more efficient and enable affordable cost levels.

The digital twin as a concept also constitutes a major part of the future in the 'Industry 4.0 domain'. This digital twin can represent anything in industry: a product, a process, a car, a wind turbine, a robot or even a total production system. It will always be based on some kind of Artificial Intelligence system storing all the available information of a system leading to more autonomy in products, manufacturing processes or even a whole production chain. The digital twin will be based on the combination of the state of the art and available digital technology. Development of this digital twins will not be trivial and the success will be in the industrial maturity, it has to combine: domain knowledge of the application, technical ICT tools, and digital – open – platforms.

This is why EU co-operation in partnerships is so essential, we have to bring together a lot of disciplines to enable this new world and reach enough maturity to bring it to the market by creating industrial demonstrators on TRL 6-7.

The new world will come anyway and a strong Europe can become a front runner if we unite forces, creating new knowledge, innovation to the market, leading to industrial global leadership and employability.

Within Philips I am responsible for the Public Private Partnership of Philips Personal Care and I am also a Professor at the University of Groningen, both in the North of the Netherlands. The Drachten site is one of the biggest and most advanced global development and production centers in Europe within Philips. We develop numerous innovative products, such as Senseo coffee machines, Wake-up Lights, the new One Blade and shavers. Besides developing new shavers, Drachten also produces them in our factory that uses cutting-edge production technology.

From my responsibility I know how important Public Private Partnerships are. Remaining world leader in Electric shaving necessitates a lot of international co-operation and innovation. The



foundation of this innovation is based on European partnerships leading to new knowledge and innovation combined with industrial leadership and maturity. Considering this I can only express my sympathy for the Factories of the Future Public Private Partnerships. Working together, not only with science but also with other private companies to create new knowledge to bring solutions with industrial maturity to the market. Innovation on TRL 6-7 is essential for Industrial adoption, not only for the bigger companies but especially for the SME's, being the backbone of our European Industry.

On the Human Resource agenda our local high-tech ecosystem is also essential. The basis of every company is on the commitment and dedication of its workforce and most of our workforce is educated in the North of the Netherlands. So even a global company like Philips, employing in Drachten 35 nationalities, needs a very strong local ecosystem. In our ecosystem we try to bring together more than 200 companies, most of them SME's, technical education on all levels, science, all with a focus on Industry 4.0 and connected to Europe by a digital innovation HUB and a National Smart Industry HUB in the North of the Netherlands.

This combination of a local ecosystem embedded and connected to a strong Europe, co-operation in EU Partnership is and will remain the basis of success on the long term.

As a democratic EU society: Long-term road mapping, Debating, selection, execution of these Public Private Partnerships with Industry is important to stay on right track, to get and keep this big European ship of digitalization in the right direction and to sail together into the future.



Pilar DEL CASTILLO VERA MEP, (EPP, Spain), Industry, Research & Energy Committee

How can the MFF improve Europe's competitiveness? Surely improving Europe's competitiveness will not depend exclusively of the MFF, and other factors, such as a friendly legislative regime towards investment, play an important role.

Nevertheless, the future HorizonEurope and specific programmes should substantially contribute to strengthening Europe's economic growth.

In this regard, there is no need to stress the importance of the manufacturing industry in the European digital economy.

Companies have not only profited from new online business possibilities, in addition the restructuring of business models in association with Internet use has led to improved efficiency.

Consequently, the growth and competitiveness of our economy, as well as the new opportunities for prosperity are, without discussion, determined by the achievement of a full development of the digital society.

However, in order for Europe to fully digitally empower itself, we must first achieve unconstrained connectivity throughout the entire EU and eliminate legislative fragmentation and, second, not forget to invest in having the proper capabilities.



These key capacities concern high-performance computing, artificial intelligence, cybersecurity and advanced digital skills and ensuring their wide use and accessibility across the economy and society by businesses and the public sector alike.

Beyond any doubt the European Union provides unique and extraordinary conditions. With a GDP of €16.5 trillion, representing 22.8% of global GDP, more than 500 million consumers, and a strong global competitive industrial sector it has the necessary assets and economies of scale for developments such as cloud computing, Big Data, data-driven science, robotics, artificial intelligence, the Internet of Things, and of course 5G to fully develop.

In addition we are in a good competitive position not only because of the mentioned economies of scale, we also have an outstanding global competitive position in manufacturing, a sector that represents the major share of investment in EU R&D (62.3%) and 80% of total EU exports.

These strengths will prove of outmost importance in an era where the growth of machine to machine communications is exploding beyond the charts.

By 2020, 40% of all data will come from sensor data and it will unlock a \$1trillion global market and by 2023 we will reach 1 trillion sensors.

With the adequate capabilities and highways of the future, the high capacity networks, Europe's industrial sector will be perfectly equipped to be a front runner in the data economy, which is undeniably the key competitive advantage of the 21st century.



John HOWARTH MEP, (S&D, UK), Budgets Committee

The Horizon Framework Programmes and European Manufacturing Competitiveness

In the first three years of the current EU scientific research Framework Programme 8, Horizon 2020, brought together 14,768 for profit businesses, 1,494 educational institutions, 2,147 research organisations and 1,490 public sector bodies in funded collaborations.

These projects represented only 1 in 4 of the proposals assessed as high quality during the first three years of the seven year programme. By this measure funding for the EU Framework programmes, though productive of itself, has been woefully inadequate in ensuring that European research is enabled to deliver its full potential. The 2014-20 MFF set funding just under €75bn - €13bn, 15% less than the Commission had proposed.

However, the challenge is recognised to some extent. Both the European Commission and the European Parliament have highlighted research and innovation as a strategic priority for the Union. Funding for the next Multiannual Financial Framework (MFF - the EU's seven year budget), from 2021 to 2027, sits around €98bn in the proposals put forward by the European Commission. This represents an increase but does not live up to the bold talk of the Commission President, Mr Juncker. It represents a relatively small step forward. The MFF, however is legally speaking, a binding international agreement between the member states and, as such, is the property of the EU Council. It remains to be seen whether the Council shares the notion of priority for Framework 9 once the hard talking over numbers begins. Were the HorizonEurope budget lines to be scaled



back in a similar manner, one could be looking at a pot of €83bn - hardly an increase at all and in proportionate terms, around 7.5% of total MFF commitments. Despite the rhetoric from the top of the Commission, this is hardly a decisive shift of the Union's priorities. The European Parliament resolution of 14 March 2018 called for an FP9 Budget of at least €120bn.

These figures, however, hide the as yet imponderable effect of a British exit from the EU. The UK contribution to HorizonEurope could be anything between zero (were the UK to walk away from either the EU without a deal from FP9 because of conditions deemed unacceptable) and €15bn with participation at current success rates.

The bigger the programme, the better the news for Europe's manufacturers. HorizonEurope addresses a series of key challenges that can produce real gains for the sector unlikely to be realised by any other means. The European Union adds value by providing:

1. Economies of scale - the programme can address research that is otherwise too broad, too deep and too expensive for individual organisations to attempt, in doing so harnessing the capacity of a diverse group of organisations ranging from SMEs to major publicly funded centres of research excellence
2. The means of engagement - those sceptical of the value of the EU and its programmes generally feel uncomfortable when confronting the empirical world of research and innovation but when they do engage they frequently contend that, left to its own devices, the market would fill the void and solutions would evolve without the need for the dead hand of the bureaucrat. This seems to anyone who cares to look to be wishful thinking. The role that the EU plays in making the Horizon programmes happen across national and linguistic boundaries is now simply taken for granted, but its value cannot be underestimated. The definitions and streams provided by the pillars of the Horizon programmes, through challenges and proposal calls, make projects happen. There is simply no substitute for a central organising authority

Within this context HorizonEurope seeks to address through innovation the central business challenges facing manufacturers:

1. Delivering higher productivity - to maintain Europe's economic position progressively raising productivity is a central challenge. A good example of Horizon's contribution is the Satisfactory project. This partnership of ten organisations across five countries co-ordinated in Greece, seeks to create the smart factory, researching working environments, processes and decision making in the modern productive workplace. Smart sensors and data analysis, decision support systems, collaboration and information sharing, augmented reality and gamification methods are all part of the mix delivering environments in which productivity gains are realised
2. Lowering material and component costs - improving competitiveness in manufacturing with more cost effective materials. With pilot applications in aerospace, medical technology and automotive, the Borealis project develops new means of producing more cost effective components and developing revolutionary smart manufacturing tools. 15 businesses and research organisations contributed to the project co-ordinated in Finland and Switzerland
3. Supporting growth - innovation to improve the growth potential. For example the



ReconCell consortium have developed reconfigurable robot work cells that make practical the robotisation of production for SMEs where costs were otherwise prohibitive. Nine organisations led by the Josef Stefan Institute in Slovenia collaborate in the project

4. Creating solutions for new and growing markets - the circular economy promises new directions but requires priming through research into products and production processes. Ecosolar seeks to re-engineer the processes in the manufacture of solar panels. The project “envisions an integrated value chain to manufacture and implement solar panels in the most ecologic way, taking into account reuse of materials while manufacturing and repurposing solar panel components at end of life”. Co-ordinated by Norwegian research foundation, Sintef, the project involves eleven organisations
5. Addressing societal challenges - environmental markets increasingly provide large scale challenges. Horizon prizes offer cash incentives for solutions to societal problems - such as automotive emissions, tactile displays and materials for clean air. Solutions proposed need to be marketable, affordable and sustainable. One of this year’s Horizon prizes seeks to promote the development of materials to improve air quality - an increasingly critical issues for major conurbations and a serious public health challenge. The winner will be announced at the end of October in Vienna at INDTECH18 - a conference on innovative industries for smart growth, promoted by the Austrian Presidency under the Horizon programme

HorizonEurope’s continuation goes beyond its direct continue to innovation. It’s aims include the promotion of excellence in science. Accordingly Horizon funds its share of fundamental science - something which must continue for the benefit of the European Research Area.

The funding of pure/fundamental science research has been called into question by both market forces and some political currents. The argument that if industry is not prepared to fund research then that research can make little or no contribution to the productive economy has always been of dubious merit. However, a time of increasing marketisation of higher education, undergraduate fees and post-graduation employability has focussed university business managers on marketable courses and has led in some member states to the reduction of numbers studying ‘pure’ science and to the closure of courses or entirely departments offering theoretical physics, biology or engineering.

The decline of teaching pure, as well as applied, science and the resulting absence research at theoretical frontiers will only damage practical science. It may be stating the obvious but unless the frontiers of knowledge are continually extended, the possibilities of applying new knowledge cannot reveal themselves. The benefit to manufacturing lies further down the road and cannot always be directly connected. Nonetheless, HorizonEurope should be open to funding fundamental science projects and to catalysing the partnerships and collaboration that enables knowledge to be extended for its own sake.

Horizon provides the framework that facilitates collaboration between industry leading businesses and leading research institutions. It enables the scientific progress to develop hand-in-hand with manufacturing, applying the practicality of developing production processes to experimentation and theory. It is producing solutions to real business challenges and both building and broadening the sum of knowledge within the European Research Community. As such the Framework



Programmes continue to be the most direct means of enhancing the competitive performance of manufacturing on the European continent.

Klas Wählberg, TEKNIKFÖRETAGEN, CEO, ORGALIME, Board Member
Concluding Remarks

- We are all working towards the same goal: towards a united Europe where people have jobs, a nice, green and secure environment to live in and perspectives for their children's future.
 - I want to believe that this is possible, now is the time to make this happen.
- I am convinced that this will come with a United Europe where technology industries play a major role in Europe in 2035 and generate economic value. This will come with a United Europe where people work for the technology industries and come up with solutions for Sustainable Development Goals.
 - I want to believe that together the public and the private sectors can make this happen, now is the time to make this happen.
- Looking to the next steps, how can we ensure that MFF brings this future?
- It is necessary to shift towards new, sustainable growth models that combine economic, social and environmental considerations in a holistic and integrated way.
- For this, we need to invest in the right priorities
 - High-tech infrastructures are an essential missing link for bringing the benefits of the Digital Single Market, the Energy Union and the Circular Economy to EU citizens. A future MFF that prioritises investment into high-tech infrastructures provides investment certainty to industry and investors and the ability to plan and invest into innovative areas for the long-term.
 - I want to believe that MEPs will be thinking long-term and set the right priorities; now is the time to make this happen.
 - Applied research must be heavily promoted. It is the link that gives sense to blue sky research results. It is the element that increases the competitiveness of companies. Therefore, the pillar II of HorizonEurope with industrial collaborative research and PPPs like Factories of the Future must be harshly defended. It is an investment in Europe's future – in the future of all of us.
 - I want to believe that MEPs will support industrial collaborative research and on that account fight for pillar II; now is the time to make this happen.
- If we get it right, we can achieve a win-win outcome and Europe's economy will reap the benefits of a more competitive industry that will help solve global challenges.





Antony Fell, EUROPEAN FORUM FOR MANUFACTURING, Secretary General

The next European Forum for Manufacturers' Roundtable Dinner Debate will cover the Implementation of the Plastics Strategy on Wednesday 10 October 2018 in the Parliament. The session will be chaired by Ignacio Faria MEP. The Commission keynote speech will be by Kestutis Sadauskas, Director, Green Economy.

To close this EFM Roundtable Dinner Debate, I would like to propose a warm vote of thanks to all the companies who have come to the Parliament this evening to participate in this debate, to the Commissioner and MEPs and to the staff for their excellent preparation.


