EARTO
IMPACT DELIVERED

Jobs & Growth

Economic Footprint Study

Impact of 9 European RTOs in 2014

Launch Event

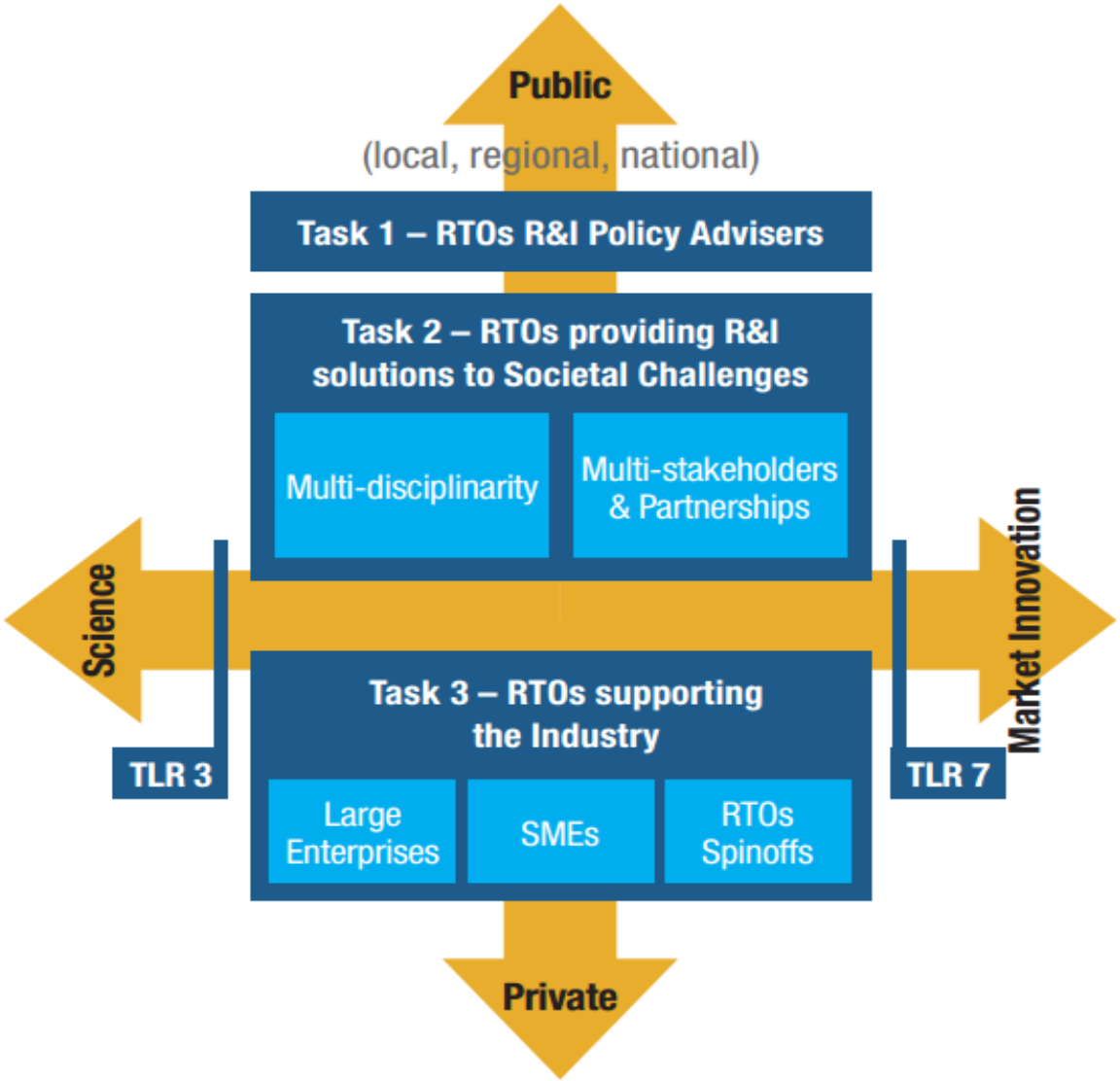
14 January 2016


23 COUNTRIES
350 RTOs


NETWORK
150 000
RESEARCHERS
ENGINEERS &
TECHNICIANS
SHARING IDEAS
& INFORMATION

EARTO Vision: **Technology for a Better World**
EARTO Moto: **Impact Delivered!**

Understanding EU RTOs' Activities

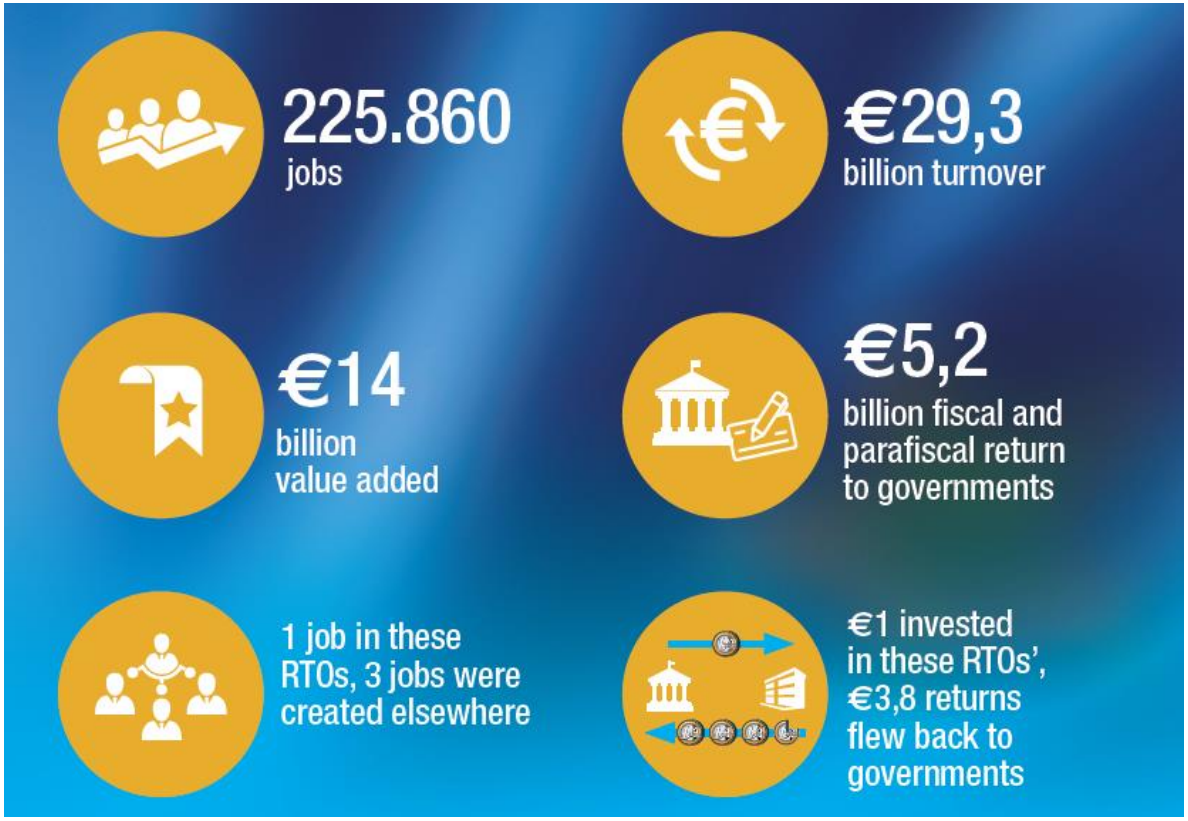


1. **RTOs house various research infrastructures & demonstration facilities benefitting many stakeholders: universities, new enterprises, SMEs, large enterprises**

2. **RTOs train and develop experts: offering professional skills to EU industry**

Economic Footprint of 9 EARTO members in one year (2014)

The aggregated economic effect of 9 European RTOs from their Core-Activities and generated through Contract Research and Spin-offs resulted in 2014 in:



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Economic Footprint of 9 European RTOs 2013-2014

Miriam Van Hoed, IDEA Consult

EARTO Event, 14 January 2016

IDEA Consult

- IDEA Consult was founded in 1998 and is located in Brussels.
- A multidisciplinary team of 30 professionals, who are involved in the current societal challenges. *"We believe that knowledge and innovation are driving forces behind sustainable societal progress"*
- Broad experience in impact assessment and evaluation of R&D&I investments.

Economic Footprint of 9 RTO Members of EARTO

Why an economic footprint study for RTOs ?

- Lack of official quantitative data and evidence on RTOs
- Demonstrate the economic impact of RTOs in Europe

Economic Footprint of 9 RTO Members of EARTO

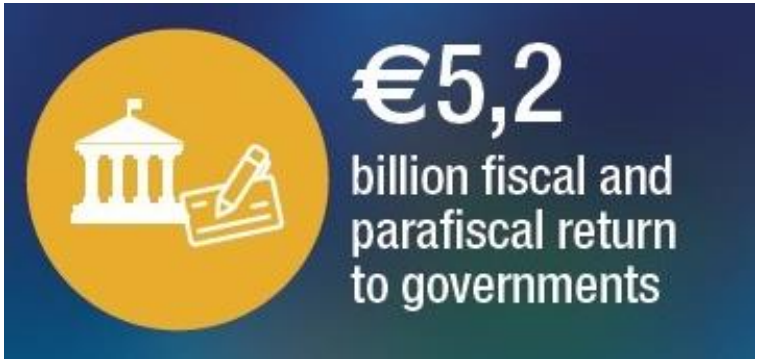
representing 1/3 of EARTO members in terms of employees and turnover

Economic Footprint

Aggregated Effects of 9 RTOs in 2014

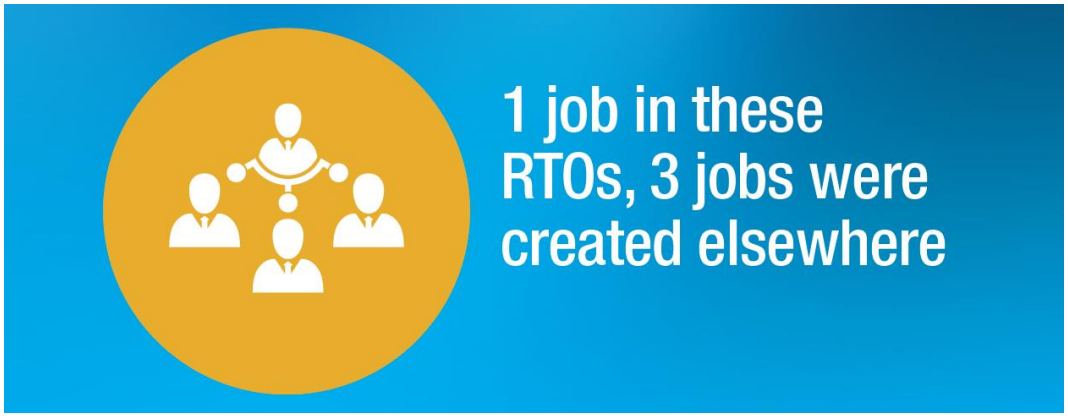
AGGREGATED EFFECTS OF 9 RTOs in 2014

from their Core Activities and through Contract Research and Spin-offs



AGGREGATED EFFECTS OF 9 RTOs in 2014

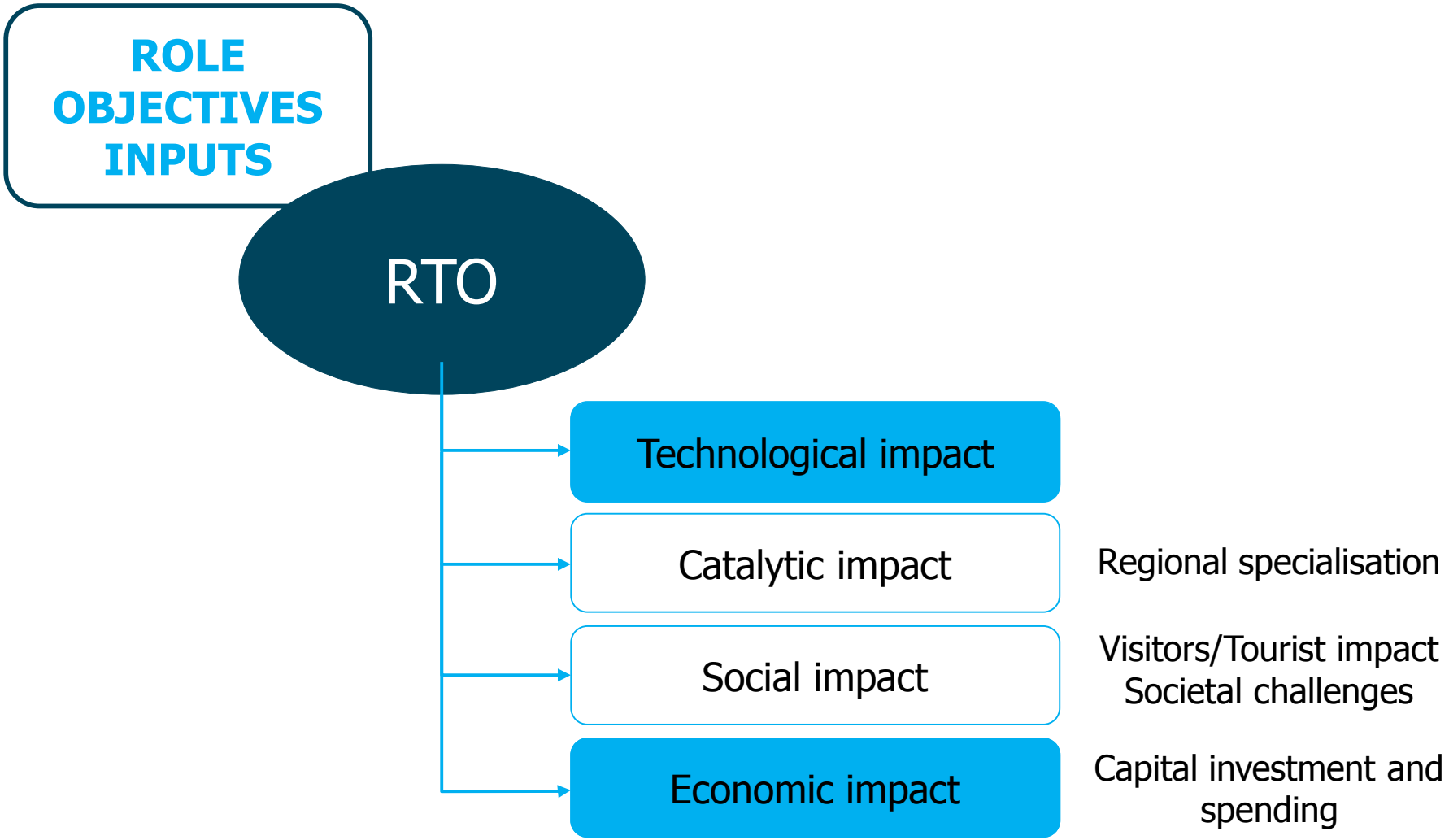
from their Core Activities and through Contract Research and Spin-offs



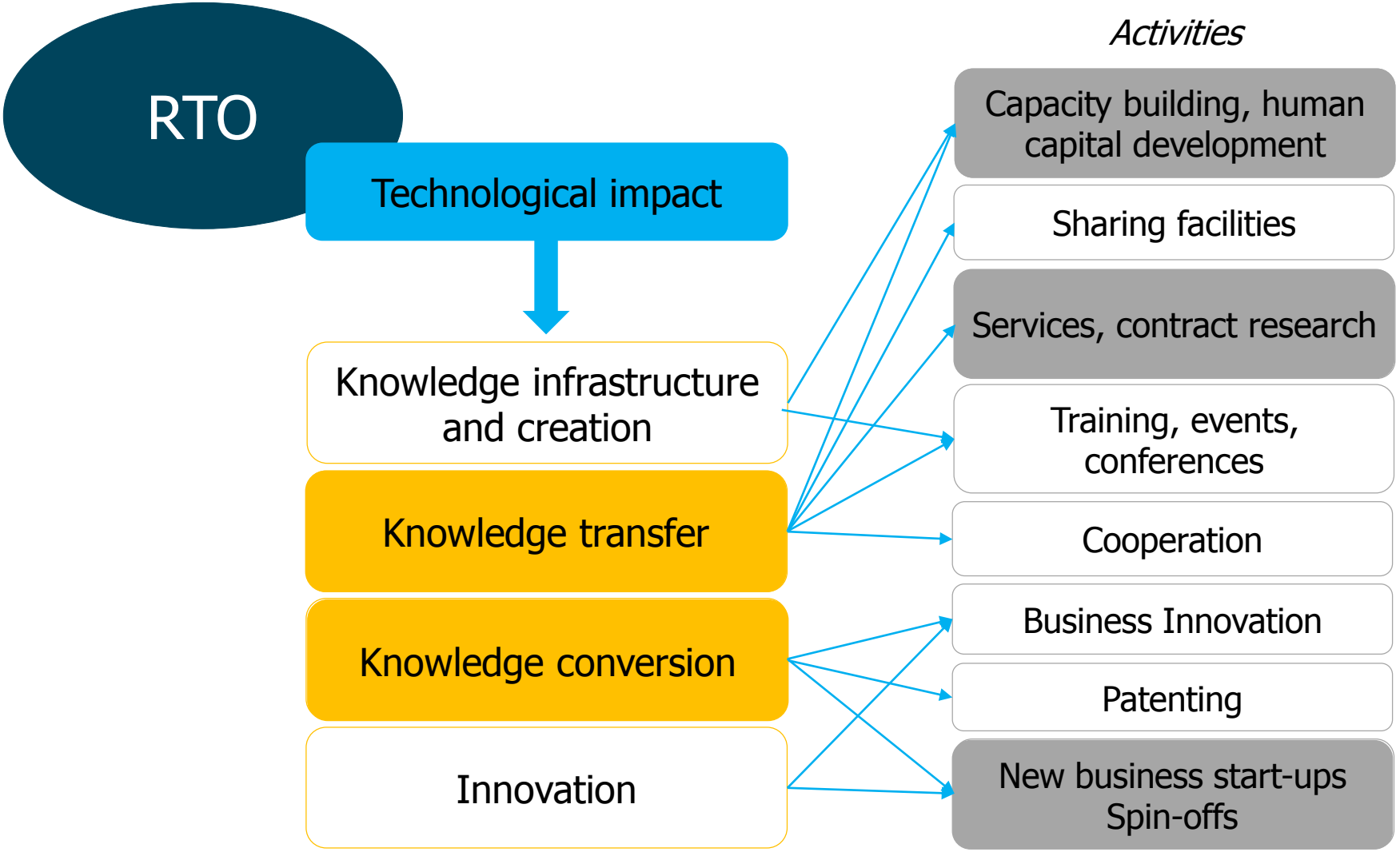
Economic Footprint

Methodology & Scope

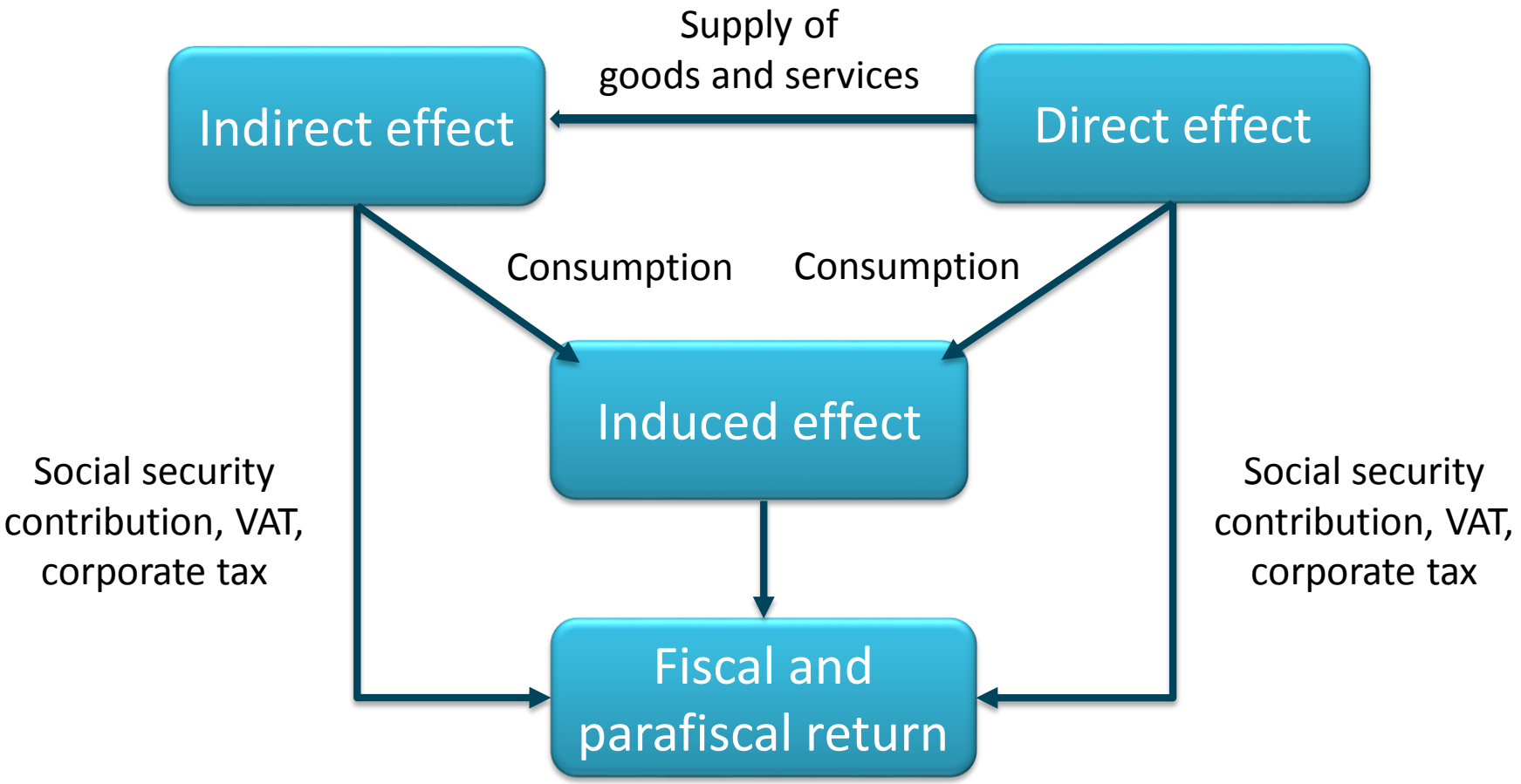
FRAMEWORK:
Overview of Outputs and Impacts related to the role of RTOs



FRAMEWORK:
Overview of Outputs and Impacts related to the role of RTOs



METHODOLOGY of the Economic Impact Assessment



Economic Footprint

RTOs' Core Activities in 2014

RTOs' CORE ACTIVITIES

Definition:

- Economic activities of the RTOs as active organisations:
- Staff, turnover, value added and purchases + all derived economic effects further upstream in the European economy.

Detailed results:

- Direct effect
- Indirect effect
- Induced effect
- Fiscal and parafiscal return

RTOs' Core Activities - DIRECT EFFECT

Definition:

Economic effects at the organisation level:

- Staff
- Turnover
- Value added

RTOs' Core Activities - DIRECT EFFECT

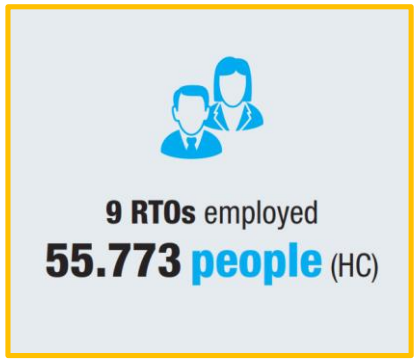
Methodology:

Based on data delivered by the RTOs on their in-house activities, combined with information from the institutes' websites and annual reports:

- Employment: number of full-time equivalents (FTE) and head counts (HC) on the payroll
- Employment: number of researchers on the payroll
- Turnover
- Value added

RTOs' Core Activities - DIRECT EFFECT

Results for 9 RTOs in 2014:



RTOs' Core Activities - INDIRECT EFFECT

Definition:

Economic effects of the spending (purchases) of the RTOs.

- The purchases create an additional demand at the suppliers of the RTOs, and further upstream.
- The additional demand generates additional employment, turnover and value added at the suppliers, and further upstream in the European economy.

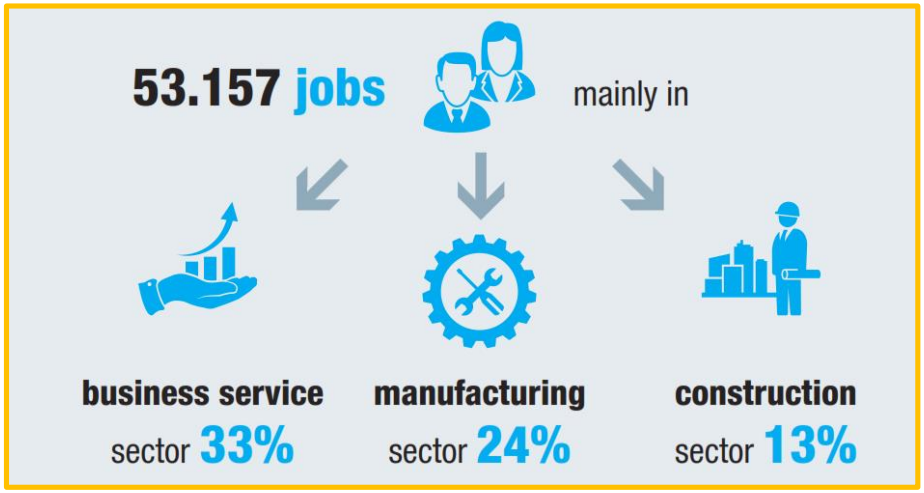
RTOs' Core Activities - INDIRECT EFFECT

Methodology:

- First order effect at the suppliers = based on incoming invoices of RTOs
  - ⇒ organisation-specific effects
- Higher order effect at the suppliers of the suppliers = based on input-output tables
  - ⇒ introduce the RTO's expenditures as a demand shock in the EU input-output table and derive the corresponding output, employment and value added effects

RTOs' Core Activities - INDIRECT EFFECT

Results for 9 RTOs in 2014:



€6,3 billion
turnover

€2,8 billion
value added

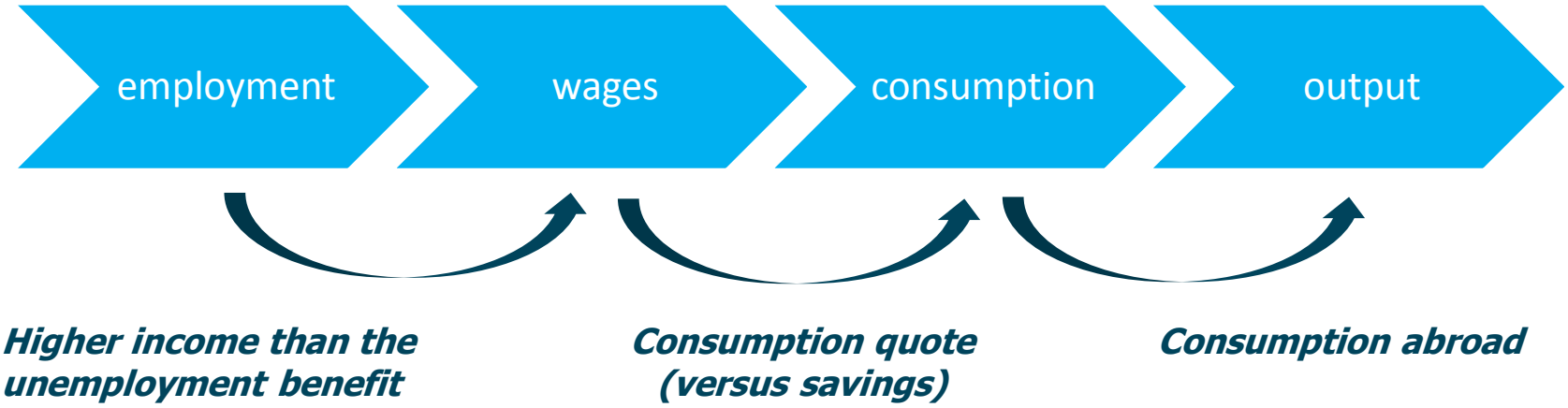
RTOs' Core Activities - INDUCED EFFECT

Definition:

- Economic effects of the additional consumption of goods and services in the European economy by the additional direct and indirect employment.
- These effects take place at the suppliers of the consumed goods and services, and further upstream.

RTOs' Core Activities - INDUCED EFFECT

Methodology:



RTOs' Core Activities - INDUCED EFFECT

Results for 9 RTOs in 2014:

10.100
jobs

€1,2 billion
turnover

€0,5 billion
value added

RTOs' Core Activities - FISCAL RETURN

Definition:

- Fiscal return to the national governments in Europe
- Due to taxes on the total economic effects (direct+indirect+induced)
- Through three channels:
  - Employment: Social security taxes & Personal income tax
  - Turnover: corporate taxes
  - Value added: VAT

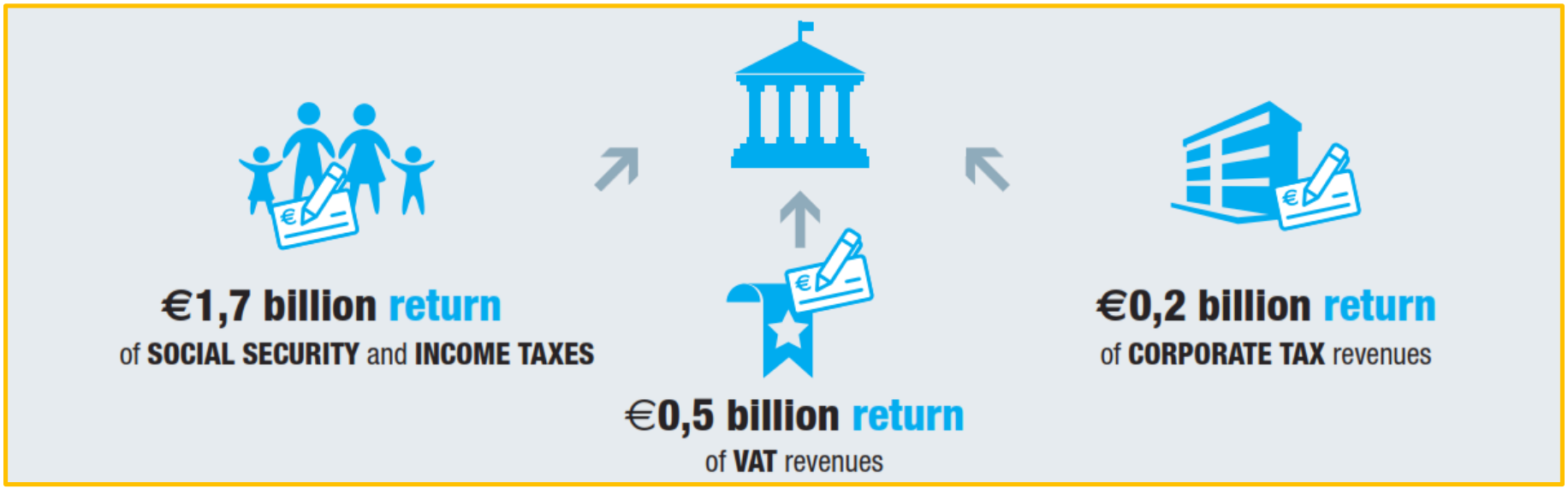
RTOs' Core Activities - FISCAL RETURN

Methodology *(Source: EC Taxation and customs union & Eurostat)*

- **Employment**: Social security taxes & Personal income tax
  - ⇒ EU average implicit tax rate (ITR) on labour applied to gross wages per sector
- **Turnover**: Corporate taxes
  - ⇒ EU average corporate tax rate applied to profits (based on gross profitability rates per sector)
- **Value added**: VAT
  - ⇒ EU average VAT-rates applied to value added

RTOs' Core Activities - FISCAL RETURN

Results for 9 RTOs in 2014:



TOTAL IMPACT of RTOs' Core Activities

Direct + Indirect + Induced effect => Fiscal return

Results for 9 RTOs in 2014:

119.030 jobs

€15,4 billion turnover

€7,4 billion value added

€2,5 billion fiscal and parafiscal return to governments

TOTAL IMPACT of RTOs' Core Activities

Results for 9 RTOs in 2014:

For each 1 job in these RTOs, another additional 1,1 jobs were created elsewhere in the European economy due to RTOs' core economic activities in 2014.

For each €1 invested by governments in the form of operational grants of those RTOs in 2014, **€1,50 flew back to those governments** due to RTOs' core economic activities in 2014.

Economic Footprint

Selection of **Scientific/Technological Activities**

RTOs' SCIENTIFIC/TECHNOLOGICAL ACTIVITIES

Definition of the economic effects:

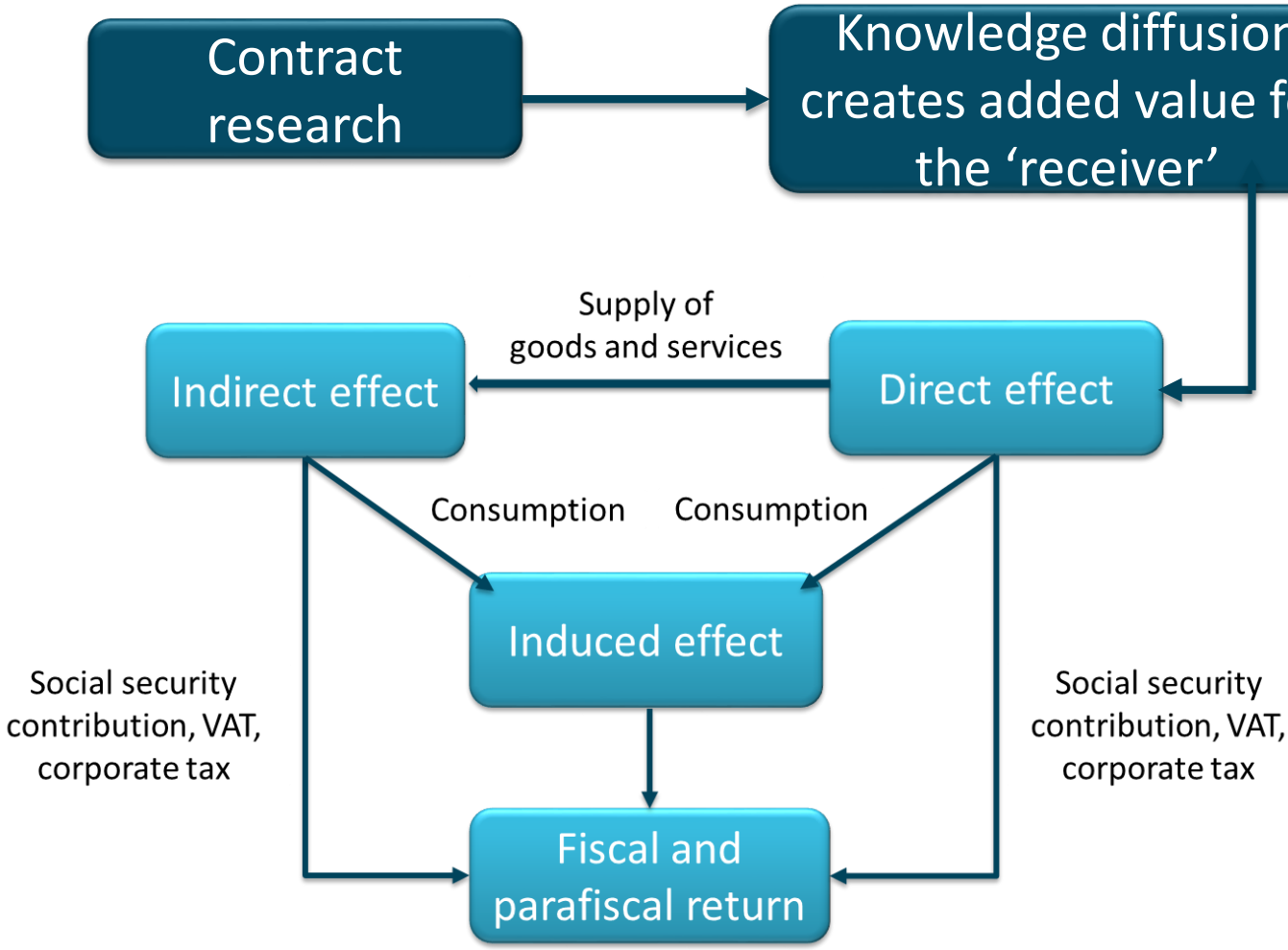
- Economic effects of the technological spillovers of the RTOs.
- These effects take place at the side of the knowledge receivers and further upstream in the economy.

Detailed results:

- Contract research
- Spin offs

RTOs' Scientific/Technological Activities
CONTRACT RESEARCH

Definition:



RTOs' Scientific/Technological Activities
CONTRACT RESEARCH

Methodology in 3 steps

1. Value of the knowledge diffusion (for the receiver) = the price a company or organisation is willing to pay for the research (RTO data)
2. Technological impact of the diffused knowledge = the amount of technology created based on this knowledge

   ⇒ Technology multiplier based on input-output methodology to indicate the relation between R&D intensity and total technology intensity.

   ⇒ Value of 1.98 in the Euro zone (source: Knell, 2008): for each euro of intramural R&D expenditures in the Euro zone, 1.98 euro of embodied technology is created.

RTOs' Scientific/Technological Activities
CONTRACT RESEARCH

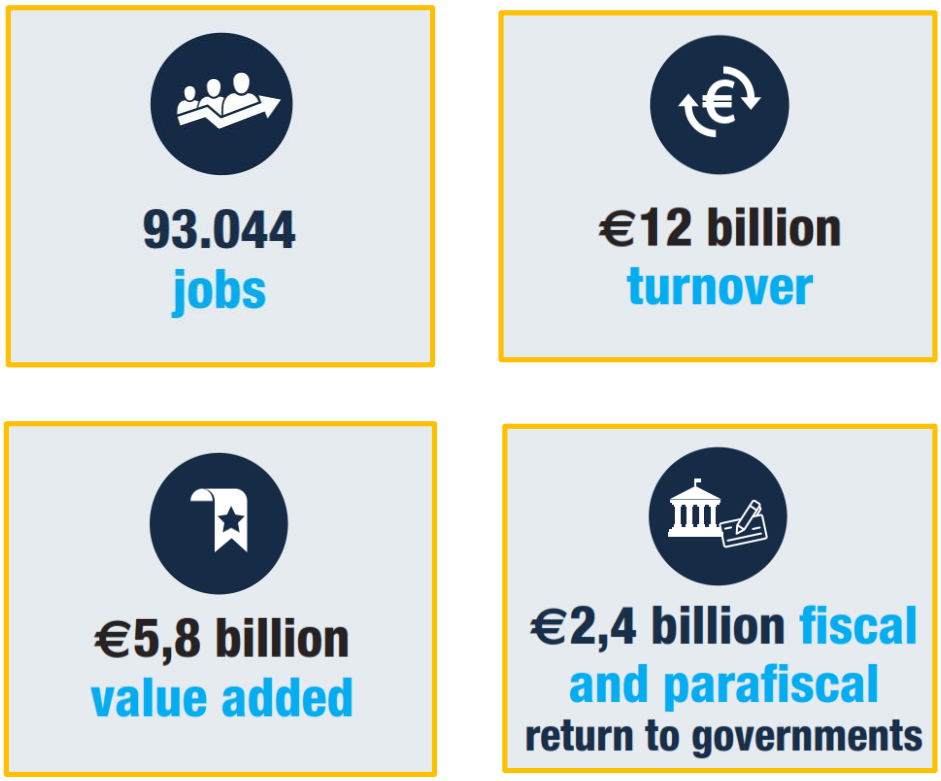
Methodology in 3 steps

3. Economic footprint of the created technology = direct, indirect, induced effects and fiscal return

   ⇒ Based on the economic rates found for the core activities of the RTOs

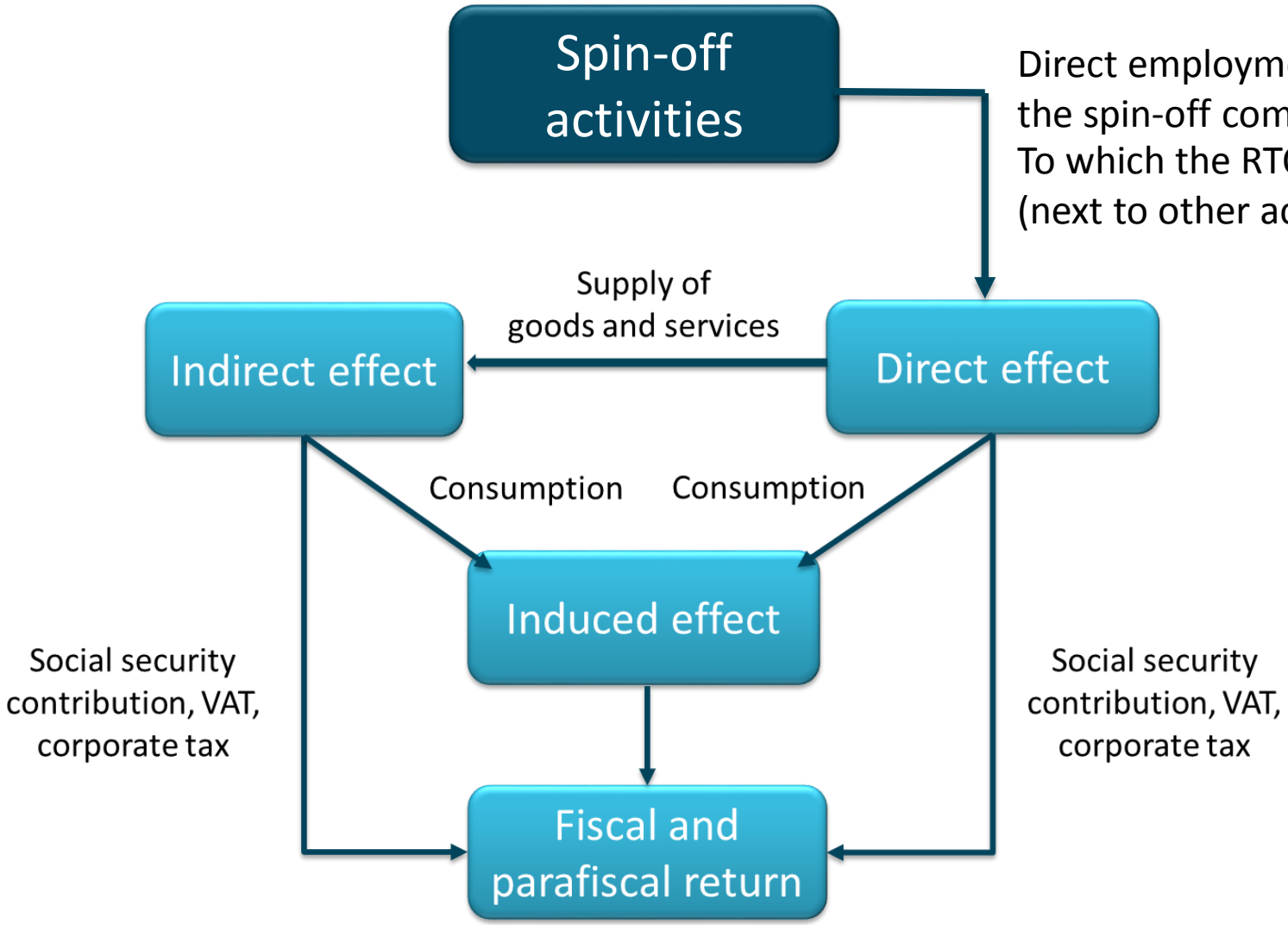
RTOs' Scientific/Technological Activities
CONTRACT RESEARCH

9 RTOs' €1,9 billion worth of contracts in 2014 resulted in:



RTOs' Scientific/Technological Activities - SPIN-OFFS

Definition:



RTOs' Scientific/Technological Activities - SPIN-OFFS

Methodology

- Spin-off activities create new employment, value added and turnover – directly, indirectly and induced.
- ! Attribution: spin-offs are based on knowledge developed in the RTO, but further develop in a broader context of actors and factors
  - ⇒ Interpretation: an indication of the importance of this kind of knowledge conversion processes based on RTO knowledge for the European economy

RTOs' Scientific/Technological Activities - SPIN-OFFS

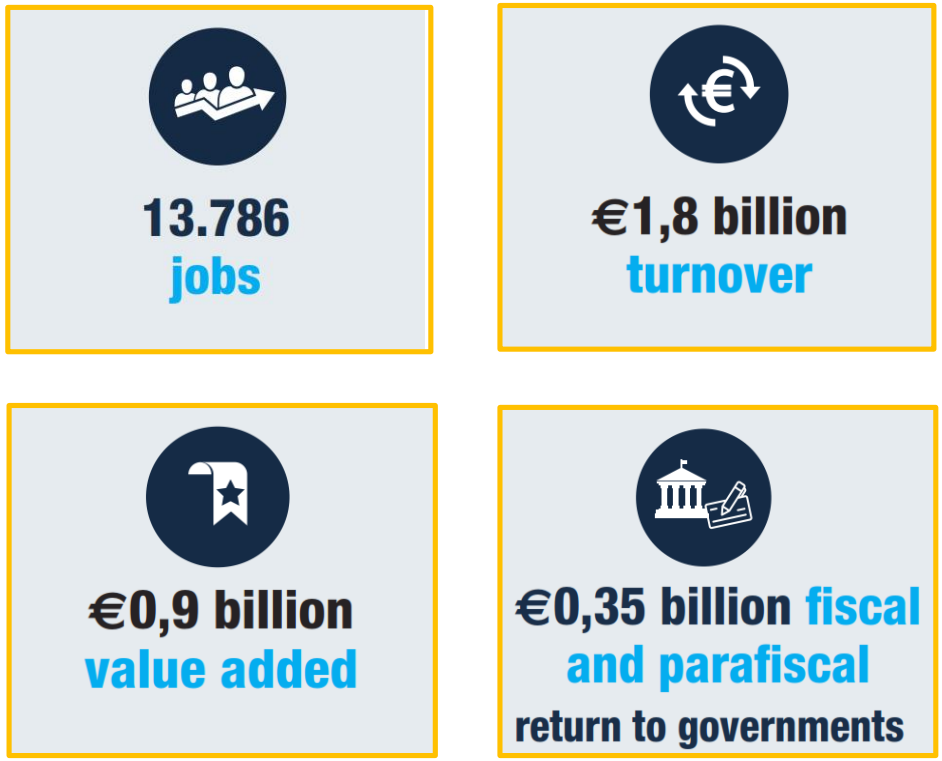
Methodology

- Economic footprint of the spin-offs = direct, indirect, induced effects and fiscal return

  ⇒ Based on the direct employment figures of the spin-offs and the economic rates found for the core activities of the RTOs

RTOs' Scientific/Technological Activities - SPIN-OFFS

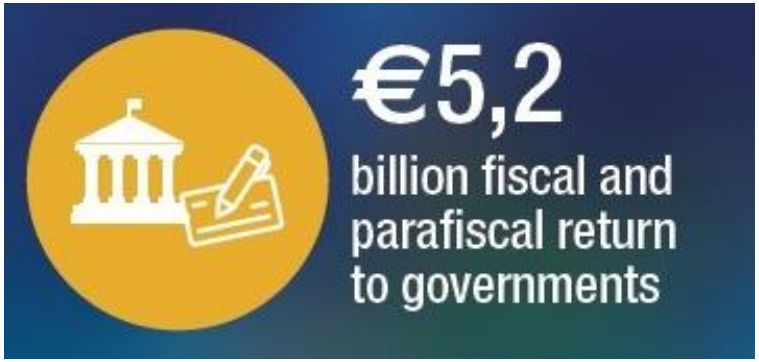
9 RTOs' 257 spin-offs active in 2013-2014 resulted in:



Concluding Remarks

AGGREGATED EFFECTS OF 9 RTOs in 2014

from their Core Activities and through Contract Research and Spin-offs



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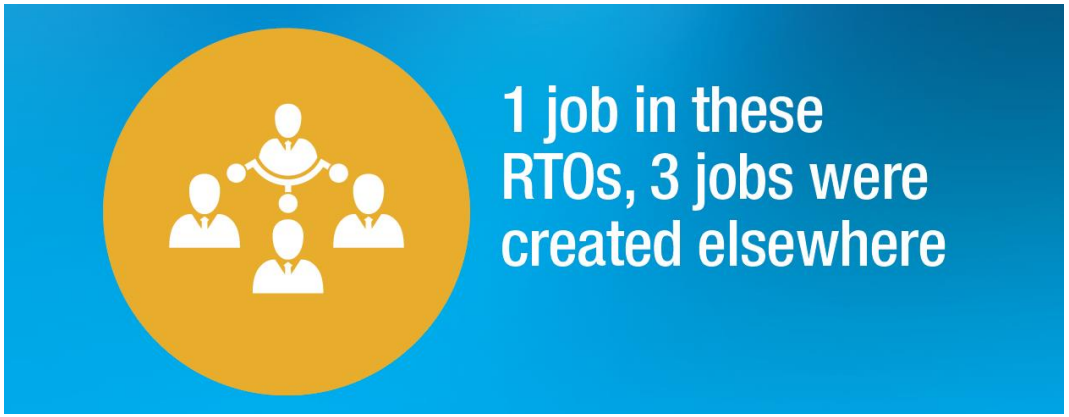

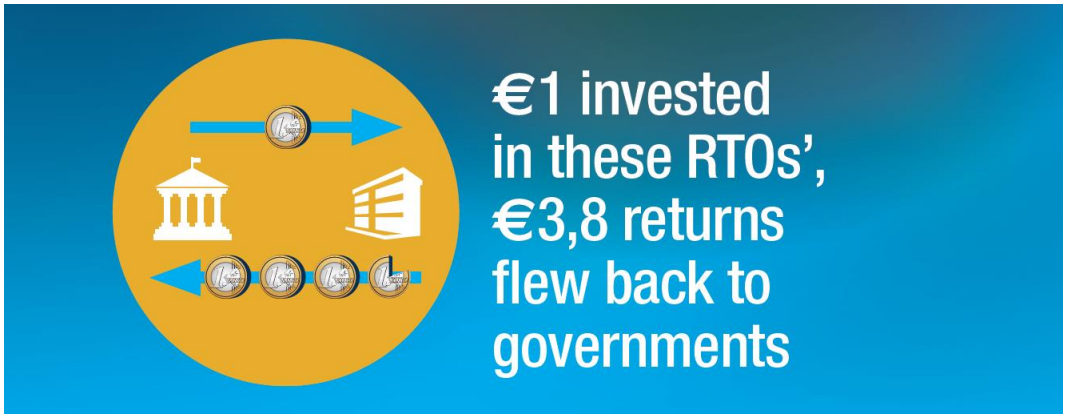

How do methodology and results compare to other studies?

Three elements in our methodology affect the results compared to other existing studies:

- Scope: selection of objectively quantifiable impacts with strong economic focus; versus overall estimation of impacts.
- Counterfactual: unemployment benefit; versus zero income in counterfactual of no RTOs.
- Value of contract research: Knell (2008) technology multiplier based on I/O methodology; versus parameters used in other studies.

Concluding Remarks

- The study is key in demonstrating the value added of RTOs in the European economy;
- And provides quantitative evidence that is lacking in official statistics and data on RTOs;
- The results reflect a high economic impact of RTOs in Europe:
  - From core activities (employment, turnover, value added, purchases);
  - And almost as much from technological spillovers (economic effects at the side of the knowledge receivers);
  - Not even taking into account other types of impacts related to the RTOs' objectives in terms of science, technology, innovation and society (lower boundary);
  - In absolute numbers as well as compared to other sectors in the economy.

IDEA CONSULT thinking ahead

EARTO IMPACT DELIVERED

Economic Footprint of 9 European RTOs

CONTACT

www.ideaconsult.be

miriam.vanhoed@ideaconsult.be

IDEA Consult
Kunstlaan 1-2, bus 16
1210 Brussel
02 282 17 17

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Building on, and expanding successful actions

Status (EU support so far):

- ~150 M€ (2013-14)– 14 projects – 80 centres – 400 experiments
- ~75 M€ in 2015 (in contracting phase)

KEEP CALM AND REFORM R&I POLICIES

Initial Take-aways from our Advisory Mandate

1. **RTOs' current funding strategy may not be sustainable:** new business models and funding sources (e.g. EFSI) are worth exploring.

2. **Advisory and financial support to the broader RTO ecosystem will add value:** to improve absorption of existing and stimulate development of new financing tools.

3. **Leverage RTOs' technical expertise in the wider financial community to increase interest and funding appetite:** to enhance catalytic impact to mobilise private sector funding.

Final report expected in mid-2016 with concrete recommendations for future actions.

VTT Technical Research Centre of Finland Ltd

- One of the leading R&D&I organisations in Europe
- We provide expert services for our domestic and international customers and partners, both in private and public sectors

TOP 2
VTT is second most active patenting organisation in Finland (2014).

36%
of Finnish innovations include VTT expertise.

We use
4 million hours
of brainpower a year to develop new technological solutions.

Turnover 277 M€ (VTT Group 2014)

Personnel 2,600 (VTT Group 1.1.2015)

Unique research and technological infrastructure

Wide national and international cooperation network

Xabier Goenaga's Comments & Suggestions

- Impact of R&D on productivity varies a lot with R&D intensity of companies
- Take account of other KT mechanisms besides Contract Research
- Impact of new equipment on companies productivity is high: Do RTOs play a role in purchasing decisions?
- Complement quantitative impact with indicator based assessment (bibliometric/patents/…), surveys and peer reviews
- More in depth assessment of advantages and disadvantages to local companies of RTO´s international partnerships

TECNALIA IMPACT

MISSION: **WE TRANSFORM TECHNOLOGY INTO GDP**
TECNALIA makes sense as institution **only** if we generate IMPACT!

Bringing it **into practice**, our **main strategic axes**:

1. being close to the **market**
2. technological **relevance**
3. supporting talented **people**
4. an **open** organisation
5. with a **sustainable** economic model

Measuring it, through a set of **KPIs**, continuosly **monitored**

Regional anchoring and internationalisation:

- Regional impact: Contract research with companies, training and transfer of talented people, generating new busines…
- Internationalisation: As a way to compete and collaborate with the best and accompanying local companies

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