

European Association of Research and Technology Organisations

Recommendations for future EU innovation policy

TECHNOLOGY FOR A BETTER WORLD

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Recommendations for future EU innovation policy

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Executive Summarv

Europe represents 7% of the world population and 25% of the global GDP

Between 2007 and 2013 the total public deficit increased from just over 60% of the GDP to almost 95%. In addition, Europe faces an unprecedented rise in youth unemployment. Innovation is the key to changing these trends and the EU has launched Horizon 2020 as a vehicle for such change. EARTO is ready to partner with the European Commission in achieving sustainable growth through innovation.

Research & Technology Organisations (RTOs) long experience of collaboration across the whole value chain means that they are ideally suited to manage existing and build new ecosystems and clusters that are driven by value chains. **RTOs added-values include:**

- Strong experience in EU project management
- · Local/regional/national presence, industry intimacy and links to academia
- Provision of critical mass in terms of expertise, experience (organisational memory), technology infrastructures with highly qualified personnel
- Participation in networks throughout Europe

RTOs' position as key partners in European Public-Private Partnerships, European Technology Platforms and other strategic alliances which are relevant for industry and research communities at large, allow them to be active participants in the development of new industry, best national and international industry and regulatory practices, as well as in smart research & innovation policies.

This paper presents two key recommendations in support of European sustainable growth:

Recommendation 1

Europe needs strong value-chains and innovation ecosystems

European RTOs are best positioned to develop broad support to European value chains together with the European Commission and Member States. Cooperation across public and private stakeholders, sectors and national borders is one of the unique strengths of European RTOs. EU politicians and decision-makers are invited to continue their support to existing European value chains and innovation ecosystems and use RTOs to set up new ecosystems. In order to achieve this, EU decision-makers should support RTOs in managing the research and technological infrastructures and facilities necessary for innovation in such ecosystems.

Recommendation 2

Europe needs impact delivered from national and European RD&I investments

Clearly RTOs have a major role to play in supporting Member States and the EU. A multipronged approach allows RTOs to deliver impact from the invested RD&I funds by providing strategic advice on key areas where those funds should be invested, by performing RD&I, and by maintaining and constructing the necessary research & development infrastructures and demonstration facilities in Europe.

RTOs are ready to work with the European Commission as strategic advisors supporting EU innovation policies. In this context, RTOs are ready to advise the European Commission on how to achieve synergies between EU innovation policies in different Directorate-General (DGs) and support the transitioning of DG Research & Innovation into a policy DG. RTOs are very active in the implementation of Horizon 2020 and as such see a clear potential for further improvement of key issues in response to societal challenges and for simplification of the EU RD&I instruments landscape. Furthermore, available funds are limited and RTOs are willing to participate in the dialogue for prioritizing existing resources and developing smart and sustainable innovation policies in support of maximum impact.

EARTO as the European RTOs network remains ready to work with the European Commission, European Parliament and Member States regulators in support of these recommendations in a continued open dialogue.



Introduction

RTOs Responding to Today's Innovation Emergency

As clearly recognised by the European Commission, we are facing an 'innovation emergency'1 : EU faces today the very real risk of falling behind the US and Asia in terms of innovation performance. Europe R&D intensity in the EU-27 stood at 2.03% in 2010, much below the figures recorded in Japan (3.36%), South Korea (4%) and the United Sates (2.87%)². There is today a clear understanding that while Europe creates excellent research it does not capitalise sufficiently on the knowledge created in terms of economic success, new products and job creation.

In this context, the Europe 2020 strategy has identified 5 focus areas including innovation³ to foster sustainable growth. The EU Research & Innovation Programme Horizon 2020 has been designed to shift the focus from excellent research to innovation, driving economic growth and creating jobs.

Indeed, the European Commission expects that achieving the EU target of investing 3% of EU GDP in R&D by 2020 could create 3.7 million jobs and increase annual GDP by €795

billion by 2025. In order to reach such impact, the European policies and programmes will need the full engagement of the key European innovation stakeholders including Research and Technology Organisations (RTOs).

The 350 European RTOs, members of EARTO, are already responding to the present "innovation emergency" through

performing applied research with industry collaboration and by offering their full support to EU decision-makers in defining an efficient European innovation policy and in implementing key aspects of the Horizon 2020 programme together with industry. European RTOs' core mission is to harness science and technology in the service of innovation for public bodies and industry, to improve the quality of life and build economic competiveness in Europe.

RTOs have a special interest in collaborating with SMEs, as they often act as the "external R&D lab" for SMEs who cannot afford their own R&D resources. While activities are well underway to improve the economic future of the EU, it is critical that focus is maintained on important initiatives in support of these efforts. Accordingly, this paper outlines the EARTO recommendations in support of innovation and economic prosperity in Europe.

Synergy of EU Policies as an **Effective Tool for Jobs & Growth**

European competitiveness cannot be supported by a standalone industrial strategy without numerous interactions with many other policy areas. The European Commission in its Communication in January 2014 for a European Industrial Renaissance⁴ clearly stated the need to have better links between its sectorial policies. This was again clearly recognised by the European Council in its recommendations issued in March this year stating that links between the Europe 2020 strategy, industrial competitiveness and climate and energy policies will be key for the future. Thus, the European Commission is making significant efforts to truly integrate various policies and the mid-term review of Europe 2020 Strategy will

be key in the coming year.

Most recently, very welcome efforts can be seen in the European Commission Communication on Research and Innovation as sources of renewed growth⁵ where links between EU RD&I & Financial policies have been made for the first time. Such efforts should clearly be continued and supported by the Member

States e.g. the European Semester & the EU Presidencies. In this context integration and synergy are not understood as aims in themselves but as means to support European Institutions & Member States in making the right policy mix for better welfare for EU citizens. It is clear that priorities need to be made in terms of what is to be financed in order to tackle the innovation challenges ahead that will require multi-disciplinary, multi-level and multi-stakeholders approaches.

This will require new links & collaborations between the various EU sectorial policies and will bring forward new dialogues.

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European RTOs' core mission

is to harness science and

http://ec.europa.eu/research/innovation-union/index_en.cfm?pg=why

² http://epp.eurostat.ec.europa.eu/cache/ITY_OFFPUB/KS-GN-13-001/EN/KS-GN-13-001-EN.PDF

³ http://ec.europa.eu/europe2020/europe-2020-in-a-nutshell/priorities/index_en.htm ⁴ http://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:52014DC0014&from=EN

⁵ http://ec.europa.eu/research/innovation-union/pdf/state-of-the-union/2013/research-and-innovation-as-sources-of-renewed-growth-com-2014-339-final.pdf

The European Commission has already identified this issue and created various inter-DGs-horizontal working groups in an effort to at least partly address it. However, considering the complexity of EU processes, the Member

States will need to play their part in supporting such efforts. If the European Commission aims towards simple proposals, the Member States will have to aim towards avoiding adding complexity to the proposals made by the European

Commission during their dialogue at the European Council level. Once again, RTOs are ready to support the European Institutions in defining links between EU policies and advising how to tackle issues raising from promoting synergies and ensuring an integrated and improved evidence-based policy making.

Another example of such issue can be seen in the discussion on how EU RD&I policy can be linked to the EU Regional Policy. A significant part of the EU Structural Funds is now labelled for innovation but synergy between the two EU policies still needs to be put in place. The European Commission is pushing regional actors to better define their regional strategy (i.e. smart specialisation strategy) and this will require further definition of their RD&I strategy. RTOs welcome such synergy efforts made to link EU funding programmes, both at strategic and implementation levels.

Such efforts have the potential to strengthen the regional dimension of research and innovation and ultimately give regions a stronger role in coordinating activities on the ground and driving the development of effective regional innovation ecosystems. RTOs as multi-disciplinary applied research organisations covering a broad spectrum of application areas can therefore clearly support the European Commission objective to stimulate synergies between the various EU funds as a means to creating more impact from EU RD&I funds. Accordingly, RTOs as strong regional & national actors are working closely with their regional authorities in setting up their regional smart specialisation strategies and ultimately taking an active part in answering the operational programmes.

Once again the success of such synergy implementation between RD&I and regional policies will require the involvement of various actors including EU, national & regional authorities as well as other stakeholders involved in regional innovation ecosystems. RTOs playing the role of "connectors" are willing to support these actors in implementing such synergy by bringing forward practical experience in advising and working with the various political decision-making levels.

In addition to the alignment of EU funds, the efforts towards synergies between EU policies will also bring back to the table the issue of rationalising EU RD&I instruments. The European Commission has made its best efforts to incorporate simplifi-

RTOs welcome such synergy efforts made to link EU funding programmes, both at strategic and implementation levels.

cation into the Rules for Participation of Horizon 2020, but the number of funding instruments, platforms, committees, working groups, partnerships, joint programmes and others

> initiatives do not appear to have decreased significantly. There is still a tendency to look for another instrument if an existing one is not working as well as expected, without closing the door for the existing failing instrument. This has brought unnecessary complexity to EU

RD&I policy, with an inherent complexity from many instruments. Such complexity of instruments clearly needs to be minimized, especially considering the fact that RD&I policy aims at innovation which requires the strong and easy involvement of industry (large companies & SMEs).

The current high level of complexity is potentially impairing EU RD&I ambitions and blunting impact.

Furthermore, to strengthen the innovation chain further, one may also consider how financial instruments from DG Enterprise, such as "soft loans", the European Investment Bank and revolving funds, could further contribute to stimulating public-private cooperation, especially between SMEs and RTOs.

Tackling all these problems is not the responsibility of the European Commission alone. Member States must play their part through dialogue within the European Council and MEPs

should also be involved, e.g. by pushing for proper agendas and discussions in the ITRE Committee.

Such complex landscape presents a barrier to achieving the necessary impact from European RD&I funds. With the implementation of the EU funding programmes RTOs as strong regional & national actors are working closely with their regional authorities in setting up their regional smart specialisation strategies and ultimately taking an active part in answering the operational programmes.

transferred to external agencies, the European Commission's DG R&I has the opportunity to take a step back from the implementation of the programmes and really look at the issue of simplifying EU's RD&I instruments landscape.

RTOs are ready to support the European Commission in evaluating the instruments at hand and establishing smarter EU landscape with more innovation targeted instruments.



Recommendation 1

EUROPE NEEDS STRONG VALUE-CHAINS & INNOVATION ECOSYSTEMS

Applied research is an important part of the innovation chain. European RTOs are well positioned to develop broad support

to European value chains together with the European Commission and Member States. Based on multidisciplinary applied research, cooperation across public and private stakeholders, sectors

RTOs represent both multi-disciplinary expertise and application orientated infrastructures that can fill the gap when industrial research capabilities in house have declined, providing an objective and specialised RD&I partner.

Currently, continued turbulent economic times in Europe call for increased R&I efforts to maximize EU economic competitiveness and support Europe's ability to create jobs, new business and maintain our overall welfare. Europe's

economic recovery has been weak and fragile, particularly compared to Asia and the US. The reindustrialisation of the US is taking place at a fast pace accenting our European manufacturing industry challenges. One key opportunity in the face of geographic and economic challenges is the fact that Europe's industrial base has evolved and continues to do so providing a sound resource

and national borders is one of the unique strengths of European RTOs. EU politicians and decision-makers are invited to use RTOs to set up new ecosystems as well as to continue their support to existing European value chains and innovation ecosystems. This will speed up the process of dissemination of results of research. EU decision-makers should support RTOs in managing the research and technological infrastructures and facilities necessary for innovation in such ecosystems. for RD&I. Globalisation and the economic crisis have, however, had a serious impact on EU industry, e.g., since 2008 a total of 3.5 million jobs have been lost in manufacturing and EU overall productivity continues to weaken (with major differences between individual Member States). Our key opportunity lies in the renewal of Europe's industrial base involving also SMEs in that process. RTOs represent both multi-disciplinary expertise and application orientated infrastructures that can fill the gap when industrial research capabilities in house have declined, providing an objective and specialised RD&I partner.

European industry encompasses much more than the traditional manufacturing sector. The traditional product chain concept with its fixed phases and production factors, while still important, is no longer dominant as the reality becomes more complex with industrial companies occupying globally networked innovation ecosystems. Technologies and services play a key role as enablers of new, sustainable approaches. In many cases these enablers are generic, making them suitable for broad application. Investment in expertise and infrastructure coordinated by RTOs are optimised as they are focusing on R&I in a variety of disciplines rather than a single industry sector. Transnational investment in key infrastructures can also support the implementation of the European Research Area. Indeed, in the global context, Europe is one region of the world and should have a common strategy, which takes into account its regional differences, while optimising limited resources both monetary and in terms of expertise.

The EU faces a very real risk of falling behind the US and Asia in terms of innovation performance⁶. The present aim to increase spending on RD&I to 3% GDP by 2020 needs to be supported by relevant actions. Clearly, further action needs to be taken at EU level regarding innovation policy.

The Future of European Innovation Performance is Dependent on our Innovation Ecosystems

Almost 40% of the European industrial workforce is structured around different ecosystems. The European Commission has identified smart regional specialisation as a focus area, which in other words could be termed "ecosystem formation". Today approximately 2000 regional clusters exist in Europe, while more than 9000 could potentially be set up. RTOs have a key role in such ecosystems as "connectors", linking responsible partners together, from private and public sector at EU, national & regional levels. Supporting existing networks and the creation of new networks of industrial stakeholders, including SMEs, and subcontractors will be key to re-industrialising Europe and to finding appropriate and economically viable solutions to today's challenges.

Ecosystems where innovation takes place include a variety of actors in addition to the RTOs such as SMEs and large compa-

European RTOs are an integral and vital part of innovation ecosystems' creation due to their extensive expertise and research facilities, both individually and when organised into networks and strategic partnerships across Europe. nies, universities, vocational and educational institutes, authorities and agencies (from municipal and regional to national and pan-European). European RTOs are an integral and vital part of innovation ecosystems' creation due to their extensive expertise

and research facilities, both individually and when organised into networks and strategic partnerships across Europe. RTOs have supported the creation of innovation ecosystems involving various industrial clusters and value chains, where both large companies and SMEs collaborate. RTOs as independent research providers have long taken the role of supporting value chains by housing the complex large scale research and technological infrastructures/facilities much needed by many stakeholders (new enterprises, SMEs, large enterprises, universities) but which are too resource intensive for any single industry investment. In this context a single research and technological infrastructure/facility can be used to investigate completely new technology piloting and spin-off incubation, to test changes in existing products, and to validate emerging concepts, either with single industry partners or together with a consortium of several industrial players. RTOs are key in promoting the maturation of technologies at different stages of the TRL scale. Inter-disciplinary approaches are also key when developing solutions together with industry.

Supporting European Value Chains Will Require Further Supporting RTOs as "Connectors"

As RTOs have evolved, they have reached a level of research maturity where it is now possible to offer a unique array of RD&I. This evolution has positioned RTOs as "hybrid" between two axes as summarized in the graph below. RTOs are neither public nor private, supporting both basic research and close to market research, with a focus on transforming basic research into market solutions.



⁶ See latest Innovation Score Board for detailed figures.



Indeed, RTOs' operations and services are based on **3 main types of RD&I activities** in partnership with an array of stakeholders necessary to strengthen value chains and ecosystems in Europe:

1_____Activities bringing the Future: such activities are typically funded without industrial funding, but rather with basic funding (if available, supported by national/regional governments) and open institutional funding. In this case RTOs have very strong links with their national & regional governments in defining strategic innovation plans and collaborate closely with universities to harvest ideas from their basic research and bring to higher TRL levels as result of applied research.

Collaboration with universities can be through sharing staff (e.g. joint professors, guest researchers), hosting PhDs students, joint educational programmes, joint research activities, joint facilities, among others. In many cases such collaboration exploits the complementarity of RTOs and universities to maximize benefit from national and international investments.



EXAMPLE FRANCE

The CEA is mandated by the French government to develop decarbonized energy technologies in order to increase strategic national independency, to decrease energy costs for French citizens, and to ensure facilities' safety and environmental protection. The CEA is mandated to support national industry in either nuclear or renewable energies fields, as well as in a wide range of other areas such as microelectronics or health technologies. Moreover, the CEA is given the charge of nuclear deterrence and national security as regards disarmament, struggle against nuclear proliferation and terrorism. The total CEA workforce consists of about 16,000 employees. Across the whole of the CEA (including both civilian and military research), there are 1,500 PhD students and 300 post-docs.

The CEA is based in 10 research centers in France, it has 54 joint research units, 27 Equipex (facilities of excellence) and 33 Labex (Laboratories of excellence).

www.cea.fr

2 Activities addressing the Pre-Competitive:

such activities are typically applied research programmes jointly-funded with 40-70% external funding. These activities provide short term return on research investments and are tailored to relevant funding and competition rules. In this case RD&I activities such as cooperative projects under regional, national or European competitive calls are the focus. For such RD&I activities, RTOs will automatically partner with industry as well as any other relevant stakeholders to maximize the RD&I impact and dissemination of research results.

In ideal collaborations, a triple helix approach is used where regulators, research providers and industry create the innovation backbone (or DNA) supporting the solution of obstacles to product development independent of whether they are technical, monetary, societal or regulatory.

🗾 Fraunhofer

<u>EXAMPLE GERMANY</u>

Fraunhofer-Gesellschaft undertakes applied research that drives economic development and serves the wider benefit of society. Its services are solicited by customers and contractual partners in industry, the service sector and public administration.

The majority of the more than 23,000 staff are qualified scientists and engineers, who work with an annual research budget of 2 billion euros in 67 institutes. Of this sum, more than 1.7 billion euros is generated through contract research. More than 70 percent of the Fraunhofer-Gesellschaft's contract research revenue is derived from contracts with industry and from publicly financed research projects. Almost 30 percent is contributed by the German federal and Länder governments in the form of base funding, enabling the institutes to work ahead on solutions to problems that will not become acutely relevant to industry and society until five or ten years from now.

To accelerate innovation by creating regional focuses, Fraunhofer-Gesellschaft has established 20 different innovation clusters all over Germany. The created ventures determined their goals and necessary milestones by pooling the strengths of the region and activating them to solve demanding tasks, involving industry and universities. These clusters could successfully sharpen the profile of the regions and activated private industry research activities.

www.fraunhofer.de

3_____Activities addressing the Immediate: such activities are typically based on research contracts with 100% external funding. In this case, RTOs provide immediate added value and foster knowledge dissemination with access to validation, testing, certification. In close to market applications, clients are typically industry although partnership with regulators is not unusual. These activities represent core business for RTOs where an understanding of industry coupled to objectivity and professionalism is key. In this context "industry" includes large, medium and small companies both in the RTO's country of origin and abroad. Indeed, many RTOs have a network of foreign offices to better reach their international industrial clients. Clearly, for such RD& services, RTOs do not use their basic funding and comply with European State-Aid Rules⁷.



EXAMPLE SPAIN

FIK is a private interdisciplinary scientific & technological development initiative in the field of ageing and disability. Its goal is to obtain patentable results that allow the profitability of the enterprise to be optimised and which lead to products and/or services that maximise the personal freedom, independence, health and quality of life of the elderly and disabled whilst simultaneously generating an economic framework.

FIK is made up by 26 investment partners and has a budget of approximately 50 millions euros over a 10-year period (2007-2017) in the context of ageing and disability. FIK partners include: Financial bodies, Industrial groups, Social and health institutions, Mass media, Family investment funds, Public institutions and EARTO member TECNALIA as Knowledge Partner.

FIK approaches a grand challenge in developed societies while also representing a major economic opportunity.

http://www.tecnalia.com/en/health/fik-a-privateenterprise-model/fik-a-private-enterprise-model.htm

Thanks to their specific mission-driven operational model, based on the necessity to cooperate with an array of stakeholders, European RTOs have become the glue and reinforcement of many innovation ecosystems on regional, national and European level (e.g. European Institute of Technology KICs and pan-European Public Private Partnerships & European Innovation Partnerships are strongly supported by EARTO members). RTOs are also an effective instrument for the dissemination of research results to be further used by European policy makers.

Europe Needs to Support SMEs Through Shared Demonstration Facilities Managed by RTOs

With the trend by enterprises to outsource not only the repetitive supply of components or materials but also the development (design & engineering) of such components or materials, SMEs must evolve to suit this new business model. Being used to short-term orders and direct payment after delivery, SMEs now need to invest upfront and defer return on investment until the subsequent repetitive supply period.

An SME today often does not have the financial means for such investment, let alone the skills, capabilities and research and development facilities needed to support future development. RTOs have technological infrastructure and facilities together with trained personnel, making them ideal to operate relevant shared or open pilot environments. SMEs can timeshare or use RTOs' facilities under various conditions adapted to their needs when and where it becomes apparent.

RTOs' efforts in supporting European SMEs by developing appropriate research and development facilities, open to all value-chains actors should be recognised and further supported by European innovation, industrial and regional policies. Indeed when connected to a region's smart specialisation, an RTO research and development facility can boost the industrial R&D effort in a region substantially.

RTOs specifically support SMEs which supplying large industry by offering them an industry relevant operational environment in terms of shared research and development facility.

Presently, RTOs provide value chains with multiple partners where SMEs can validate and develop the performance of their product - independent of whether they are material, component, subassembly or equipment suppliers -to another enterprise that is or will deliver a final product to the market. There exists today a market mismatch where the SME as a smaller entity does not have all the facilities needed to demonstrate the maturity of their product. Without such facilities they cannot readily become further involved in the value chain associated with the product. In this context, RTOs play an important role in supporting European SMEs to close the gap in their specific value chain by using research and development facilities which are beyond their individual investment capabilities, but which are set up and managed by RTOs. This approach allows the SMEs to test and validate their products and processes on a neutral site that can also provide customized research and development support in an independent manner.

⁷ See EARTO Comments on the last Revision of the State-Aid Rules in Europe: www.earto.eu



Recommendation 2

EUROPE NEEDS IMPACT DELIVERED FROM NATIONAL & EUROPEAN RD&I INVESTMENTS

Clearly, Europe needs to maximize the impact delivered from national and international research funding. A multipronged approach allows RTOs to maximise the effective use of all available RD&I funds and deliver impact from those funds by providing strategic advice on key areas where they should be invested, by performing RD&I, and by maintaining and constructing the necessary research & development infrastructures and demonstration facilities in Europe.

Given their national and/or regional basis, European RTOs already define and participate in multi-disciplinary networks which are positioned to play a crucial role in supporting the Member States and the European Union in delivering impact from the invested RD&I funds. The share of RD&I in the total EU budget is now about 8%, much higher than the share of RD&I spent in Member States' budgets (1.4% in 2012)⁸ which shows the importance that RD&I has today on the EU agenda. Insuring that those 8% are creating the expected impact will be key for the European Union to be able to demonstrate its added-value to citizens.

Ensuring that EU Funds Are Leveraging National Funds

EUROSTAT figures clearly showed already in 2010 that the main volume of research is funded nationally. EU Framework Programmes were at the time merely 6.7% of the total EU RD&I funds (EU27 Members States vs EU Framework Programmes)⁹. Accordingly, the EU RD&I budget can best deliver impact when understood as a complement of national RD&I funds. In other words, EU funds are complementary to those of Member States and their strategic programming

⁸ http://www.voxeu.org/article/european-research-and-innovation-spending-crisis

⁹ EC FP7 Mid-Term Review Report: http://ec.europa.eu/research/evaluations/pdf/archive/fp7_monitoring_reports/6th_fp7_monitoring_report.pdf

should then be carefully managed to implement such complementarity and bring real EU-added value.

In turn, European RD&I funding through the various framework

programmes is essential in order to support impact on a pan-European scale. In addition, EU RD&I programmes are most probably becoming of greater value for Members States having declining RD&I spending. With the Horizon 2020 programme and part of the Structural Funds earmarked for innovation during 2014-2020, even if at lower volumes, the EU RD&I funds are of increasing strategic

A large part of RTOs have had to adapt by doing more with less national financial support and redirecting their focus away from collaboration with universities, on bringing academic research to market, to working more closely than ever directly with industry.

pressure on Member States' budgets, in general but particularly in terms of the share spent on RD&I activities. Ideally, current efforts to recognise RD&I spending as investments

> and not costs will have a positive effect on how some Member States perceive their R&I budget¹⁰.

> In the context of direct cutting of RD&I spending in numerous Member States, RTOs have also experienced great pressure on their base financial resources in recent years (when these are funded by their government). A large part of RTOs have had to adapt by doing more with less national financial support and redi-

value and should be directed at key pan-European issues.

As recognised by the European Commission in its recent Communication on R&I for Growth, there is presently great recting their focus away from collaboration with universities, on bringing academic research to market, to working more closely than ever directly with industry.



Innovations in exporting industries



Turnover development after the innovation



VTT's role and significance in the innovations of export industries. Increase in companies' turnover after innovation. www.vtt.fi

¹⁰ In the US, the BEA already recognized expenditures by business, government, and nonprofit institutions on research and development (R&D) as fixed assets and recorded R&D spending as investment in gross domestic product (GDP) as part of the comprehensive (or benchmark) revision of the national income and product accounts (NIPAs) released on July 31, 2013 www.bea.gov



Accordingly, impact has never been higher on RTOs strategic agendas. Most RTOs which have received a national/regional mandate also have to report regularly on their impact to those providing them base finances. Such impact is then shown in terms of various indicators ranging from the number of new jobs created in their regions, turnover coming from industrial (national & international) contracts, number of new spin-offs, elaboration of long-term partnerships with industrial companies and with universities, as well as number of first patent filings, etc.



www.tno.nl

RTOs Strong Involvement Will Ensure Horizon 2020's Impact

RTOs' core mission is to promote research and innovation targeted at solving grand societal and industrial challenges and supporting sustainable growth through R&D and related innovation-support services helping industry to exploit economic opportunities.

Amongst the different types of research performing organisations in Europe, RTOs are those who operate most closely with industry. One task of RTOs is to ensure that research can ultimately support the creation of viable marketable products. In this role, RTOs operate very closely with industry and support bridging the Valley-of-Death to solve societal challenges and foster the reindustrialization in Europe.

RTOs are Europe's strong RD&I providers thanks to the infrastructures and facilities they set-up and manage. Large scale infrastructure requires major investments. RTOs are familiar with the process of shared funding through close combination between national and regional funding, industrial funding and shared ownership to allow the construction of facilities that would be beyond the investment capabilities of one single stakeholder.



EXAMPLE SWEDEN

A recent example is the world class AstaZero research and testing facility built in the south of Sweden to support research and testing into active vehicle safety. This facility has been more than 7 years in the planning and represents the first full scale test site for future active road safety. The land for the facility was purchased from the local municipality. Necessary infrastructure in the form of access roads etc. was installed using regional funds. Guaranteed funding for between 5-12 years has been secured from both national research agencies and industry as security for bank funding of the remaining investment cost. The facility is owned by EARTO member SP with an academic partner to foster shared use and a broad range of research activities from blue sky to close to market.

www.astazero.com

The management and planning of similar pan-European facilities is an activity that RTOs are well suited to exploit. Their operations and service model maintains a high contact both with academic research and close-to-market activities with

industry, ensuring that such facilities can operate across the TRL scale. By doing so, RTOs strongly contribute to the training of professionals at the front end of industry's technology needs and which are then transferred to the industrial sector.

Up to now, RTOs have been heavily involved in past EU RD&I Framework Programmes. EARTO members are already very much involved in all industrial and societal grand challenges via European Technology Platforms, Public-Private Partnerships, European Innovation Partnerships (EIPs), Joint Programming Initiatives (JPIs), European Institute of Innovation & Technology Knowledge Innovation Communities (EIT KICs), as well as by supporting the development of new innovation supporting instruments such as the Fast Track to Innovation (FTI).

In FP7 alone, RTOs have been a major beneficiaries' group, having received 11.9 Billion Euros, about 27% of the funds allocated under the programme¹¹. The top 10 research organisations participating in FP7 have also occupied the top positions in the overall FP7 ranking. In addition, RTOs are known for building consortia across the whole value-chain bringing industry into the EU R&I programme: EARTO demonstrated in 2012 that participation of larger RTOs in FP projects was supporting the involvement of industrial partners in such projects (see graph)¹². EARTO members are seriously taking on the challenge to enhance participation of large companies as well as SMEs in Horizon 2020, to ensure that the programme ultimately supports the creation of European viable and marketable products. EARTO members are continually looking for new ways to support the EC in implementing Horizon 2020 programme by performing impact-driven research and innovation activities.

RTOs Supporting Industry Participation in EU Projects

All FP7 Cooperation Projects vs Projects with Large RTOs



 HES: Higher or Secondary Education
 PRC: Private for Profit (excluding Education)

 PUB: Public Body (excluding Research and Education)
 REC: Research Organisations

¹¹ European Commission eCorda database figures from June 2014.

¹² http://www.earto.eu/fileadmin/content/03_Publications/20120530EARTO_Position_H2020_Cost_Model.pdf



Conclusion

RTOS ARE ACTIVE IN THE IMPLEMENTATION OF HORIZON 2020

Innovation can flourish by combining the issues and solutions from different policy areas. RTOs, as multi-disciplinary applied research organisations covering a broad spectrum of application areas, are ready to work with the European Commission as strategic advisors in support of synergies between EU innovation policies aimed at maximizing effective use of all available RD&I funds and in transitioning DG R&I to a policy DG (e.g. Policy Support Facility and others). Furthermore, simplification of the EU RD&I instrument landscape is necessary to foster

innovation. RTOs are active in the implementation of Horizon 2020 but there is a clear potential for further development of key issues in response to societal

challenges. Available funds are limited and RTOs are willing to participate in the dialogue for prioritizing existing resources and developing smart and sustainable innovation policy in support of maximum impact. RTOs long experience of collaboration across the whole value chain means that they are ideally suited to manage existing and build new ecosystems and clusters. **RTOs added-values include:**

- Strong experience in EU project management
- Local/regional/national presence, industry intimacy and links to academia
- Provision of critical mass in terms of expertise, experience (organisational memory), technology infrastructures with highly qualified personnel
- Participation in networks throughout Europe

With its newly launched Horizon 2020 programme, the EU has set its main vehicle to support EU innovation performance until 2020. Part of the challenge lays in the proper implementation of the programme in the years to come by picking up the strategic key issues to be financed. One of the RTOs' roles at national/regional levels is to perform foresight and support policymaking, e.g. identification of emerging technologies

worth the investment both from an economic and societal point of view. Based on this foresight, RTOs build consortia needed to further develop these opportunities into concrete products, processes, solutions and services. RTOs also perform necessary research to maximize potential societal impact.

RTO collaboration brings together different industrial players across the value chains and value networks, to collaborate and interact. In this context, technology assessment is an important part of RTOs' activities to support policymakers with policy development.

EARTO members are already heavily involved in the work programming of Horizon 2020 technology roadmaps, being active in most if not all of the European Technology Platforms, and in

EARTO members are already heavily involved in the work programming of Horizon 2020 technology roadmaps

the European Commission's High-level Groups (e.g. RISE -Research, Innovation and Science Policy Experts High Level Group) and Advisory Committees (29% of the expertise available in these committees). Accordingly, EARTO members are open for further discussion with EU decision-makers at a strategic level on the future of innovation policy offering their strategic advising capabilities.

RTOs are well positioned through their role as "connectors" to bolster the impact and effectiveness of RD&I spending. This can be seen not only by the fact that RTOs bring impact by conveying academic research to industry (in particular SMEs)

RTOs are well positioned through their role as "connectors" to bolster the impact and effectiveness of RD&I spending.

but also through their ability to move in highly multi-disciplinary situations due to their long experience of applying generic technological knowhow to a variety of highly specific applications.

This unique position can be used to leverage national funds if supported by proper instruments.

The present COFUND ERANET instrument¹³ for example, will not foster such cooperation.

In the recent recommendations made by the EC to Members States on Commitment 33 set by the Innovation Union looking at national R&I systems, very few points were to be found related to innovation polices. EARTO members believe that the EC could support such commitment by fostering further collaboration between the European RTOs. Their pivotal role in bringing together various stakeholders could be harnessed as a way to deliver impact by avoiding duplication through complementarity. Support to coordinate such collaboration between RTOs in Europe could act as a node to foster innovation through extending collaboration in key areas, e.g. associated with large scale infrastructure, and ensuring the optimal impact delivered from pan-European resources.

Innovation Union Commitment 33: Member States R&I Systems

«Member States are invited to carry out self assessments based on the policy features identified in Annex 1 and identify key challenges and critical reforms as part of their National Reform Programmes. The Commission will support this process through exchanges of best practice, peer reviews and developing the evidence base. It will also apply them to its own research and innovation initiatives. Progress will be monitored in the framework of the integrated economic coordination ('European semester').»

In addition, as a follow-up of Commitment 33 under the Innovation Union, the European Commission has set to create a new tool, the Policy Support Facility (PSF) to provide access to relevant evidence-databases, expertise and evaluation results. The PSF would manage this through services with the aim of improving the design and implementation of research

> and innovation reforms linked to guality strategies, programmes and institutions.

> The PSF aims to offer dedicated support to national and regional authorities when assessing their RD&I systems in view of launching reforms. Clearly, the PSF should not be built as a stand-alone tool.

The EARTO membership represents a large pool of existing knowledge on innovation policy advising which could support the PSF¹⁴. Thus EARTO would be willing to work with the European Commission and the JRC to develop the PSF.

To conclude, RTOs' position as key partners in European Public-Private Partnerships, European Technology Platforms and other strategic alliances which are relevant for industry and research communities at large, allow them to be active participants in the development of new industry, best national and international industry and regulatory practices, as well as smart research & innovation policies. Accordingly, EARTO remains ready to work with the European Commission, European Parliament and Member States' regulators in support of the recommendations laid in this paper thanks to a continued open dialogue.

¹³ Especially "type C. Implementation of a single joint call" where "governmental research organisations" seems to be expected to participate: http://ec.europa.eu/research/era/pdf/ cofund-2014-infoday/3_era-net_cofund.pdf ¹⁴ E.g. The Joint Institute for Innovation Policy http://www.jiip.eu

EARTO HIGHLIGHTS

EARTO represents the interests of some 350 RTOs from across the European Union and associated countries. With a staff of over 150 000 applied researchers and an annual turnover of €23 billion in addition to specialised research and technology infrastructures and facilities, EARTO represents a significant resource in support of innovation, including for SMEs.

23 COUNTRIES



350 RTOS





IN RESEARCH

BRIDGING GAP BASIC RESEARCH AND PRACTICAL APPLICATION

<text>

SUPPORT 100000 COMPANIES PER YEAR



SUPPORT NATIONAL GOVERNMENTS

INNOVATIVE SOLUTIONS

HEALTH, DEMOGRAPHIC CHANGE AND WELLBEING



FOOD SECURITY, SUSTAINABLE AGRICULTURE, MARINE AND MARITIME RESEARCH, BIOECONOMY

SECURE, CLEAN AND EFFICIENT ENERGY

CLIMATE ACTION, RESOURCE EFFICIENCY AND RAW MATERIALS

SMART, GREEN

TRANSPORT, INCLUSIVE, INNOVATIVE AND SECURE SOCIETIES





CONTRIBUTE HOR DO 2020 SOCIETAL CHALLENGES NDUSTRIAL LEADERSHIP HOR DO 1000 EUROPEAN RESEARCH AREA

The EARTO Vision sees a European research and innovation system without borders in which RTOs occupy nodal positions and use their resources and independence to make a major contribution to a competitive European economy and high quality of life through beneficial cooperation with all stakeholders. The EARTO Mission in support of this vision is to promote and defend the interests of RTOs in Europe by reinforcing their profile and position as a key player in the minds of EU decision-makers and by seeking to ensure that European R&D and innovation programmes are best attuned to societal needs. Within this scope EARTO wishes to partner with EU decision makers to support the development of relevant and timely initiatives such as those outlined in this paper.

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