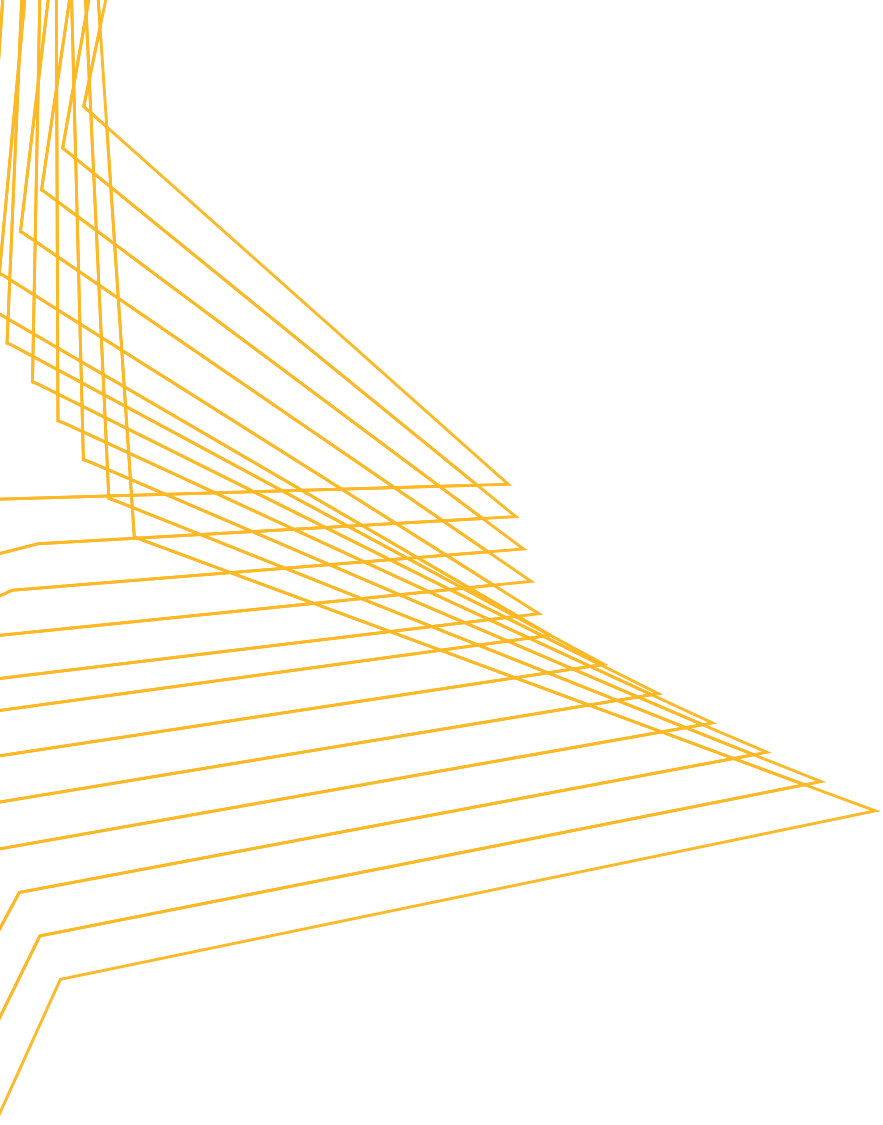

Tackling Europe's innovation challenges

Findings and recommendations from an independent study of the role and impact of Research and Technology Organisations

EARTO

'Impacts of European RTOs: A Study of Social and Economic Impacts of Research and Technology Organisations', October 2010. The study was undertaken by Technopolis, a leading international consultancy which analyses and advises on policy and evaluates its implementation in the fields of science, technology, innovation, higher education and social and economic development.

www.technopolis-group.com

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An independent study which describes Europe's Research and Technology Organisations as key actors in the European innovation system says the EC and national governments are failing to exploit their outstanding potential to help Europe rise to its urgent innovation challenges.

> Key elements of current European innovation policy discussions concern the need to link innovation with research, to mobilise coalitions of major stakeholders and tackle the Grand Challenges and to build scale and scope in European research and technological capabilities. This is the home territory of RTOs

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The combined annual turnover of RTOs in Europe is estimated at about **€23 billion**

If they were a European multinational they would figure in the top 100 of the FT European 500

The total economic impact of RTOs is estimated at up to **€40 billion** annually, and at over **€100 billion** taking account of longer-term spillover effects

Europe's Research and Technology Organisations (RTOs) have been making a major contribution to innovation excellence, economic competitiveness and social progress across Europe for 60 years.

Every year, their research resources and technology commercialisation know-how help well over 100,000 companies, from SMEs to multinationals, go beyond their internal technological limits to produce world-beating innovations, ahead of the competition.

RTOs' track record is undeniable, but it goes largely unreported. And their unique position within the innovation system is poorly understood. Until now.

A study commissioned from Technopolis by EARTO, the European trade association for RTOs, has quantified their impact and clarified their role for the first time. The study states unequivocally that it is time for policymakers to take account of RTOs' ability to deliver outstandingly effective, and cost-effective, innovation impact.

By providing a definitive study of RTOs' distinctive innovation skills and business model, the study highlights how they differ from universities and why they have powerful advantages over other research performers and technology transfer bodies. Advantages which the study directly connects to successes such as facilitating unprecedented levels of participation in Framework Programme projects - just one of European RTOs' many achievements.

Against the current backdrop of fiscal austerity, urgent Grand Challenges and ERA objectives, European and national policy makers want real innovation impact. This means they must look to leverage existing proven innovation strengths and not just focus on seeking to correct perceived weaknesses in their research and innovation systems.

According to the Technopolis study, this could be achieved by fully unleashing the power of RTOs so that they can make an even greater impact than they do already.

> “RTOs play a pivotal role in the Framework Programme, coordinating about a third of all projects and receiving around a third of Programme funding, their professionalism equipping them well to handle the management as well as the technological aspects of the task”
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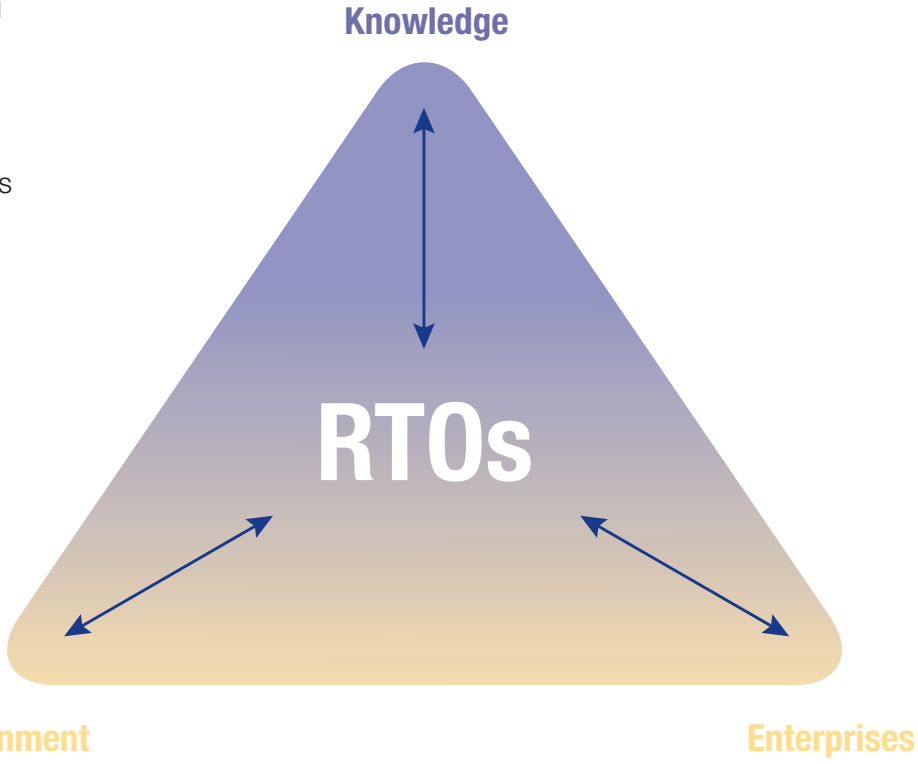
A major role in EU research

RTOs play a significant and key integrating role in EU research, bridging the gap between basic research and practical applications and working with universities, governments and enterprises to find practical solutions to key societal challenges.



Read about the unique benefits of RTOs' distinctive innovation and business model
page 8

Find out about the recommendations that will enable RTOs to become key partners in Europe's innovation strategy and economic recovery
page 14

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The dynamic role played by Europe's RTOs in bridging the gap between academia and enterprise is enabled, reports the Technopolis study, by their singular skills set and effective funding mix which, it argues, should be leveraged to increase the rate and impact of innovation to meet the ERA objectives.

> RTOs in receipt of core government funding were found to be the most highly effective facilitators of participation in Framework Programme projects

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RTOs bring together a rare and long-established array of capabilities and activities, from basic and applied research to advanced engineering, design and development, measurements, tests and prototype production and industrial exploitation through licensing and spin-outs.

Underpinning everything RTOs do is a pragmatic focus on solving real problems and delivering innovations that have real world value, in a way that provides exceptional value for money.

In striving to quantify the impact of RTOs for the first time, the Technopolis study not only discovered a diverse range of major business benefits which extend beyond immediate economic and technical impacts to strategic and productivity improvements that continue to generate impact well into the future.

It also revealed the benefits for the innovation system as a whole of RTOs' very active technology translation function, evidenced by their increasingly strong links with universities.

The study stresses that the impact of RTOs' highly effective innovation model is directly linked to their funding model. Typically, RTOs receive a roughly equal mixture of public core funding, competitive funding (EU Framework Programme, national technology programmes, etc) and private income from contract research and licensing for example.

Technopolis reports that RTOs in receipt of 30-40% core funding - including the high-performing Fraunhofer, TNO and VTT - are able to do considerably more of the applied research, and key pieces of basic research, which EARTO members deem vital to deliver their mission.

As Europe explores the best way to ensure that more innovative ideas are turned into globally competitive products and services to create wealth and jobs, it cannot afford not to fully leverage the proven technology development and commercialisation competencies of its RTOs.

Some studies of RTO impact find that a Euro of subsidy invested in an RTO yields as much as **25 Euros** of turnover in beneficiary companies

Research in Denmark shows that **93%** of RTO users are satisfied with the service they receive and a very high proportion, **85%**, come back for more

> The European Commission should become more involved in the first stage of RTOs' activity – capacity building – as a way to break down the lock-ins caused by national boundaries

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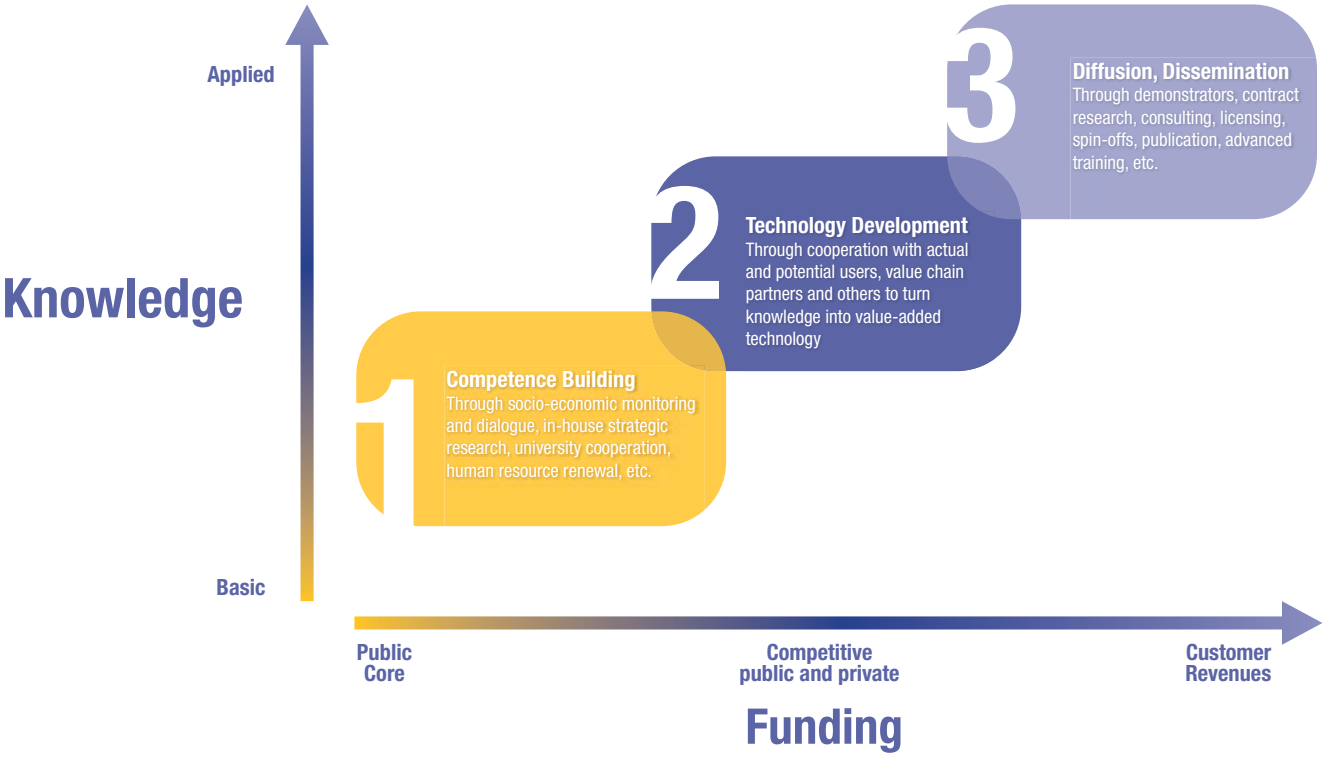
These unique organisations have the market awareness, business skills and sustainable funding model required for the job. They are also able, more effectively than universities, to reach SMEs, helping these engines of economic growth increase their R&D intensity and sustain higher levels of innovation.

A unique three-stage dynamic

RTOs' unique innovation model enables them to create technological advantages that are hard to build in the private sector, helping firms redress under-investment in research, break through technological barriers and establish new technological capabilities.

They also de-risk and raise the rate of innovation in the economy.



> “RTO customers aim to move ‘one step beyond’ their existing capabilities via their institute projects, seeking new technologies, tackling aspects of technology that they do not currently master and accessing resources not normally available to them”

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A very different role

The Technopolis study found that customers are very clear about the differences between the competencies and focus of RTOs and universities and turn to them for different things, notably RTOs’ experience of working with industry, use of industrial project management techniques and understanding of commerce and markets.

RTOs

- Resources
- Competence
- IPR handled professionally
- Confidentiality
- Used to working with industry
- Project management routines in place
- Timeliness (mostly)
- Can address focused research questions
- Close to applications and products
- Understand real industrial processes
- Understand industrial customer needs
- Less focus on publications than universities

Universities

- Developing human resources, especially PhDs
- Basic and precompetitive research
- No timetable
- Difficult to steer or predict outcomes
- Poorly equipped, compared to the institutes
- May be opportunities to get additional state funding to carry on the project

Note: In the special case of university-based competence centres, access to academic and industrial networks were also mentioned

3

Maintaining a strong and well-funded RTO sector to facilitate knowledge development and exploitation, and to leverage participation in the Framework Programme, is critical to Europe's innovation capacity, according to the Technopolis study, which says there is now an opportunity to optimise the sector to help Europe accelerate away from economic crisis and boost its competitiveness.

> An urgent need is proper statistics about the institute sector. The Commission should ask Eurostat to establish definitions and collect statistics about the RTOs and other research institutes, as is done for the university sector, and should encourage the OECD to act in a similar way

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If the ERA objective of building a healthy European research ecology is to become a reality with the **impact**, **speed** and **return on investment** required by current economic conditions, policy makers must involve RTOs to the fullest extent. They deliver on each of these counts. As the Technopolis study shows, their market-pull approach enables them to consistently pick technology winners.

Their business focus drives European innovation out into global markets. And their tried and tested three-part funding model supports the complex reality of transforming ideas into profitable innovations.

As Europe's innovation infrastructure adapts to bring the Innovation Union strategy to life, RTOs should remain a powerful constant at its core. In support of this claim, the study cites the growing need to encourage and enable SMEs to innovate, a task at which RTOs excel, and for a productive overlap between universities and research institutes, something pragmatic RTOs have long recognised and achieved.

Technopolis also highlights that RTOs' influential role in the Framework Programme puts them in a strong position to leverage FP7 funding, which is set to increase further in its final years. The study goes further, stating that the status quo is not enough and that only by reinforcing investment in, and commitment to, RTOs will Europe realise their full potential.

RTOs accounted for **28%** of FP6 participation, received **32%** of FP6 funding, provided about **35%** of FP6 project coordinators and were involved in **22%** of all FP6 projects, which between them obtained **44%** of all FP6 funding

While its recommendations, detailed on page 14, are mostly directed at European institutions, many key messages are equally relevant for national governments.

One stresses the need to ensure that RTOs' industry engagement and commercialisation skills are exploited when integrating new technology and innovation structures between universities and industry. Another endorses the widespread implementation of the most successful RTO funding model – a three-part mix of core government funding, competitive public and private income, and customer revenues.

We now look forward to the implementation of the recommendations made by the Technopolis study to unleash the power of RTOs to help European industry innovate for maximum immediate impact and compete more successfully on the global stage and European governments to make real and rapid progress in tackling the Grand Challenges.

> "Moving beyond Europe would let RTOs serve their customers better – both through physical presence and by accessing more of the world's technology. Increased scale coupled with competition-based specialisation would also improve their competitiveness and their ability to serve their customers. This would depend upon, and reinforce, the opening of knowledge markets within Europe"
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Unleashing the power of RTOs: recommendations for action

Europe has powerful RTOs. But not everywhere. In some countries, for varying historical reasons, RTOs are absent or not well developed.

EARTO therefore invites governments everywhere to act on the findings of the Technopolis study by recognising the strategic role of RTOs in national and regional research and innovation systems, reaffirming their support of the RTO sector and substantially increasing their investment wherever the RTO sector has not yet reached full potential.

In the light of the ERA objectives, the Technopolis study recommends that EU-level policy needs to optimise the RTO sector towards European needs by:

Removing barriers to RTOs building globally competitive and naturally viable scale through competition and specialisation	The Technopolis study found that core funding is vital for efficient and effective RTOs but that national core funding can have a 'lock-in' effect which prevents or discourages RTOs from offering services beyond their national frontiers. As a result, Europe's RTO infrastructure is sub-optimal, with unnecessary overlap of specialisations and equipment. Technopolis recommends that the Commission should become more involved in the first stages of RTOs' activity – competence building – as a way to help break down the lock-ins caused by national boundaries.
Integrating European knowledge markets to create a common market for knowledge and knowledge services	This could include an EU incentive scheme to stimulate cross-border commissioning of research and technology services by public authorities and private companies. An RTO could receive a bonus based on the value of its cross-border EU revenues in a given year. The bonus could be re-invested in the RTO's competence-building programmes.
Exploiting RTO capabilities to tackle Europe's Grand Challenges once these have been defined and integrated into EU research and innovation policy	Effectively tackling many of the Grand Challenges will need a hard core of long-term players capable of developing and progressing robust techno-economic strategies. RTOs have the singular skills and experience to do this.
Ensuring that European Commission provision of research infrastructure addresses not only the needs of basic research (ESFRI) but also of the RTO sector	
Supporting the self-organisation of the RTO sector at the European level via organisations such as EARTO and their connection to areas of developing policy need at European level.	


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Innovation enabled Impact delivered

EARTO is the trade association of Europe's research and technology organisations (RTOs). A non-profit organisation founded in 1999, EARTO groups over 350 RTOs, with a combined staff of 150,000, an annual turnover of €15 billion, special equipment and facilities to a value of many € billions and more than 100,000 customers annually.

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