

EARTO Paper on a New European Innovation Agenda

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Europe entered the new decade with high ambitions: recovering from the COVID-19 crisis is not enough, Europe needs to do so by boosting its sustainable competitiveness while achieving the twin transition to a green and digital industry and society. Building Europe's resilience and technology autonomy in strategic areas will be key to meet the needs of EU citizens, while ensuring Europe's forefront position in the global innovation race. Research and Innovation will be a game-changer to achieve such ambitions, while deepening the European Research and Innovation Area.

In this context, EARTO appreciates the new ambitions for innovation stated by the European Commission (EC) in its new [call for evidence for a new European Innovation Agenda](#). In the current geopolitical context that Europe faces, such a new EU Innovation Agenda has to be instrumental in ensuring EU open strategic autonomy in key advanced technologies that are necessary for the green and digital transitions, as already done for cloud and microelectronics thanks to the EU Chip Act (See [EARTO reaction to New EU Industrial Strategy: Towards Europe's Open Strategic Technology Autonomy](#)). EARTO supports the EC statement and ambition that the '*EU will benefit from an overarching innovation agenda that articulates all aspects*'.

Accordingly, EARTO members are ready to contribute to defining an ambitious and concrete EU Innovation Agenda. This paper brings forward EARTO recommendations to this effect on the 5 key areas identified for further actions:

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1. EARTO Recommendations for Improving EU Scaling-up Capabilities

Deep-tech start-ups are key to Europe's competitiveness and industrial renewal, delivering high socio-economic impact and contributing to strengthen the European Research Area. Contrary to US-type digital companies, or unicorns, EU-type deep-tech start-ups have great life expectancy and low rate of failure. However, in order to deliver such good results, the support they need early-on to make innovation investment-ready are much higher, even though they tend to balance out at a later development stage. Fostering the European entrepreneurial culture and environment should look beyond finance.

RTOs have an important role in creating start-ups as well as sustaining and scaling them up. For instance, in 2018, 10 European RTOs created 61 spin-offs for a total of 450 spin-offs which are still active with a turnover of €1.7 billion and 8,500 jobs created. The average survival rate after 5 years of those spin-offs was between 78% and 90%. These RTOs' spin-offs are based on deep technologies: unique, differentiated, and often IP protected or hard to reproduce. (See [EARTO Paper on How to Exploit the Untapped Potential of RTOs' Deep-Tech Start-Ups in Europe](#)).

Another specificity of start-ups resulting from RTOs is that they often have joint laboratories with RTOs to continue their RDI collaborations after their creation, which is one of the factors explaining the high survival rates and strong growth of these start-ups. It also increases the likelihood that these start-ups will remain established mainly in Europe and have a long-term socio-economic impact in Europe. Ensuring the backing of start-ups by RTOs thanks to joint laboratories (i.e with EU new strategy on technology infrastructures) will be as key as developing further VC capabilities in Europe. In addition, it is not enough to create and support start-ups only for higher TRLs only. The EC support to the creation of deep-tech opportunities needs create a funnel from lower TRLs and up.

To support the further creation of such start-ups by RTOs, EARTO actively supported the development of the European Innovation Council (EIC) over the last years with the creation of a pre-seed funding grant scheme. Accordingly, **EARTO is very much looking forward to analysing the results of the EIC Transition pilot, hoping it is successful and that budget for this instrument will be increased in next rounds.**

In addition, there could be further European efforts done to:

- Supporting effective Knowledge & Technology Transfer practices, value creation as the objective of knowledge valorisation activity and competencies such as legal, IP, project management, communication, marketing, negotiation and intrapreneurship. EARTO and its members are already very active in the [EU TTO Circle](#) that could be further utilised to share RTOs best-practices with the wider RD&I community under the ERA Action on Valorisation.
- Building strong, smart and versatile teams around a motivated entrepreneur/intrapreneur mindset willing to convert disruptive technologies into ready-to-invest business opportunities is an essential success factor in deep-tech start-up creation. As finding entrepreneurs is not the core business of RTOs, this effort should be supported at EU level to better connect technological experts to entrepreneurs with strong market insights. This could be done by finding a pool of entrepreneurs/intrapreneurs with market insights looking for high potential business opportunities and connecting it to a pool of untapped RTOs' technological potential. Entrepreneurs are only available for a limited timing. Accordingly, doing matchmaking at the right time is critical. **Two potential solutions could be looked at EU Level, with the creation of: 1) a digital platform for matchmaking between start-ups teams and entrepreneurs and/or 2) an 'entrepreneur in residence' by RPOs programme.**
- This could be complemented by **using a pool of seasoned "entrepreneurs" as mentors to support less experienced ones.** There are some actions done within the EIC; however they are not looking at connecting various worlds such as RTOs ventures with a pool of entrepreneurs/intrapreneurs with market insights that could be future CEOs of RTOs spin-offs.
- After the start-up creation, once they reach a particular stage in their scaling-up process, many of the deep-tech start-ups nurtured in the EU tend to move out of Europe to places where funding is more easily accessible, with less regulatory constraints. This has been the case for several RTOs' deep-tech start-ups, and often RTOs do not have the means on their own to provide the liquidity that these companies require, thus preventing them from moving overseas. Therefore, Europe needs to bridge this gap and overcome capital shortage by increasing the availability of liquidity and venture capital funding in Europe. Indeed, stimulating seed and early round investors to work beyond the national or regional level on a more European scale would help prevent the lack of investors within one country or region.

Stimulating VC investments beyond the national level is needed as Europe does not have a healthy VC ecosystem.

- **In addition to access to capital, deep-tech start-ups require access to technology infrastructures to scaling up their technologies: such access should be further facilitated** (See next recommendations).

2. EARTO Recommendations for More Pro-Innovation Framework Conditions

The call for evidence focuses on two areas: better regulations and an environment to test/facilitate the application of regulations with the support of sandboxes, living labs/tests beds. Regarding regulations, few areas should be carefully looked at by the new EU Innovation Agenda: State-aid rules, EU Intellectual Property (IP) Regime & EU Standardisation Policy and the new EU Strategy on Technology Infrastructures as environments supporting standardisation, regulations' development and applications and IP creation.

State-Aid Rules

First, the current review of the EU competition rules is an important aspect of our RD&I legislative framework. Ensuring a sound implementation of EU State aid rules by avoiding over-interpretations at national level will be key (See the [latest EC DG JRC Study](#) and [EARTO-JRC report on State Aid](#)).

Accordingly, **EARTO welcomes the proposed continuity with the current GBER Regulation**. As already stated in [EARTO's response to the EC Consultation on the revised Framework for State Aid RD&I](#) and [to the EC Consultation on Revised GBER](#): the rules to distinguish economic from non-economic activities are adequate. However, their national/regional interpretation needs to be improved, to ensure that they do not hamper Europe's innovation capacity. National/regional interpretation of these rules could be improved and harmonized by the EC providing more guidance on interpretation. In addition, Research and Technology Organisations (RTOs) should be considered by default as Research and Knowledge Dissemination Organisations (RKDOs), and not as "undertakings" under the RD&I Framework and GBER definitions. RTOs should be able to have their 100% full costs covered in national/regional RD&I competitive programmes funded by national public bodies. Moreover, it should be clarified that the State Aid rules cannot be used by such bodies to justify lower funding rates for RTOs at national and regional level.

In draft revised GBER Regulation, the **new concept of "testing and experimentation infrastructures"** (TEIs) is welcome. However:

- TEIs need to be clearly dissociated from what is commonly called "technology infrastructures" (TIs) in the definition proposed.
- The State Aid rules (GBER and RD&I Framework) should rather differentiate infrastructures as to their type of activities: predominant economic activities should be the key criteria to define TEIs, and predominant non-economic activities (including ancillary economic activities) should be the key criteria to define RIs.
- To better align the TEI's provision with the reality of the RD&I ecosystems and enable its sound implementation, the notification threshold should be raised to 20 million euros (as for RIs); and preferential access or more favourable access conditions should be given to all undertakings contributing to at least 5% to the TEIs' investment costs.

Implementing such changes would ensure a better alignment with the realities of the RD&I ecosystem and foster a sound and non-disruptive implementation of these new state aid rules. This would also considerably limit the risk of different interpretations of those rules at national and regional levels, otherwise would inevitably create distortions and harm the European level playing field.

The proposed addition of a simplified cost approach in the form of a 15% flat rate to cover the indirect project costs in RD&I projects should be removed, as this would in no case be a financially sustainable alternative for the coverage of the real indirect costs in these projects. This is especially the case for RKDOs who also provide the use of their RIs during those projects, which can lead to very high indirect cost levels (see [EARTO paper on Internal Invoices](#)). RKDOs should be entitled to compensation for actual costs. If this is not the case, this could create major difficulties for RKDOs to participate in those funded programmes.

EU Intellectual Property (IP) Regime & EU Standardisation Policy

In addition to state-aid, the European Commission should complete its better legislation efforts with:

- **The needed promotion of the effective EU IP Regime:** Europe needs a strong European Intellectual Property (IP) regime adopting a balanced approach between Open Science and IPR policy at EU and national/regional level (see [EARTO paper on Open Science & IPR](#)).
- **The linkage between the new EU standardisation strategy and EU's current IP regime:** As stated by the [EC Communication on the new ERA](#), global leadership in technologies goes hand-in-hand with leadership in standard-setting and ensuring interoperability. RTOs are very active on behalf of their national governments in EU and international standardisation efforts. The EC should use their knowledge to set up and enhance future EU standardisation efforts on key technologies and thus support innovation-friendly regulation.
- **Showing support to SEPs:** As many start-ups in Europe including RTOs start-ups and innovative SMEs are SEPs holders (or exploiting exclusively in their domain SEPs owned by RTOs) and technology providers, the EU should not weaken SEPs. Changing the current balance between technology providers and implementers would seriously disadvantage our European start-ups and innovative SMEs. In particular, EU should not create any legal obligation to conduct essentiality checks on all declared SEP families that SEP holders intend to license. Such legal obligation would be very harmful for the diffusion of the innovation as: 1) it would considerably lengthen the negotiations as well as lead to more disputes and lawsuits, 2) it would cause additional substantial costs in a phase where licensing revenue could normally not yet be expected (especially damageable for start-ups and SMEs), and 3) it would have to be repeated with changing standards. Moreover, if such obligations would only be placed on formal standards and not on de facto standards, such obligations may skew the innovation ecosystem and encourage major players to set up their own de facto standardization, giving an advantage to major players against start-ups and SMEs. This should be strongly discouraged as not being in EU interests (See [EARTO last paper on SEPs](#)).

Technology Infrastructures

Regarding the support given to better regulation by sandboxes, living labs/tests beds, here EARTO would like to stress the importance of the upcoming new EU Strategy on Technology Infrastructures being set up by the European Commission hands in hands with Members States to complete current EU technology roadmaps (**ERA action 12**). **Technology Infrastructures (including demonstrators, testbeds, piloting facilities, living labs, etc.) are the backbone of dynamic RD&I ecosystems and stable innovation-driven value chains and can become regulatory sandboxes for the technology-based innovations that generate.** The strategic importance of TIs has been recognised in the [EC Staff Working Document on Technology Infrastructures](#) and recently in the [new EC Report Towards the Implementation of an EU Strategy for Technology Infrastructures](#).

In addition, Technology Infrastructures (TIs) are a central element of European innovation hubs (See [EARTO Paper on TIs](#)). Aiming at accelerating technology uptake and scale-up by large and small industry, TIs provide the necessary services to solve industry's challenges, turning innovative ideas into large volume production, or transforming disruptive technologies into market-ready products and services, while doing so in the most efficient and sustainable way. Large companies may own production lines with control facilities: those are typically used for the company's own purpose and designed to analyse and develop existing solutions closer to market, rarely suitable for the development, maturation and testing of new technologies. **When developing the readiness of a manufacturing process for a new technology together with the development of the product itself, it is necessary to enable scaling-up production amounts from single demonstrators to small series. This is often possible only in dedicated technology infrastructures, which are most of the time beyond the investment capabilities and skills needed to operate them for one single industrial stakeholder, least of all for SMEs. Large companies of international scale, but also mid-caps and SMEs therefore rely on TIs' providers such as RTOs and TUs to offer access to their wide range of facilities. Such access enables to share, and therefore considerably lower both the risks and the costs of RD&I investments for industry, while speeding up the implementation of new solutions. It fosters and leverages RD&I investments by industry, most of which would not take place if these companies did not have access to RTOs' TIs.** This is key to boost industry's productivity and competitiveness with high impact for society. Depending on the context, a single technology infrastructure can be used for a wide range of activities: from investigating completely new technologies, to piloting, but also spin-off incubation, testing changes in existing products, and validating emerging concepts, either in collaboration with single industry partners (large and small) or together with a consortium of several players. With their central role in European innovation hubs and RD&I ecosystems, TIs connect technologies to non-technological disciplines and services,

including feasibility and regulatory compliance. TIs ensure the connection between a broad range of stakeholders, supporting companies to find the right partners to reach their goals. They also incorporate the users' perspective while looking at solutions bridging commercial interests and societal needs, for instance with the direct involvement of users within "living labs" to improve the societal acceptance of innovation. TIs also provide professional training and coaching and strongly contribute to the training of professionals on-the-job at the front end of industry's technology needs.

Developing an EU strategy in technology infrastructures is very timely: first our global environment requires Europe to boost its investments in deep-tech to stay on the innovation race, 2) current challenges faced (eg. green transition, energy, etc.) will not be solved by a single Member State alone due to the huge investments needed, and 3) the new wave of deep-tech innovations will rely on access to even heavier development capabilities (infrastructures & skills) that start-ups and SMEs will not be able to afford, clearly calling for further public investments in TIs.

The European Commission and Member States already realised the need for combined investments in TIs on microelectronics with the creation of new pilot-lines for micro-electronics under the new EU Chip Act. **Similar thinking should be brought to other key industrial sectors in Europe using the new ERA Action 12 to develop further sectorial European TIs strategies based on agreed European industrial technology roadmaps.**

3. EARTO Recommendations for Strengthening EU Innovation Ecosystems

Innovation Ecosystems

Boosting the development and diffusion of emerging technologies is essential for the shift towards the next industrial transitions. Only one fifth of EU companies are highly digitised, and only one in five manufacturing companies has already used advanced manufacturing solutions. Addressing these two aspects of technology development and diffusion is essential. RTOs play a key role in today's European RD&I ecosystems to support such development and diffusion in different ways:

- Connecting EU, national and regional levels in innovation,
- Providing multidisciplinary expertise in technology, policy, social and business innovation,
- Linking research to application and technology transfer,
- Connecting public interest to private needs in all sectors of the economy.

Collaboration between innovation actors across Europe is key to address the complex problems Europe is facing. More generally, societal challenges often have a systemic nature that requires not only a broader range of competencies but also the adoption of a different perspective, that is more holistic, i.e. involving different sectors and disciplines at the same time rather than responding to their respective needs and demands. In this environment, RTOs are playing a role that is in the process of being defined such as 'system intermediaries', 'orchestrators', 'transition architects', 'innovation system hub', 'virtual OEM', 'system platforms', 'system translator', etc. **In addition to providing 'deep' knowledge and expertise, RTOs role also entails bringing together different actors (including universities, industry, intermediaries, ministries, and agencies at different levels of government, regulators, etc.) in large and complex initiatives to leverage technological and social innovation likewise for deep structural change. This calls for new capabilities, in addition to new forms of technological knowledge and expertise combined with social sciences and humanities knowledge on system transitions for which RTOs can be specifically mobilised.**

Participation in large European funded projects, from FP6's Integrated Projects to the various European Partnerships, have been instrumental in helping European RTOs to further develop these capabilities. In addition, the existing cross-border networks of RTOs, resulting from long term collaborations in EU-funded projects, can play a crucial role in addressing the fragmentation of the EU innovation ecosystems, bridging communities, identifying best practices and creating a common EU innovation culture.

A new OECD report on 'The contribution of RTOs to socio-economic recovery, resilience and transitions' will be published on 18 May, further describing the role of RTOs supporting transitions to support Member States on how to further utilize RTOs as policy instruments to further develop effective innovation ecosystems.

Synergies

It is also key to ensure **complementarity between all EU funded programmes for the implementation, deployment and optimal (re-)use of new technologies and innovations,**

each focussing on its own strengths (incl. Horizon Europe, Digital Europe programme, Space programme, Defence programme, Structural and Investments Funds especially with INTERREG, the I3 Instrument, RFF investments). This is essential to leverage technologies and innovations that are reaching market maturity in areas of public interest, especially for those that had previously benefitted from previous EU level investments (See [ERRIN-EARTO Paper on synergies](#)).

Public Procurement

Public procurement of RD&I remains underused in Europe compared to other parts of the world, especially for pre-commercial procurement, despite the efforts undertaken by the EC to promote such instrument in Europe (including the Framework Programmes). This is mainly due to the separation of EU pre-commercial procurement into two distinct phases with two distinct calls for tenders: 1) the research and development phase and 2) the one for the deployment of commercial volumes of end products. This is not the case in other countries such as the US. Promoting innovation through public pre-commercial procurement very much depends on the ability of public authorities to purchase the innovative products developed. Having only one call for tender for both phases would provide additional incentives for companies, especially start-ups and innovative SMEs, to take part in the RD&I phase since they would be assured to get an opportunity to recover part of their RD&I investment in the commercialisation phase by bringing their innovation to the market. It would also provide additional incentives for RTOs to take part in the RD&I phase in partnership with companies, including start-ups and innovative SMEs, as this one-phase process for pre-commercial procurement would be more aligned with their IPRs' policies.

Indeed, this would allow RTOs to:

- Keep ownership of the foreground IP it created (e.g. when the foreground IP created in the PCP is new or an improvement of a RTO's background IP), in line with the international best practices and WIPOs recommendations.
- Possibly grant an exclusive sectorial license on such IP to the start-up or innovative SME they partner with, acting as their RD&I provider.
- Develop the IP in other industrial sectors, through exclusive IP licensing to other start-ups or innovative SMEs in other sectors, creating therefore a virtuous cycle of innovation.

EARTO hereby **very much supports the European Institutions to improve the EU regulatory framework and leverage the potential of public procurement of R&I in Europe**. This entails to undertake the following steps (See [EARTO Paper on this PCP](#)):

- Negotiate a derogation with the World Trade Organisation's Government Procurement Agreement (WTO GPA) Committee on public procurement of R&I. Such negotiation should aim to exclude the procurement of the goods resulting from successful RD&I for the small businesses (commercialisation phase) from the scope of the WTO GPA to have the same rules as those negotiated by the US.
- Amend the EU Public Procurement Directives accordingly. Such amendment should aim at exempting from their scope not only the provision of RD&I services but also the subsequent purchase of the products resulting from the successful RD&I.
- Amend the EU RD&I state aids rules and the EU Framework Programmes' Pre-Commercial Procurement rules accordingly.

As explained in the ENIRI Study commissioned by the EC: *"Undoubtedly the USA has put a driving force innovation in place through its public procurement policies. However, the (European) Union, through Pre-Commercial Procurement (PCP), cannot copy the US system without undertaking profound legal adjustments"*. Indeed, in the US, the public purchaser can make public procurement in a single call for tender for both the RD&I phase and the manufacturing/commercialisation phase when the public procurements are reserved to SMEs and start-ups, which is the case in the US PCP-like projects (SBIR programme).

A clear improvement should be therefore brought to the RD&I public pre-commercial procurement legislation in the EU. Such improvement would boost entrepreneurship and accelerate the development of innovative start-ups and SMEs by enabling their first order and addressing the funding gap. Indeed, many analyses confirmed that for a start-up or an innovative SME having a first commercial order is one of the most important stages of their development. Indeed, having a first commercial order facilitates capital venture investment in such start-up/SME and gives confidence to the bankers¹ to invest in their almost proven business case then by this first order. Getting first order by mean of winning a one phase public pre-commercial procurement contract, help start-ups/SMEs to reach new customers and investors, considerably reducing time-to-market and strengthening both the technology sector and the venture capital sector.

4. EARTO Recommendations for Bridging the Innovation Divide

Many countries/regions have already successfully developed some synergies between Structural Funds and research and innovation programmes both at national and EU level. Indeed, various RTO capabilities have been built up thanks to Structural Funds and then later used in various EU FP programmes. In addition, various tech transfer activities which have been funded by Structural Funds, are based on research results developed under EU FP programmes. **The issue today is still to scale up successful examples of countries/regions to others still facing an innovation gap: EARTO strongly believes that countries/regions facing an innovation gap would very much benefit from investing further in developing/attracting RTO-like capabilities in their territories fitting the need of their industry.** In widening countries, the EARTO network has supported various national efforts to develop further such capabilities and has seen over the year very successful examples being set up such as [Lukasiewicz Research Network](#) in Poland, [FTMC & RTO Lithuania](#) in Lithuania, [INL](#) covering both Spain and Portugal and is ready to support further Member States and regions. Accordingly, **the European Commission could launch the analysis of the recent successful examples of the establishment or modernisation of the RTOs sector in Widening countries (some examples given above).** This Joint Research Center could be tasked with such analysis and initiation of discussion with EU Members States 'innovation laggards' with EC DG REGIO & EC DG R&I Policy Support Facility.

To support the development of further RTOs capabilities across Europe which will be key to address the issue of innovation gap, **the basic tools of policy making should be available. Accordingly, the development of proper European wide statistics on RTOs to allow Member States and regions to see the gaps in their tech capabilities should become a priority to allow proactive innovation policymaking.** Today the OECD and EUROSTAT capture quite well the role of a few key actors in the RD&I ecosystem: 1) government, including public funding for RD&I programmes, 2) universities, including both their education and research activities, and 3) industry, including private expenditure on RD&I from small and large companies. Data on these actors are easily accessible from the OECD and EUROSTAT databases and can be used directly by policymakers for better evidence-based policy making, or by researchers to produce data-driven analysis of the different trends in the sector that then can feed into the design of new policies. However, OECD and EUROSTAT data on RTOs, is direly lacking (and even on Public Research Organisations/PROs for that matter), despite the key role they play in the RD&I Ecosystem, in RD&I competitive programmes like EU Framework Programmes, and the impact they deliver on the economy and for society.

If we are to promote the development of innovation capabilities in Europe, policymakers designing effective and efficient policies and instruments (i.e. making the optimal choices on where to further invest) should be able to access proper data on their RTOs sector. Accordingly, EARTO has three **recommendations to improve the classification of RD&I actors so that EU statistics would realistically reflects the reality of their RD&I ecosystems to Member States:**

- The Frascati Manual decision tree should be updated by adding a separate category for RTOs (or at least PROs), clearly distinguishing them from universities, industry, governments and other not-for-profit organisations. This includes the formulation of a clear definition of RTOs (or at least RPOs) that allows for the collection of data.
- Prior to the next update of the Frascati Manual, RTOs (or at least PROs) should (subsequently) be marked as specific units in official statistics at national levels so that data on the whole RTO sector can then be grouped at OECD/EUROSTAT levels.
- A dedicated Code for RTOs should be created in the European Nomenclature of Economic Activities (NACE) and in the United Nations' International Standard Industrial Classification (ISIC).
- This key topic should also be discussed by national statistics offices and governments in the relevant settings at OECD and EUROSTAT levels, so that the approach can be coordinated. See EARTO Paper on this topic for further details on what is needed today.

Furthermore, **the development of a common EU validated methodology that allows for the estimation of the (economic) impact of impact of RTOs (or at least PROs) should be developed with support of the European Commission and the OECD. This will subsequently enable Member States to illustrate the role and relevance of RTOs (in comparison to other actors) in their respective innovation systems, as a basis for optimal policy formulation.** Two RTOs have already initiated research to assess their role using the abovementioned methodology with rather encouraging first results as follows: Impact of Fraunhofer Research (2020) and A microeconomic assessment of RTO's impact on Firms output: The case of TNO (2018) with Technopolis impact analysis of Norwegian RTOs (2015). However, in practice the subsequent research

lacks data that allows for an estimation of their returns (i.e. an estimation of the 'multiplier' on financing of their research). To go one step further in developing such methodology and validate it for the whole sector at European level, a joint EU research project involving multiple RTOs linked to their national statistical institutes is necessary today.

5. EARTO Recommendations for Developing EU Innovation Skills

Closer to market, the need for specialised and highly skilled personnel and know-how is high. RTOs are a valuable source of highly skilled and specialised human capital and know-how, in terms of research, collaboration with the industry and support to the innovation processes, without which creating bridges between the many different disciplines and knowledge necessary to solve societal and industrial challenges would not be possible. Besides, RTOs maintain good contacts both with the academic research world and the close-to-market industrial world, ensuring that their facilities operate across the TRL scale. It is for instance recurrent for RTOs' employees to occupy part-time positions as professors in universities, and to co-supervise doctoral thesis and master's degree final projects. RTOs also strongly contribute to the training of professionals on-the-job at the front end of industry's technology needs. RTOs also support the development of T-shaped profile skilled employees, capable to co-create and collaborate with experts in other areas and innovate across disciplines. This enables applied research to find its way into the industry and then turn into innovation. Transfer of heads between RTOs and industry is frequent.

At the same time however, **RTOs face growing challenges in acquiring and keeping highly skilled personnel. RTOs are already highly proactive in staff acquisition and engage in ample programmes to spark interest in future highly skilled personnel. Yet, the recruitment of talents is becoming increasingly difficult due to regulation (e.g. export control), competition (private sector vs. public sector wages) and geographic locations of national facilities. To maintain and increase the potential of RTOs to develop the required human capital and know-how for a flourishing European Research and Innovation Agenda, these issues need to be further analysed and integrated in the ERA process.** A comprehensive approach for the development, maturation and dissemination of cutting-edge technologies should include the acquisition of the necessary skills for the deployment of such technologies by industry. In this sense, training, upskilling, and re-skilling opportunities for the EU professionals may benefit from access to RTO-hosted Technology Infrastructures (reaching industry-relevant TRL levels) where the highly skilled personnel from the RTOs may provide those capacity-building activities on immersive environments through realistic "*feel-and-experiment*"-like approaches.

To support further Europe's skills agenda, Europe must continue to promote and to reinforce the existing programs dedicated to the international mobility of students and researchers, since they are the ambassadors within the European Union, and beyond its borders. However, the existing instruments remain complex with very low success rate. This could be improved by bringing greater simplicity into programmes' implementations and by favouring smaller and more targeted projects with proper funding. **Extending and improving EU funding programmes to cover the needed industry-skilling/-reskilling activities beyond Horizon Europe programme would be needed.** In this context, different EU mobility related programmes such as Marie Curie could target the development of skills in knowledge and tech transfer as well as entrepreneurship (e.g. Entrepreneurs in residence idea mentioned in recommendation 1 to further develop innovation skills in EU).

EARTO remains at the disposal of the EU Institutions to further discuss these recommendations and support the EC in its work to set up an encompassing EU Agenda.