



Euro-CASE

THE EUROPEAN COUNCIL OF
ACADEMIES OF APPLIED SCIENCES,
TECHNOLOGIES AND ENGINEERING

ANNUAL REPORT 2016



A hub of collective intelligence



The European Council of Academies of Applied Sciences, Technologies and Engineering is an independent non-profit organisation of national Academies of applied sciences, technologies and engineering, representing 23 European countries, the Austrian Academy of Sciences (ÖAW) re-joining 22 other Euro-CASE Academies as of January 1, 2017.

Euro-CASE acts as a permanent forum for exchange and consultation between European institutions, industry and research.

Through its affiliated Academies, Euro-CASE has access to top expertise (more than 6000 of Europe's most eminent engineers and technologists) and provides impartial, independent and balanced advice on technological issues with a clear European dimension to European institutions, national governments, companies and organisations.

In 2016, the European Commission launched the Scientific Advice Mechanism (SAM). Euro-CASE, along with the four sister Academy Networks, AE, ALLEA, EASAC and FEAM, participates in this Mechanism through the SAPEA (Science Advice for Policy by European Academies) project (cf. page 13).



Euro-CASE Vision 2020

“Euro-CASE will be the voice of European excellence in Engineering, Applied Sciences and Technology for the world”.

EC Director General for Research and Innovation, Robert-Jan Smits, on the SAPEA project:

“The agreement with the five European Academy Networks will boost the Commission’s Scientific Advice Mechanism. It will allow it to tap into the Academies’ broad knowledge across disciplines and regions in Europe. The Commission is looking forward to this new partnership with the Academies”.

Brussels, December 13, 2016

Message from the Chairman

Last year marked the beginning of a new chapter in our provision of evidence-based policy advice to the European Commission. With the implementation of the Scientific Advice Mechanism, the European Commission gave Academies a dedicated role in the EU system of science-based policy advice. Following the signing of the Memorandum of Understanding to strengthen inter-Academies cooperation in March 2015, the Presidents of the five European Academy Networks: Academia Europaea, ALLEA, EASAC, Euro-CASE and FEAM, agreed to form a consortium called “SAPEA – Science Advice for Policy by European Academies” in answer to a call in the Horizon 2020 Work Programme, with the aim of working within the Scientific Advice Mechanism together with the High Level Group of Scientific Advisors

The SAPEA consortium unites more than 100 member Academies, each with hundreds of Fellows, and I am very pleased that the SAPEA project was officially launched in November 2016. The EU funding of up to € 6 million for the next four years will enable the Academies to integrate their Fellows from all scientific disciplines in the process of providing evidence-based policy advice to the European Commission and will also provide means for closer collaboration between the five European Academy Networks. Euro-CASE will represent the voice of engineering, applied sciences and technology in the consortium.

Euro-CASE has currently four standing committees, so-called Platforms. The Innovation Platform has entered its second phase and will devote the expertise of the participating Academy representatives to the topic “Barriers to innovation and scale-up of innovative SMEs”. The topic is of a particular importance for future European growth opportunities and the Innovation Platform will provide evidence-based recommendations in this respect.

The Bio-economy Platform currently works on an overview of the status of the bio-economy in Eastern Europe while the Energy and Climate Platforms are entering their second phase.

I would like to thank our colleagues from the Engineering Academy of the Czech Republic who started activities of the Engineering Education Platform that will now be continued by our colleagues from the Academy of Engineering Sciences of Serbia. The Platform will seek



Reinhard F. Hüttel, Chairman of Euro-CASE

to provide an engineer's perspective and understanding of the current state and future of engineering education in Europe.

It is important for me to mention that in October 2016, the fifth successful EU-US Frontiers of Engineering Symposium was held at Aalto University near Helsinki, Finland, in partnership between the US National Academy of Engineering and Euro-CASE. It is fundamental that we offer young engineers and scientists this unique opportunity to participate in such an enriching transatlantic exchange. We are looking forward to the next cycle that will be held in California in 2017.

The latest Euro-CASE Annual Conference was organised by our colleagues from ATV and took place on November 14, 2016 in Lyngby, Denmark. Under the headline “Big Data – Smarter Products, Better Societies”, the international conference provided an excellent forum to discuss the opportunities and challenges arising from Big Data.

Finally, I am looking forward to a second three-year term as chairman of Euro-CASE with the new members of the Executive Committee. Together, we will strive to further strengthen the structures of Euro-CASE and to consolidate its role as partner of the European Commission in providing evidence-based policy advice.

The start of the SAPEA project also marks the beginning of work that still lies ahead of us. I am very much looking forward to embracing these new opportunities and challenges.

Reinhard F. Hüttel, Chairman

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Euro-CASE ANNUAL CONFERENCES

Since 2008 Euro-CASE member Academies have organised a series of Annual Conferences. Through this, a tradition has been established which sees each member Academy host an event each year.

- 2008 London:** "How Can Europe Meet its 2020 Renewables Targets?" [RAEng]
- 2009 Stockholm:** "Increasing the interest in Mathematics, Science and Technology" [IVA]
- 2010 Berlin:** "Innovation - Best Practices" [acatech]
- 2011 Madrid:** "Water and Food Security in Europe" [RAI]
- 2012 Paris:** "Energy Independence for Europe" [NATF]
- 2013 Lisbon:** "Boosting Innovation in Europe" [PAE]
- 2014 Brussels:** "Evidence-based Policy Advice and Innovation Policy beyond Horizon 2020" [acatech, ARB, IVA]
- 2015 Delft:** "Engineering Smart Cities of the Future" [AcTI]
- 2016 Lyngby:** "Big Data - Smarter Products, Better Societies" [ATV]

2016 ANNUAL CONFERENCE

Big Data – Smarter Products, Better Societies

November 14, Lyngby, Denmark

ATV



The 2016 Annual Conference was hosted by the Danish Academy of Technical Sciences under the technical theme **Big Data – Smarter Products, Better Societies**. The international conference provided a forum for discussions on the opportunities and challenges arising from Big Data. Over 150 people participated in this meeting which included several key note presentations by distinguished international speakers as well as three parallel sessions where scholars and business leaders presented challenges and solutions.

Session speakers included:

- **Yves Caseau**, Head of Digital Agency of the AXA Group and Fellow of NATF
- **Sierd Cloetingh**, Professor, Utrecht University, President, Academia Europaea
- **Reinhard Hüttel**, President of acatech and Chairman of Euro-CASE
- **Peter Olesen**, Professor, Chairman of the Governing Board of the European Institute of Innovation and Technology (EIT)
- **Gérard Roucairol**, Chairman of TERATEC and Former President of the National Academy of Technologies of France.
- **Henrik Wegener**, Executive Vice President, Chief Academic Officer and Provost at the Technical University of Denmark (DTU) and Chairman of the High Level Group of Scientific Advisors of the EC Scientific Advice Mechanism (SAM).



Annual conference 2016, plenary session



Martin P. Bendsøe, ATV Fellow and Chairman of the organizing Committee

The parallel sessions offered in-depth discussions and knowledge sharing on the following themes:

- Industrial Internet of Things
- Smarter Societies
- Changing Health Care

One of the debated transversal issues in the above topics was related to data privacy in data ecosystem. This concern will be further considered during the 2017 Euro-CASE Annual Conference in Poznan (see below).

The detailed programme and presentations can be found on the Euro-CASE website at www.euro-case.org



Parallel session: Smarter Societies

2017 Annual Conference

Cybersecurity

November 7-8, Poznan, Poland

The 2017 Euro-CASE Annual Conference is scheduled to take place in Poznan (Poland) on November 7-8. It will be hosted by the Polish Academy of Sciences (PAN) and Poznan Supercomputing and Networking Center (PSNC) on the theme of "Cybersecurity". The 2017 conference will include a number of keynote presentations by distinguished international speakers as well as three theme-specific tracks.

Other subtopics include:

- Security in public and private sectors
- Prevention of industrial cyber espionage
- Technologies used to protect industrial networks/ SCADA systems
- National and European cybersecurity policies
- Education in digital security



POLISH ACADEMY OF SCIENCES



Frontiers of Engineering



TAF

TECHNOLOGY
ACADEMY
FINLAND

2016/2017 cycle

Since 2010, Euro-CASE and the US National Academy of Engineering have jointly organised meetings under the umbrella of Frontiers of Engineering (FOE).

The objective of the Frontiers of Engineering Symposia is the establishment of contacts between the next generation of leaders in engineering, and the creation of a youth network to facilitate transatlantic engineering/technology collaboration and the transfer of new techniques and methods across four topics of major societal interest. Invited participants comprise of engineers, scientists and technologists below 45 years old including 60 representatives from both Europe and the United States.

In 2016 the Frontiers of Engineering symposium was hosted by the Technology Academy Finland on October 16-18 in Finland. Dr Harri Kulmala, Chief Executive Officer of the Finnish Metals and Engineering Competence Cluster in Tampere and TAF member, served as the EU co-chair. Over the 2-1/2 days of the symposium, four topics were highlighted:

- Intelligent Transportation Systems (automated vehicles, logistics & traffic systems, public transportation, robot equipment)
- Information and Computer Technologies for Personal Health
- Carbon Capture, Utilization and Storage
- Integrated Photonics Manufacturing



Detailed program and presentations from the symposium are available on the NAE website <http://www.nae-frontiers.org/Symposia/EU-USFOE/22791/50072.aspx>

The National Academy of Engineering (NAE) will host the 2017 Symposium at the UC Davis (California) between November 15 and 18. The general co-chairs, Dr Harri Kulmala (TAF) on behalf of Euro-CASE, and Prof. Michael Tsapatsis (University of Minnesota) on behalf of the NAE, along with other organizing parties, have identified the following four topics:

- Neuro-engineering
- Computational Imaging
- Next-Generation Solar Cells
- Technologies for Space Exploration

As in previous years, Euro-CASE Academies will select and nominate European participants in this event.



Frontiers of Engineering 2016 Symposium , Aalto University, Finland

Euro-CASE Platforms

Euro-CASE Platforms are organised as working groups where various Academies' representatives consider a specific topic and produce reports, which are often transmitted to the appropriate authorities in various European and national institutions, and may become a basis for further interactions.

Innovation

In 2015, the first term of this Platform produced an extensive report on European Innovation Policy. The report can be found on the Euro-CASE website. The Euro-CASE Board has approved an extension of this Innovation Platform for further 2 years 2016-2017.



Bertrand van Ee - Chair of the Euro-CASE Innovation Platform

In Stockholm, on January 12-13, 2016, Björn Nilsson (President IVA, Sweden) handed over the Innovation Platform's chairmanship to Bertrand van Ee (President AcTI, Netherlands). The Platform consists of 14 different member Academies. Together they provide outstanding scientific and private sector expertise on innovation policy related issues.

Despite a range of European and national approaches, there are still several challenges for innovation in various countries and for Europe as a whole. This is particularly true regarding transformation of research results into marketable products as well as scaling up innovative SMEs across the EU. The Platform is thus currently



From left - Aleksander Śniegocki, Thomas Stehnken and Bertrand van Ee

working on a report titled "What are the barriers in the national innovation systems that inhibit the scaling-up of innovative SMEs in Europe? What are the actual challenges in the Member States and what can the EU and national governments do to improve conditions for scaling up?" The study is based on extensive desk research and the results of a European-wide survey carried out by the Platform.

In addition, the Platform will conduct a series of case studies ("deep dives") that highlight specifics of a particular activity sector. The underlying assumption of the case studies is that barriers to innovation and scale-up can be outlined more clearly and in more detail than in a report which confronts issues within Europe as a whole. The report will be approached from the reasoning that innovation occurs differently in different sectors. It is envisaged that these case studies will be published as stand-alone documents, while key findings will be integrated in the overall report.



Innovation Platform meeting in Jablonna, Poland

Related to “Innovation”, contacts with several Directorates in Brussels were established, especially with the DG RTD and DG GROW. Additionally, through a series of case studies, the Platform aims to collaborate with the Knowledge and Innovation Communities (KICs) of the European Institute of Innovation and Technology (EIT).

The overall ambition of this Platform is to support policy makers in the European Commission and the Member States in lowering the barriers to innovation by delivering a report with clear policy recommendations by September 2017.

Energy



In 2013, Euro-CASE launched the Energy Platform which is comprised of Fellows of Euro-CASE Academies and members of other institutions and enterprises. This Platform is based on the activities of its member Academies that develop policy options and address the need for science-based policy advice. The Platform's first important output was a policy paper on the reform options for the European Union Emission Trading System (EU-ETS).

In the light of substantial decisions to be taken in the field of energy at the European level, as laid out in the EC Communication “A policy framework for climate and energy in the period from 2020 to 2030” (COM/2014/015 final), it is the aim of the Energy Platform to work in addition on different scenarios for the development of the European Energy System as well as the technological requirements and constraints for different energy policies. The Platform therefore decided to produce a discussion paper on the electricity future in 2030; “Electricity production, transmission and storage – challenges for

the future European electricity system”. The above paper is available on the Euro-CASE website.

Euro-CASE and its member Academies are committed to contributing to the development of a sustainable European Energy System both at national and European levels. Key challenges include issues such as energy prices and industrial competitiveness in the light of the 2030 targets and the specific interaction of sustainability and industrial policies. A long-term project on the future of the European Energy System is envisioned.

Engineering Education



“Engineering is vital to successful, sustainable civilization. So much rests on the shoulders of future generations of engineers that we must give them the best possible foundation to their professional lives.”

In 2016, leadership of the Engineering Education Platform was assigned to the Academy of Engineering Sciences of Serbia (AESS). The newly appointed chair, Petar Petrovic, AESS Fellow, presented the approved Engineering Education Platform's work program in Annual Conference in Lyngby.

In its initial stage, it is proposed to analyse several highly relevant topics of a general character:

- The current status of engineering education as seen by:
 - Employers and their associations,
 - Scientific and higher education communities,
 - Government authorities,
 - Other institutions engaged in the engineering development at the European, regional and national level.

- Future required and possible evolutions in the current state of engineering education in terms of the expected role of engineering for future technological, economic, social, environmental and other developments;
- National, regional and European system policies, measures and key actors for performing desirable changes in engineering education;
- Outline of the system for monitoring and evaluating the impact of changes on systems of educating engineers.

Additionally, 3 to 5 subtopics will be selected i.e. particular thematic priorities with a high degree of relevance for the Platform's objectives, which could be a subject of further analysis and deeper case studies.

Bio-Economy



Bio-economy platform meeting in Brussels

The Bio-economy Platform aims to review the status and progress of the Bio-economy inside the European Member States, identify limitations to its development and propose recommendations to the Euro-CASE Board which could be useful for overcoming these limitations. The Platform is led by Bruno Jarry, Vice President of the National Academy of Technologies of France (NATF) and brings together representatives of 13 member Academies. In 2016, the Platform members met twice in Brussels to discuss, amongst others, a planned collaboration between the Platform and the Bio-Based Industries Joint Undertaking

(BBI-JU), and a Public-Private Partnership between the EU and the Bio-Based Industries Consortium. The collaboration aims to better appreciate the extent to which the Bio-economy is represented in Eastern European Member States. Euro-CASE Academies in Eastern Europe have undertaken to compile specific information on their country's bio-economy for a questionnaire prepared by the BBI JU. The Platform will also contribute to the investigation under the Scientific Advice Mechanism of the European Commission on "New techniques in agricultural biotechnology".

Major interactions of Euro-CASE with various European institutions, organizations and other international activities

For many years, Euro-CASE has efficiently interacted with the European Commission and the European Parliament. Its voice has now been recognized as the leading voice of engineering and technical sciences for European political institutions. This recognition led the European Commission to include Euro-CASE, along with four other partner organizations, into a Consortium invited to provide independent, science- and evidence-based policy advice. The present motto of the Commission, which has set up SAM (Science Advice Mechanism), is: “Science for Policy” and not “Policy for Science”.

Euro-CASE has pursued close relations with the Joint Research Center (JRC) of the European Commission, on the basis of their Memorandum of Understanding signed in 2012. A meeting jointly organized on “Digital Privacy” was considered a great success. Euro-CASE Fellows have also actively participated in a “Science meets Parliament Day”, an event organized by JRC, which brought together scientists, technologists and Members of the European Parliament to discuss issues of interest in establishing European laws, directives and policies.

International interactions of Euro-CASE are not only limited to Europe as witnesses its participation in CAETS (Council of Academies of Engineering and Technical Sciences).

How to strengthen the role of excellent science in the EU policy making was a topic of a meeting organized by the European Risk Forum to which Euro-CASE was invited to express its views and recommendations.

All these points are developed in more details in the chapters which follow.

SAM: Scientific Advice Mechanism



Following the signing of the Memorandum of Understanding between the five European Academy Networks (Academia Europaea - AE, All European Academies - ALLEA, European Academies Science Advisory Council - EASAC, Euro-CASE, and Federation of European Academies of Medicine - FEAM) in March 2015, preparations were made to deliver the Consortium project - Science Advice for Policy by European Academies (SAPEA).

Six Work Packages were defined:

- WP1: Coordination
- WP2: Scientific Advice, evidence reviews and other scientific inputs
- WP3: Communications (including public engagement via the media and dissemination)
- WP4: Establishment of procedures for quality assurance of scientific advice
- WP5: Best practice of interaction between Academies and with policymakers.
- WP6: Sustainability study on optimizing coordination and fostering the further cooperation of Academies.

On Tuesday, December 13, 2016 Presidents of the five European Academy Networks forming SAPEA joined the Director-General for Research and Innovation, Dr Robert-Jan Smits in Brussels for its official launch. SAPEA is part of, and will contribute to the European Scientific Advice Mechanism (SAM), which provides independent, transdisciplinary and evidence-based scientific advice to the European Commission.

Director-General Smits welcomed the launch of SAPEA. "Today's agreement with the five European Academy Networks will boost the Commission's Scientific Advice Mechanism," he said. "It will allow it to tap into the Academies' broad knowledge across disciplines and regions in Europe. The Commission is looking forward to this new partnership with the Academies."

The Chairman of the SAPEA Board and ALLEA President, Professor Günter Stock, voiced his appreciation that "the Commission has established a comprehensive system for providing independent and evidence-based scientific advice for EU policymaking. The five European Academy organisations look forward to constructively working together with the SAM's High Level Group."

SAPEA combines the expertise of more than 100 Academies across Europe, spanning the disciplines of science, engineering, medicine, humanities, and social sciences, with hundreds of Fellows respectively who will contribute to the work of SAM. The project will run over 4 years and is funded through a 6 M€ Grant from the EU's Horizon 2020 programme.

Before the Grant Agreement was officially signed, Euro-CASE provided several experts on the topics previously undertaken by the High Level Group: "Cybersecurity" and "CO2 emissions from vehicles under real road driving conditions". Currently, two other subjects are proposed by the Commission, namely: "New techniques in agricultural technology" and "Food from Oceans". Euro-CASE Academies' Fellows have been nominated to actively participate in both topics.

The SAM-High Level Group of Scientific Advisors in 2016 included:

- Janusz M. Bujnicki, Professor, Head of the Laboratory of Bioinformatics and Protein Engineering, International Institute of Molecular and Cell Biology, Warsaw



Signature of the Grant Agreement by the SAPEA consortium and the European Commission. From left to right: Günter Stock-ALLEA, Robert-Jan Smits-EC DG RTD, Bernard Charpentier-FEAM, Jos van der Meer-EASAC, Sierd Cloetingh-AE, Jacques Lukasik-Euro-CASE



From left to right, in the 1st row: Reinhard Hüttli, Chairman Euro-CASE, Rolf-Dieter Heuer, Françoise Meunier, Vice-President FEAM, EU Commissioner Carlos Moedas, Elvira Fortunato, Julia Slingo and Pearl Dykstra. In the 2nd row: Sierd Cloetingh, President Academia Europaea, Günter Stock, President ALLEA, Janusz Bujnicki, Jos van der Meer, President EASAC, Cédric Villani and Henrik C. Wegener, Chair of HLG.

- Pearl Dykstra, Professor of Sociology, Erasmus University, Rotterdam
- Elvira Fortunato, Professor, Materials Science Department of the Faculty of Science and Technology, NOVA University, Lisbon
- Rolf-Dieter Heuer, Director-General, European Organization for Nuclear Research (CERN)
- Julia Slingo, Chief Scientist, Met Office, Exeter
- Cédric Villani, Director, Henri Poincaré Institute, Paris
- Henrik C. Wegener, Chair of the HLG, Executive Vice President, Chief Academic Officer and Provost, Technical University of Denmark

All members of the High Level Group are Fellows of various Academies participating in the SAPEA project. Elvira Fortunato and Henrik C. Wegener are members of Euro-CASE.

SAPEA Networks Presidents met for the first time with the High Level Group members and with Commissioner Carlos Moedas in March 2016, in Brussels.

Major international events with participation of Euro-CASE representatives

INGSA

In September 2016, Secretary General, Jacques Lukasik, represented Euro-CASE, at the 2016 International Network for Government Science Advice conference (INGSA). The Secretary General participated in the panel during the plenary session on “Solution-oriented Advice” and delivered a presentation on “Why Science and Technology are important in times of Social Transformations?” Approximately 450 participants from 70 countries attended the conference.

Conference material can be found on the INGSA website: <http://www.ingsa.org/events/2016-conference/>



INGSA meeting

HLG meeting Vilnius



Vilnius Workshop

As part of the evidence-gathering process, the SAM High Level Group organised a multidisciplinary workshop on “Cybersecurity - Secure digital identities for the digital single market in Europe”.

Around 75 participants from academia, governmental bodies, civil society and the private sector interactively discussed and responded to a series of questions related to this topic.

This High Level Group meeting took place in Vilnius, Lithuania in November 2016 and was hosted by the Lithuanian Academy of Sciences. Euro-CASE was represented by several Fellows with expertise in Cybersecurity.

The workshop addressed the following topics:

- Understanding digital identities through a multidisciplinary approach
- Strengths, Weaknesses, Opportunities and Threats (SWOT analysis) of digital identities
- Privacy and security
- Security and trust in the digital world

International Council of Academies of Engineering and Technological Sciences (CAETS): www.caets.org



CAETS is an independent, nonpolitical, non-governmental international organization of engineering and technological sciences Academies.

After the 2015 CAETS meeting in New Dehli, the 2016 Annual meeting took place October 12-15 in London, and was organised by the Royal Academy of Engineering (UK) under the theme “Engineering a Better World”. Many representatives of Euro-CASE Academies participated in this event; 15 Euro-CASE Academies are also members of CAETS which gathers 26 Academies worldwide. Euro-CASE Secretary General, Jacques Lukasik presented the SAPEA project to the general audience.

‘Diversity’ proved to be a key discussion point at the CAETS Council Meeting. A number of Academies discussed the diversity challenges facing the engineering profession within their respective countries, and the measures taken to address them.

Head of Diversity at the Royal Academy of Engineering, Jenny Young, gave a presentation where she informed attendees on the planned launch of the RAEng’s “Diversity and Inclusion” progression framework for professional bodies.

The Royal Academy of Engineering of Spain (RAI) will organise the 2017 meeting in Madrid on November 13-16. The conference will focus on contributions of engineering to the Bio-economy, emphasizing challenges such as future food security, the food-land-energy nexus, and the blue Bio-economy.



CAETS plenary session

Member Academies' major events and achievements in 2016

More detailed information for each Academy can be found on their respective web sites.

**Austria**www.oeaw.ac.at**Belgium**www.academieroyale.be**Croatia**www.hatz.hr

- On the occasion of a Cooperation Agreement signature between Zagreb and Ulsan (South Korea) Universities, HATZ organized a Round Table on "The Academia and Shipbuilding Industry Cooperation in South Korea and Croatia".
- Fellows, Professors Vilko Ziljak and Klaudio Pap, were laureates of the Grand Prix, distinguished in November at the 65th International Fair INNOVA in Brussels.
- Along with the Faculty of Civil Engineering Zagreb, HATZ organized several Round Table discussions on "How to Win a Project for Financing within the HORIZON 2020 Program? with examples of successful projects" and, related to the European Union political situation, "The End of EU?", "Political and Legal Fundaments of Western Europe", "The European States' Unification Crisis".
- One of the 2016 publications was focused on the European Research Area for growth and innovation in textiles. HATZ publications are distributed to all Euro-CASE Academies.

**Czech Republic**www.eacr.cz

- 2nd Joint Conference of the EA CR and the Czech Medical Academy, organized in October in Prague, presented results of cooperation of technical and medical research in various fields of technical and medical sciences.
- In March, the EA CR was co-organizer of an Engineering Forum – a significant meeting of representatives of firms and prominent figures from the Czech industry, state administration, and representatives of the sphere of R&D and technical education. The topics under discussion included: science, research and innovations, forms of supporting export and technical education. The topics were aimed at improving competitiveness of the Czech economy.
- The Annual Prize of the Engineering Academy is an award promoting outstanding results of Engineering in the Czech Republic. In 2016, it was presented to the team from METROSTAV, J.S.C., for the realization of the Blanka Tunnel Complex of the Prague City Ring Road. Advanced technologies were used in its construction, taking full account of complex geological conditions.

**Denmark**www.atv.dk

- Besides organizing Euro-CASE 2016 Annual Conference on "Big Data-Smarter Products, Better Societies", ATV managed the Torkil Holm Symposium on "Visions in Chemistry". 360 participants and speakers enjoyed two days of presentations and discussions on cutting edge research and future chemical applications.

- "Stronger Science Communication in the Media" conference gathered 120 participants and speakers. They discussed how to communicate science and research in a modern and more convincing way to present-day media.
- "EU's Personal Data Protective Directive" was an occasion for more than 100 participants and speakers to debate the consequences of the EU's new directive, providing specific suggestions to companies, authorities and others on how to comply with the Directive in the best possible way.

**Finland**www.technologyacademy.fi

- The 1 M€ 2016 Millennium Technology Prize was awarded to Professor Frances Arnold. She pioneered methods of "directed evolution" to create useful biological systems, including enzymes, metabolic pathways, genetic regulatory circuits, and organisms. This technology uses the power of biology and evolution to solve many important problems, often replacing less efficient, sometimes harmful technologies, and making sustainable development and clean technology possible in many areas of industry.
- TAF's Technology Leap (Teknoloikka in Finnish), based on a proven concept developed by IVA in Sweden, aims to stimulate young people (19-22 years old) to choose a technology career. Its practical implementation includes an internship in companies as well as communication on their experiences to the general public.
- MillenniumX is the brand name for a series of events for schoolchildren to encourage creative thinking, understanding the significance of technology in society and building technological innovations. The topics of events included competitions, exhibitions and workshops e.g. on games, games development, programming, and robotics.

**France**www.academie-technologies.fr

- Besides its Fellows' active participation in the Euro-CASE Platforms (Energy, Innovation, Engineering Education and Bio-economy), NATF published several reports on the following topics:
 - Healthy Food
 - Technologies for Climate Change
 - Open Innovation and SME's
 - Bio-gas
 - Risk Assessment
 - Genome Sequencing Techniques
 - TIC Learning Techniques
- The theme of the NATF Annual Plenary Seminar, held in October, was related to "Innovation, Growth and Employment". At the end of the year, two public Colloquia, organized in partnership with the CNRS, were held on the topics "How to Repair an Elastic Man?" and "Modelling: its Successes and Limitations".
- NATF elected a new governance for the period 2017/2018:
 - Alain Bravo, President
 - Bruno Jarry, Vice-President
 - Olivier Appert, General Delegate



Germany

www.acatech.de

- German Federal President, Joachim Gauck, provided a key-note speech on “Human-Machine Interaction” at the 2016 acatech Annual Conference in Berlin.
- In 2016, the “Innovation Dialogue” with Chancellor Angela Merkel and high-ranking representatives from business, science and society, coordinated by acatech, focused on two topics “Innovation Potential of Biotechnology” and “Modern Forms of Knowledge and Technology Transfer”.
- During the two-day Annual Conference related to the project “Energy Systems of the Future”, managed by acatech in cooperation with the National Academy of Sciences Leopoldina and the Union of the German Academies of Sciences and Humanities, participants discussed the inclusion of social groups in Germany’s energy transition (“Energiewende”). The project brings together more than 100 renowned scholars from numerous disciplines that develop scientifically sound policy options aimed at supporting the restructuring of the energy supply system in Germany.



Greece

portal.tee.gr/portal/page/portal/INTER_RELATIONS/english/role



Hungary

www.mernokakademia.hu

- HAE organized a 3-day conference on “Innovation and Sustainable Surface Transport”. Its purpose was to motivate domestic professionals in the field of innovation and strengthening the relationship between domestic stakeholders and the companies involved in the development.
- A one-day long Korean-Hungarian Seminar dealt with the theme: “Technical Innovation – Importance of Start-Up Companies”.
- On the occasion of the HAE General Assembly, Dr. István Lepsényi, State Secretary, presented a lecture on “Motors of Industrial Developments”.



Ireland

www.iae.ie

- In May, IAE hosted a Conference on Economic and Infrastructure Development, supporting the National Planning Framework. The following Reports were launched:
 - “Spatial Planning on the island of Ireland”: Sets out the key concepts and highlights the main challenges to be addressed.
 - “Dublin-Belfast Economic Corridor”: Recommendation of the development of an economic corridor connecting the island’s two main cities.
 - “The Atlantic City Regions”: How to achieve a more balanced regional development and investment by completing an increasingly connected city regions?
 - “Sustainable Transport Infrastructure in 2035”
 - “National Broadband Plan Ireland – Policy Advisory”: Developing

a national policy in providing an internationally competitive, high speed broadband service based on long term planning (30 years).

- “Critical Infrastructure - Adaptation for Climate Change – Progress Report Q1 2016”: Highlights to government policy makers and owners of critical infrastructure of still relevant concerns and recommendations from the Academy’s 2009 Report.

- The following Report is to be launched in January 2017: “Ireland’s 2030 Greenhouse Gas Emissions Target”: An assessment of feasibility and costs in achieving the Climate and Energy Policy Framework targets.



Italy

www.fast.mi.it



Netherlands

www.acti-nl.org

- The Innovation Conference in November held in The Hague was under the theme: “Dutch Industry: the Next Smart Step”. The key note speech was delivered by Prince Constantin of Orange, in his office of Ambassador of StartupDelta, the Dutch national start up and scale up initiative. The 2016 meeting was the 13th in a series of Innovation Conferences organized by AcTI. AcTI stressed the importance to involve not only the triple helix of government, industry and knowledge institutions, but also institutionalized public interest groups to make such innovations feasible and successful. The conference program is available on www.acti-events.org.
- During the Innovation Conference, the Board of AcTI announced, on the occasion of its 30th anniversary, the AcTI Startup Programme and set up a Committee of Young Entrepreneurs. The committee’s task is to implement the AcTI Startup Program (ASP) in consultation with the Dutch StartupDelta Initiative. Young promising entrepreneurs get the opportunity to make use of the AcTI platform and the chance to acquire AcTI membership. StartupDelta supports the AcTI start up program and will add recognition to the programme its network of young entrepreneurs.



Norway

www.ntva.no

- In March, the Oslo Chapter of NTVA organized a meeting in Gothenburg, Sweden, in cooperation with the IVA Vest, under the theme of medical research. A similar meeting took place in Oslo. In May, the Academy arranged a seminar of future challenges of Norway. It was a celebration of the 90th birthday of Johannes Moe, an esteemed member and past President of NTVA as well as General Director of SINTEF and Rector of NTNU.
- In September, NTVA organized its annual 2-day Teknologiforum in Trondheim under the theme “Smart Cities and Societies”. In October, the Academy held a “motivation day” at the University College of Bergen, with presentations and demonstrations of different science themes for high school students.
- NTVA organized in 2016 approximately 40 meetings and seminars. The Academy regularly reports on its activities in 6 cities: Bergen, Kristiansand, Oslo, Stavanger, Tromsø and Trondheim.



Poland

www.pan.pl

- The Polish Academy of Sciences "Excellence in Science" Department was created in 2016 to offer support for ERC grant applicants in Poland through providing information, guidance and advice on ERC grants and the application process.
- The Polish Institute of Advanced Studies is being created as an auxiliary scientific unit of PAS, conducting research within the framework of social sciences and humanities and aimed at making the Polish SSH more international.
- In 2016, PAS signed new agreements on scientific cooperation with the Czech Academy of Sciences, the National Research Council of Italy (CNR), as well as the protocols with the Academies in the following countries: Estonia, Belarus, Ukraine, Mongolia, Moldova and Slovakia.
- In September, a meeting of the Euro-CASE Innovation Platform took place in PAS Research Center "Energy Conversion and Renewable Resources" in Jabłonna, one of the most modern laboratory complexes in Europe. Main topics during the two-day discussions centred on innovation and energy.



Portugal

www.ordemengenhadores.pt



Romania

www.astr.ro

- In October, in the city of Targu Mureş, ASTR organized the eleventh edition of the academic "Days of ASTR" on the theme "Smart City". Plenary speeches aimed to define the concept of Smart City, from national and world experience perspectives. During this meeting, ASTR's magazine, "Journal of Engineering Sciences and Innovation" (JESI) was launched to the public. The first issue contains 11 papers in five subdivisions and extends over 150 magazine pages.
- ASTR members attended European research programs and organized international events in Romania: WEC-FOREN, EMECH, EUROSIS ISC, "Innovative Technologies for Joining Advanced Materials" - TIMA 16, International Conference on Interdisciplinary Studies, Balkan Mining Congress...
- On October 31, Professor Abdellatif Miraoui, Ph.D. DHC from Morocco was presented the title of Honorary Member by ASTR President, Mr. Mihai Mihăiță. In his acceptance speech, Professor Miraoui described the organization and the activities carried out by the institutions he represents University Cadi Ayyad and Agence Universitaire de la Francophonie (AUF), including his vision of "Smart Universities".



Serbia

www.ains.rs

- At the Euro-CASE Board meeting in November, held in Lyngby, Denmark, AESS representative, Professor Petar Petrovich, was elected to the Euro-CASE Executive Committee. The Board approved his Academy's proposal for a renewed Euro-CASE

Engineering Education Platform and Professor Petrovich has been entrusted to chair the Platform.

- AESS Regular Election Assembly was held on November 30. The following individuals have been appointed for a term of three years: Branko Kovacevic - President, Miroljub Adzic - Vice President, and Miloljub Smiljanic - Secretary General.
- AESS actively participated in the creation of a strategic document for interstate economic cooperation between Serbia and Kazakhstan. AESS proposed a number of projects and programs in specific areas of common interest to both sides. As a member of the governmental delegation, led by the Serbian Prime Minister Aleksandar Vucic, AESS Fellow Borislav Stojkov presented 14 projects at the Business Forum held in November in Astana, Kazakhstan.



Slovenia

www.ias.si

- In June and October, two workshops were organised by the IAS Working Group for Education and produced "Statements on Technical Education in Slovenia".
- "Key Measures for Technology and Innovation Breakthrough of Slovenia": IAS, together with the Chamber of Commerce and Industry, organised the "3rd Strategic Conference of Slovenia 5.0: Innovation and Technology Breakthrough of Slovenia". The output of the conference were 5 key measures for Technology and Innovation Breakthrough; circulation of researchers, reform of higher education, change of funding of R&D, change of tax and investment policies, Industry 4.0 and digitalisation.
- "Innovation System of Slovenia": following one of its main projects, the Academy has prepared and published the "Analysis of Sustainable Development of Slovenia", "Analysis of Educational System in Slovenia", "Analysis of Research, Development and Innovative Achievements of Slovenia". Analysis include recommendations for improvement on the above topics. The statements will be published on the IAS website as well as physical copies which will be presented to the public and the Ministry of Education for further use.



Spain

www.raing.es

- The Royal Academy of Engineering of Spain has organized more than 30 seminars, conferences and other similar events. The following are highlighted:
 - A session on "Technologies to change the current "Energy" model".
 - International workshop "Advances and applications of Data Science & Engineering".
 - Seminars "Challenges for the de-carbonization": "Technology and Economy" and "Frontiers of the Knowledge and Technique" as well as the Round Table "The Energy and the Engineering at Society's Service".
 - Traditional Annual Awards "Academiae Dilecta" and "Young Engineers" were attributed.
- This year's efforts of the "Prospective Platform for Energy and Innovation", which integrates a team of experts from industry, uni-

versity and administration, were focused on “The role of the energy storage solutions in the power grids of the future”.

- The “Education, Innovation, Entrepreneurship and Investment Forum” aims at the creation of a new, holistic ecosystem, identifying major problems of the respective areas and proposing practical, innovative and efficient solutions in order to improve the ecosystem. In 2016, the Forum approached the issue “Women and Engineering” with the support of European and Spanish institutions.



Sweden

www.iva.se

- Projects: IVA is currently running or has completed during the year several major policy-advice projects:
 - Innovation within the Forestry Industry
 - Good Cities of the Future
 - Electricity Crossroads
 - Resource-efficient Business Models
 - Research Outlook and Attractiveness for Sustainable Growth
 IVA has also run projects aimed at attracting students to higher education in engineering and science (Technology Leap), and promoting entrepreneurship amongst the young (Prince Daniel's Fellowship).
- Seminars and outreach: More than 120 seminars and other outreach activities open to the public were organized. More than half of the seminars were hosted by the different divisions of the Academy or regional sections. The remainder were hosted by IVA projects or the IVA Business Executives Council.
- International activities: IVA Fellows were represented at the CAETS and Euro-CASE Annual meetings. Several international delegations were received at the Academy, including a delegation led by the Prime Minister of Latvia in June, and a delegation led by the Prime Minister of the Czech Republic in November. IVA also made several delegation- and study-visits abroad, e.g. to Hong Kong, China, Finland, Germany, including a Royal Technology Mission with senior business leaders to Japan.



Switzerland

www.satw.ch

- To increase the number of young people choosing engineering as profession, SATW has organized a conference on the topic of encouraging “Technology” in schools and extracurricular STEM activities. In addition, TecDays have been organized in eight high schools and a magazine called Techno-scope was published.
- Cybersecurity has become an even more relevant topic. To sharpen the attention of the Swiss population on threats related to cyber space, SATW organized two public events in Lausanne and Zurich. For experts, another Cybersecurity event was organized on the subject of the security of critical infrastructures.
- Industrial manufacturing methods are about to change fundamentally. Mastering new manufacturing technologies such as additive manufacturing and Industry 4.0 will be the key to success. SATW published the first research overview on “Advanced Manufacturing in Switzerland”, providing a highly comprehensive picture of the Swiss scientific landscape.



United Kingdom

www.raeng.org.uk

- As the culmination of its Presidency of the CAETS, the RAEng hosted “Engineering a Better World”, a flagship conference focused on the contributions “Engineering” can make in achieving the United Nations Sustainable Development Goals (UN SDGs). Over 400 people attended the conference from over 40 countries, including Academies and professional engineering institutions from countries in Africa. The day prior to the conference the Academy hosted a Young Engineers Day, with students from around the world working in teams to come up with an engineering innovation to solve one of the UN SDGs.
- The Academy Diversity Leadership Group, established in 2013 to take action to increase diversity across engineering employment, launched a toolkit developed with and for employers called “Increasing diversity and inclusion in engineering”.
- The academy has been selected as a delivery partner for the UK Government “Global Challenges Research Fund (GCRF)”, a £1.5 billion fund launched in 2016 to support cutting-edge research that addresses the challenges faced by developing countries. The RAEng has £3 million per year to spend over the next four years, funding five programmes, including Africa Catalyst, a programme to support the development of Professional Engineering Institutions across Africa.

Board representatives and Executive Committee



At the 2016 Euro-CASE Board meeting in Lyngby the Austrian Academy of Science (ÖAW) was renewed a full member from January 2017.

Euro-CASE Executive Committee in 2016 and 2017

Members of the Executive Committee are identified as *ex officio* members of the Board. During 2016, members of the Executive Committee met four times and held two telephone conferences. The Board met twice, in May 2016 in Paris and once more following the Annual Conference in November 2016 in Lyngby, Denmark.

The 2016 Executive Committee's term was due to end in May; however, this was extended by the Board owing to the preparatory process of the SAPEA project.

The 2016 Executive Committee was comprised of:

- **Reinhard Hüttl** | acatech (DE) | Chairman
- **Jacques Lukasik** | NATF (FR) | Secretary General
- **William Wakeham** | RAEng (UK) | Treasurer
- **Olavi Nevanlinna** | TAF (FI) | Member
- **Björn Nilsson** | IVA (SE) | Member
- **Petr Zuna** | EA CR (CZ) | Member

Following the Board meeting in Denmark, a new Executive Committee was appointed for a three year term, this includes:



Reinhard Hüttl
acatech [DE]
Chairman



Yves Caristan
NATF [FR]
Secretary General



Ric Parker
RAEng [UK]
Treasurer



Elzbieta Frackowiak
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Olavi Nevanlinna
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