Analysis of Needs, Offers and Gaps for Innovation & Technology Transfer Services for Companies in the North-West Region of Romania

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North-West Region of Romania (NW)

Author: Dr. Jonathan Loeffler

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1 Context of the study

The Romanian Ministry of Regional Development, Public Administration and European Funds (MDRAPFE) as Managing Authority for Regional Operational Programme 2014-2020 shall finance under Priority Axis 1 - Promoting technology transfer – innovation and technology transfer entities with the aim to increase innovation in companies in the areas of smart specialization. In this context, identification of priorities for Innovation & Technology Transfer (ITT) services offered by Technology Transfer organisations in North-West Development Region of Romania (referred to further on as North-West Romania) is really important. Thus, the initiative to identify the ITT needs of the companies and the gaps in the existing competences of the regional ITT offer, as well as necessary complementary measures, that could raise the impact of funds spent was included in the Policy Mix from the Action Plan of DG Regio's Lagging Regions Initiative, coordinated with the North-West Regional Development Agency (RDA NW).

The goal of this study, based on survey and interview results, is to exploit the potential for innovation and strengths in the region by focusing on a limited number of priority areas, where there is already a competitive advantage, or one can be developed.

Premises of study, strongly rely on the fact that in the next ten years scientific developments in Key Enabling Technologies[1] will influence many different industrial branches e.g. agro-food, textiles & clothing, industrial automation, ICT, healthcare & well-being, environment or energy. In these industrial sectors many companies and especially SMEs are involved as traditional suppliers, start-ups or producers of high-tech products. In order to remain competitive on these markets, the companies have to integrate these new technologies in their commercial vision for future products.

It is of strategic importance for the companies, especially SMEs, in North-West Romania to have access to support services to develop their activities in the domain of innovation partnership and technology transfer.

Until now the acceptance and integration of novel research results by SMEs is limited. In order to improve the acceptance it is important to demonstrate to the SMEs the link between available RTD results and the technological needs of SMEs' products. For this reason it is necessary to identify the needs of the companies. This has to be performed in a market-driven approach.

Furthermore this project has a cross-sectoral approach. The SMEs were chosen from different strategic economic areas of the region, identified in the Framework Document for RIS3 as ones with smart specialization potential, i.e.: on Agro-food, ICT, Production Technologies/Machine tools, Wood processing and Furniture, Metal working technologies, Paper, Plastics &Packaging, Cosmetics and food supplements, as well as Health.

On the other side it was important to analyse the Innovation & Technology Transfer structures, which already offer this type of support services and/or would like to develop such services. A technology-driven approach, based on the service offer of the existing regional I&TT structures,

[1] Key Enabling Technologies (nanotechnology, photonics, advanced materials, industrial biotechnology, micro and nano electronics, advanced manufacturing technologies)

especially for applied research aspects was also performed at regional level. The final outcome of this initiative are recommendations on how to support the access of companies of the NW region to Innovation Support Services and Technological Platforms[2].

As important actors in the ITT process, the existing regional clusters, as forms of quadruple helix cooperation, shall be strongly involved. The clusters in North-West Romania are in the domains of Agro-Food, Furniture and Wood Processing, Balneo-Tourism, ICT, Cultural and Creative Industries, Nanotechnologies, Energy, Life Style and Eco-Innovation.

[2] A Technological Platforms is a technological facility (public or private) which offer services to enterprises, including SMEs like prototyping, demonstration lines, lab test facilities sot that they can bring new products and services to market involving one or more KETs

2 Executive summary

2.1 Introduction

This paragraph will introduce the thematic and explain the structure of the analysis. This analysis will help to give an answer to the following questions:

1. What are the needs of companies in the domain of Innovation & Technology Transfer (I&TT) in the region?
2. What type of I&TT services can be offered by RDI organisations to answer the companies' needs?
3. Where are the gaps between needs and services, which could be filled by the development and support of new I&TT services through the Regional Operational Programme 2014-2020 financed under Priority Axis 1 by identifying priorities for Innovation & Technology Transfer (ITT) services offered by research organisations in the North-West Development Region of Romania?
4. What other actions should be taken in order to raise impact of funds spent?

In a simplified model, two main domains with specific objectives for the development of companies can be distinguished (Figure 1):

- The domain of "Business Development": it is essential for companies to develop their business in order to sell their products or services to a maximum number of clients. For this they have the objectives:
    - To develop attractive products and services with new functionalities
    - To identify new clients and new markets.
- The domain of the "Internal Company Development": quality and costs are the main drivers in this domain, so the companies have two main objectives here:
    - To improve the quality of the existing products/services
    - To reduce costs

In order to achieve these main objectives, the companies have needs in the following six categories:

1. Knowledge
2. Contacts
3. Financing
4. Management
5. Equipment
6. Qualified personal

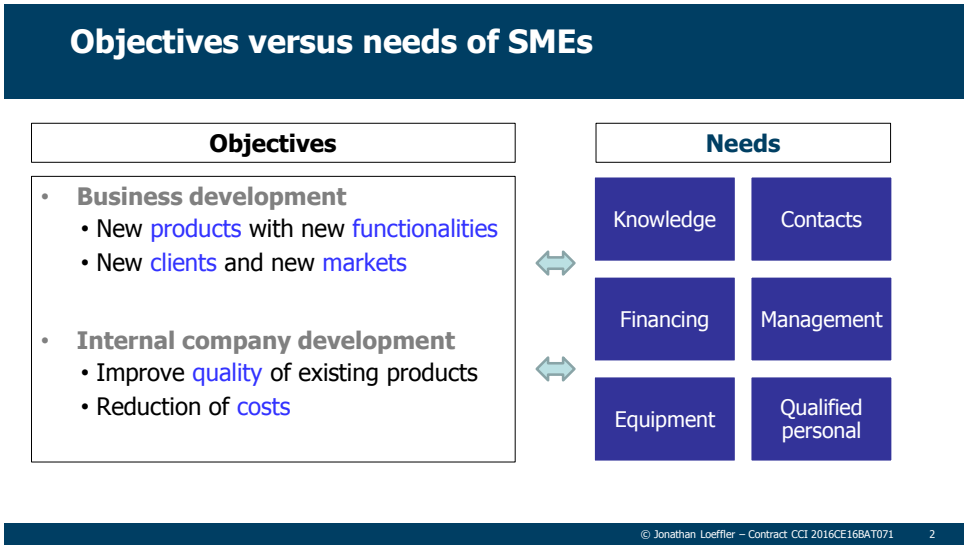


Figure 1 – Simplified model of companies' needs to achieve their main objectives

The company can either find answers to these needs *internally* or look for *external solutions* (Figure 2). Big companies have most of the resources internally, but SMEs need to enter partnerships and collaborations to boost their development. In the case of Innovation and Technological Development, the collaboration with research organisations, and the existence of I&TT services based on market needs, is of strategic importance.

The main challenge of the collaboration between companies and research organisations can be formulated in one question, which will determine the structure of this analysis: **How Innovation & Technology Transfer services from R&D/Innovation (RDI) organisations can give answer to these companies' needs?**

The following figure shows which I&TT services can give an answer to the different types of companies' needs introduced before and support the objectives of the companies' development.

The strong link to the objectives of the companies is essential to achieve the long term sustainability of the services developed. The companies will be ready to ask for the services and even to pay for them, only if they are in-line with their objectives and if they give an answer to their specific needs. For this reason the starting point of this analysis is demand-driven.

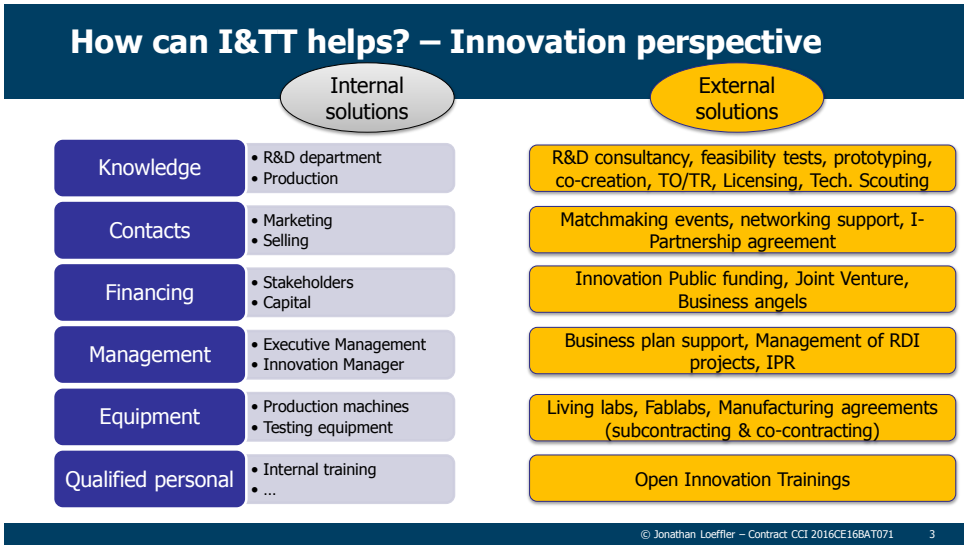


Figure 2: Link between I&TT services and companies' needs in the domain of innovation

These different services can be integrated in 4 different phases in the I&TT process described in the following figures:

- Awareness raising phase
- Analysis of needs
- Matchmaking phase
- Implementation phase

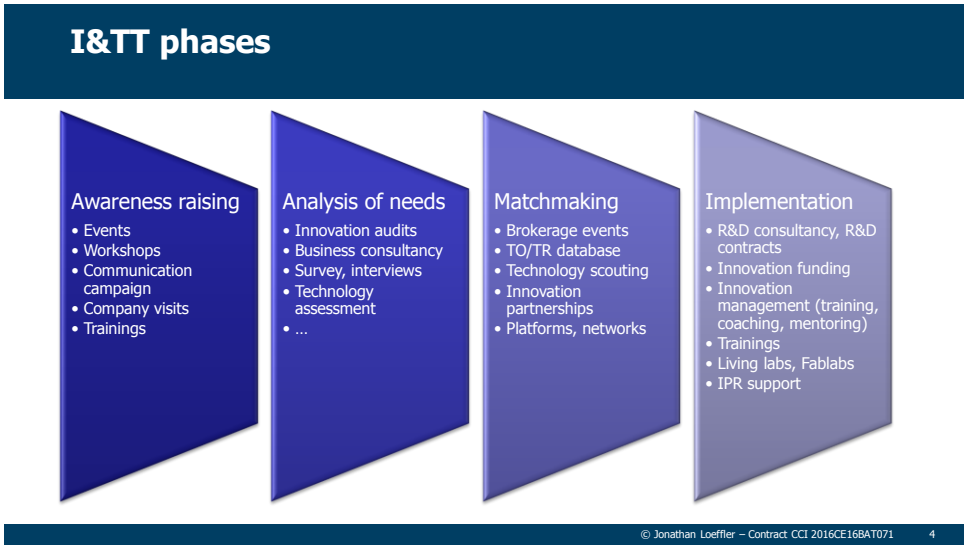


Figure 3: Services in the 4 main phases in the I&TT support process

The analysis will also identify in which phase the services should be reinforced.

2.2 Survey on needs of companies for I&TTservices

PROFILE OF COMPANIES

The Profile of companies having participated to the survey is the following:

125 companies have participated to the survey - 78% of the companies are established companies older than 5 years and **22% younger than 5 years–** all sizes of companies are represented (<10, 10-50, 51-250 and >250 employees), especially micro-enterprises.

The economic areas represented are the ones identified in the Regional Framework Document for RIS3 as having smart specialization potential, i.e. Agro-food, Cosmetics & food supplements, Health, IT&C, Metal Working Technologies, Paper, Plastics & Packaging, Production technologies, Wood processing & furniture. Additionally, a few companies from other complementary sectors completed the questionnaire, as well.

The survey on needs of companies for I&TT services was divided into two main sections:

Section 1 – Objectives of companies and partnerships in terms of Research, Innovation and Technology Transfer

Section 2 - Needs in terms of innovation management, new technologies and research knowledge

The following paragraphs will summarised the results of the survey in these two sections.

2.2.1 Results on objectives of companies and partnerships

2.2.1.1 Companies objectives

As explained before, the objectives of a company can be divided in two main categories: a first category of objectives dedicated to support the *internal development* of the enterprise concerning production, quality and costs. A second category related to the *external development* (business development) related to gain new clients and reach new markets.

Six objectives have been appointed by more than 50% of the companies.

From a *business development* point of view, the objectives are

(i) To enter new markets or increase market share (84%)
(ii) To expand product assortment (68%)

The objectives related to the *internal development* of the company are:

(iii) To improve product quality (64%)
(iv) To reduce production costs (60%)
(v) To increase in-house experience on the technology field (59%)
(vi) To increase R&D activities (57%)

The domain of *business development* is especially strong in the ICT sector with 97% of the companies having the objective to enter new markets or to increase their market share.

The domain of *R&D activities* and *technological development* is especially strong in the sector of Production Technologies/Machine Tools and ICT with more than 80% of the companies appointing these objectives in the near future.

2.2.1.2 RDI partnerships

58% of the companies have the RDI partnership at regional level, 36% at national level and 32% at international level.

Around 67% of the partnerships are with universities. 40% of the partnerships are with other companies and **30% with clusters**.

Out of the companies not having RDI partnerships yet, more than **86%** have the interest to join RDI projects. This shows a big potential for new partnerships and the necessity to have support organisations which help to initiate and organise the matchmaking between offer and demand in the domain of new technologies and innovation for companies.

2.2.2 Results on innovation management, new technologies and research knowledge

SUPPORT SERVICES NEEDED IN I&TT

The demand for I&TT services from companies can be divided in 3 groups.

The main support services needed from more than 60% of companies are in the domain of:

- Contacts for *innovation partnerships in the domain of* research labs, fablabs, living labs, test bench (70%)
- Innovation Financing / funding (64%)
- Research contract to integrate new knowledge/technology in products or services (prototyping, tests, consultancy, technical assistance) (61%)

International contacts for *innovation partnerships* are needed in the domain of research labs, fablabs, living labs, test benches by more than 60% of the companies.

Around 35%-40% of the companies are looking for support for:

- Business *support (*Technology scouting, Benchmarking, Market survey, commercialisation bootcamps) (45%)
- *Innovation Management* support (Training / Coaching / Mentoring) (42%)
- *Databases* with technology offers, studies, roadmaps (38%)

Less than 30% of the companies are looking for support in Technology assessment, analysis of innovation potential, brokerage events and IPR issues.

LONG TERM VISION ON INNOVATION

It is considered that having a long term vision on innovation shows a high degree of awareness and a high demand for I&TT support to realise this vision.

Product innovation

75% of the enterprises have a long term vision on product innovation. It is a positive signal because it is more than half of the companies and this shows a big potential for TT&I services in order to support and implement this vision.

Service innovation

The vision concerning **service innovation** is also strongly present in 65% of the companies.

R&D activities

Around 45% of the companies have a long term vision on R&D activities, which is less than for the two other domains, but still shows a strong potential for a demand in I&TT services.

INNOVATION STRATEGY

More than 50% of the companies still do not have a specific budget for innovation measures. This can be a sign that these companies are not developing a dedicated and pro-active innovation strategy, which is translated in specific measures with a reserved budget. They take innovation measures on a case-by-case level by reacting to opportunities and applying a continuous improvement process (CIP). This shows a need for Innovation Management support in terms of strategy.

INNOVATION MANAGEMENT METHODS

More than 2/3 of the companies do not have a systematic approach to source or invent new technologies, i.e. they are not performing technology watch and technology scouting and using innovation management methods like open innovation or co-creation. **There is also a need in terms of methods to be introduced in the companies to better manage the innovation process.**

MAIN DRIVERS AND BARRIERS TO USE NEW TECHNOLOGIES AND R&D KNOWLEDGE IN PRODUCTS OR SERVICES

The main drivers to use new technologies or R&D knowledge for new products or services are similar to the objectives stated in §3.2.1, namely:

- Increase productivity and competitiveness (76%)
- Increase performance of existing products / services (68%)
- Provide new functions / develop innovative products (68%)

The main barriers are:

- Equipment costs (68%),
- Qualified staff costs (40%)
- Lack of knowledge (38%)
- Technological complexity (34%)

This shows the **necessity to have test facilities and FabLabs with shared infrastructures and qualified personnel as service platforms** which can be contracted by the companies. An Individual company cannot afford the necessary investment. The financial risk is too high.

2.3 Results of the survey on I&TT services offered

Fifteen Technology Transfer (TT) offices and intermediary organisations from different types have participated to the survey:

- 7 are officially accredited and function in the framework of universities, public and private R&D organisations, chambers of commerce, consultancy companies, etc. as different types of TT organisations or TT intermediaries, according to the Romanian legislation. Most of them are Technological Information Centres, followed by Technology Transfer Centres, and there is one Liaison Office with the Industry.
- 8 are not accredited, but in case of obtaining financing from ROP 2014-2020, aim to get accreditation. Some of them are already functioning as TTOs, mainly those in the framework of the biggest public universities from the region, based in Cluj-Napoca, i.e.: Babeş-Bolyai University, Technical University from Cluj-Napoca, University of Medicine and Pharmaceuticals, University of Agricultural Sciences and Veterinary Medicine.

The organisations have a strong professional experience and are well established. 12 organisations have more than 15 years' experience in I&TT. Only 3 have between 5-15 years.

The highest number of TT organisations are active in the fields: environment & climate, energy, Eco-Nano Technologies, Advanced Materials, Space & Security, ICT, Health and Bio-economy. They have also expertise in the following technological fields: Advanced Materials, Nanotechnologies, Advanced Production Technologies and Industrial Biotechnology.

The most represented fields with smart specialisation potential are: ICT, Machine/Equipment Tools (Production Technologies) and Metal Processing.

These fields have a strong economic potential for the future and correspond to strong innovation trends. Cooperation and partnerships with companies in these domains can have a positive impact on the future economic development of the NW region. Furthermore, these fields are well corresponding in one hand to the economic sectors in which the companies are active and on the other hands to the main domains in which regional clusters have been established. These two points are very good framework conditions to establish I&TT partnerships and projects between companies and RDI organisations.

There activities covers all Technology Readiness Level (TRL). They are mainly active in the range of TRL1 to TRL7 covering fundamental research, proof of concept until demonstration in operational environment. Less than half of the organisations covers TRL 8 and TRL 9. Companies are looking for support in high TRL, like TRL 5 to TRL 9 dedicated to validation, demonstration and qualification of technologies and systems in an industrial or operational environment. This shows a gap in the offer of I&TT services.

Not accredited TT organisations seems to be more active in applied research activities between TRL 4 and TRL 9.

14 out of 15 research organisations offer services to external organisations mainly to SMEs, public organisations and large companies.

The services related to product/service development are described in the following manner:

(1) All services with the exception of the domain 'Living Labs and FabLabs / Pilot line / Demonstration line / Preseries fabrication' are offered by more than 60% of the organizations

(2) The following services are proposed by more than 80% of the organizations:
- Scientific & technological Advice/Expertise/Consultancy
- Innovation partnership agreements
- Awareness raising events
- Project management of Research and Innovation projects
- Company visits
- Component/ process development & testing
- Feasibility Study / initial design / Simulation
- Proof of concept / Lab testing of basic experimental set-up/ Characterisation

(3) The following services are less developed:
- Product validation / certification
- Matchmaking events, brokerage events
- Living Labs and FabLabs /Pilot line/ demonstration line/ pre-series fabrication

A deficit of services is especially high in the last category 'Living Labs and FabLabs /Pilot line/ demonstration line/ pre-series fabrication'.

But although a large support in the different domains of services is proposed, the demand from the companies is still very strong in the same domains. Two reasons can be responsible for this situation: either a lack of resources at I&TT organisations to respond to the demand or the services proposed are not adapted to the demand. A combination of both can also be considered.

DEFICIT OF SERVICES IN THE DIFFERENT PHASES

The following figure shows the services (marked in orange) not sufficiently developed as described in the former paragraph in the different phases of the I&TT process in the collaboration between companies and I&TT organisations.

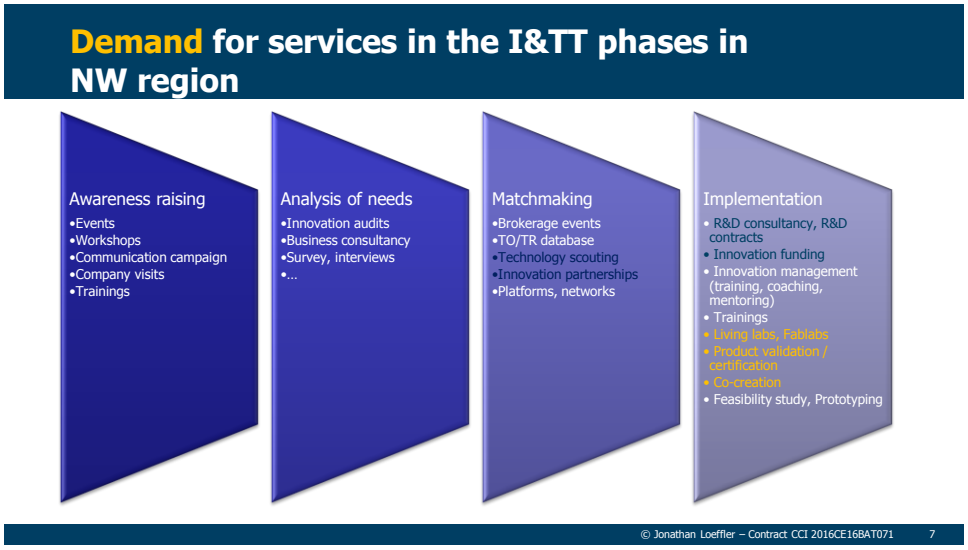


Figure 4 – Deficit of services in the different I&TT phases

ITT services in the implementation phase on product validation & certification, feasibility study & prototyping and co-creation in the frame of FabLabs or Living Labs should be further developed to respond to the strong demand of the companies.

In the other domains of services marked in blue in Figure 4 above, the demand for services is still very high even if the services are proposed by the I&TT support organisations. **It is possible that the services are not adapted to the demand of the companies.**

- The companies have a strong demand to be supported in the opportunity to enter new markets and also to develop new contacts (84%). Brokerage events seem not to be the right answer, because only 24% have a need in this domain. A more individualised service dedicated to partner search and business support with technology scouting would probably be more adapted.
- The demand for innovation financing/funding and for research contracts is also high, even if most of I&TT organisations are proposing a support in these domains.

Concerning **services opened to SMEs**, differences can be identified in the following domains:

- Awareness raising events (specific events for SMEs should be organised)
- Business plan support
- Networking support

2.4 Gap analysis

OBJECTIVES OF COMPANIES VS. SERVICES OFFERED BY RESEARCH AND TECHNOLOGY TRANSFER ORGANISATIONS

As already explained (and described more in details in § 2.2.1.1), six objectives have been appointed by more than 50% of the companies.

Two of the most quoted objectives for the near future are related to the *business development* of the companies:

(i) To enter new markets or increase market share (84%)
(ii) To expand product assortment (68%)

Four of them are related to the *internal development* of the companies:

(iii) To improve product quality (64%)
(iv) To reduce production costs (60%)
(v) To increase in-house experience on the technology field (59%)
(vi) To increase R&D activities (57%)

Business development

The two former objectives related to *business development* can be addressed mainly by the following I&TT services in the category “Contact”:

- Awareness raising events
- Matchmaking events
- Networking support
- Innovation Partnership Agreement

The results of questionnaire (question 3.2) show that:

- Awareness raising events are proposed by 14 out of 15 organisations
- Matchmaking events, brokerage events are proposed by 9 out of 15 organisations
- Networking support is offered by 11 out of 15 organisations
- Innovation Partnership Agreement is proposed by 14 out of 15 organisations

As explained before, the demand for these services is still very high even if the services are proposed by the I&TT support organisations. It is possible that the services are not adapted to the demand of the companies or there is a lack of resources at the support organisations.

Internal development

The objectives related to the *internal development* can be addressed mainly by **process innovations**. The following I&TT services in the categories "*Knowledge*" and "*Equipment*" can support them:

- *R&D consultancy* and *simulation* on quality improvement and smart production e.g. to reduce production time
- *Process development and testing*
- *Living labs, Fablabs* to test the quality and the new production steps

The results of §4.2.1 of the I&TT offer study show that:

- *R&D consultancy* services is offered by all the I&TT organisations in the region
- *Process development and testing* is proposed by more than 80%
- *Living labs, FabLabs* services only by 4 out of 15 organisations

The existing gaps are in the domains of services for *Living labs and FabLabs.*

3 Analysis of results from the on-line questionnaire concerning companies I&TT needs

The questionnaire had the following three main parts:

- Part 1 - Company profile
- Part 2 - Company's objectives and partnerships
- Part 3 - Innovation management, new technologies and research knowledge

The structure gives the possibility to make some statistics for the different types of companies concerning their specific needs.

3.1 Section 1 - Profile of the companies participating to the survey in the NE Region

In order to have a representative sample of companies for the survey, it is important to address different types of companies considering the following factors:

- Creation date
- Size and turnover
- Involvement in RDI activities
- Economic sectors
- Role in the value chain

3.1.1 Profiles of the companies

CREATION DATE

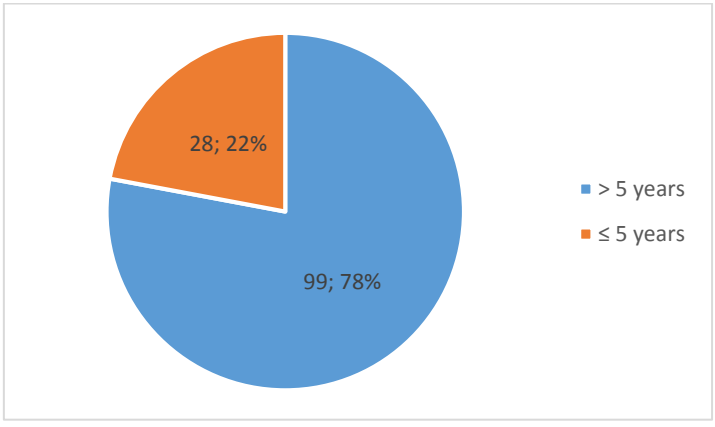
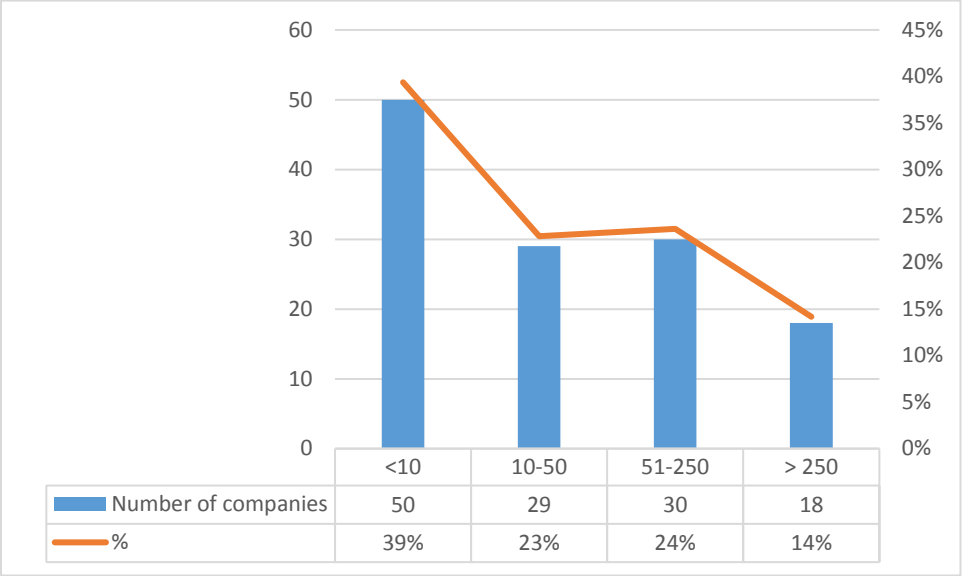


Figure 5 – Statistical distribution of companies depending on the date of creation

127 companies have participated to the survey - 78% of the companies are established companies older than 5 years and 22% younger than 5 years

NUMBER OF EMPLOYEES:

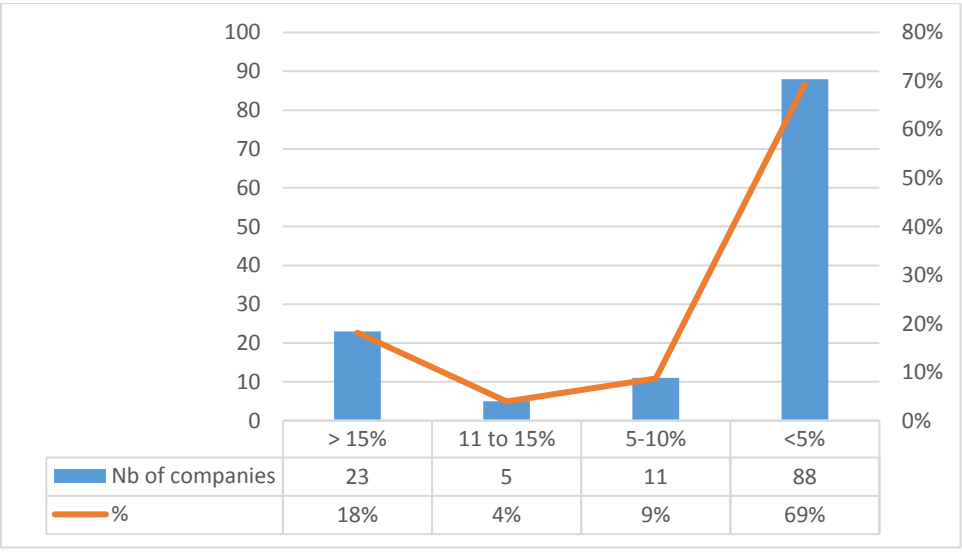


	<10	10-50	51-250	> 250
Number of companies	50	29	30	18
%	39%	23%	24%	14%

Figure 6 – Statistical distribution of companies depending on their number of employees

All sizes of companies are represented (<10 with 39%, 10-50 with 23%, 51-250 with 24% and >250 employees with 14%), especially micro-enterprises.

NUMBER OF RTD STAFF (IN %):



	> 15%	11 to 15%	5-10%	<5%
Nb of companies	23	5	11	88
%	18%	4%	9%	69%

Figure 7 – Statistical distribution of companies depending on the percentage of RTD staff

About 30% of the companies are RTD intensive companies with more than 5% of their staff dedicated to RTD activities.

ANNUAL TURNOVER (IN MIO. RON):

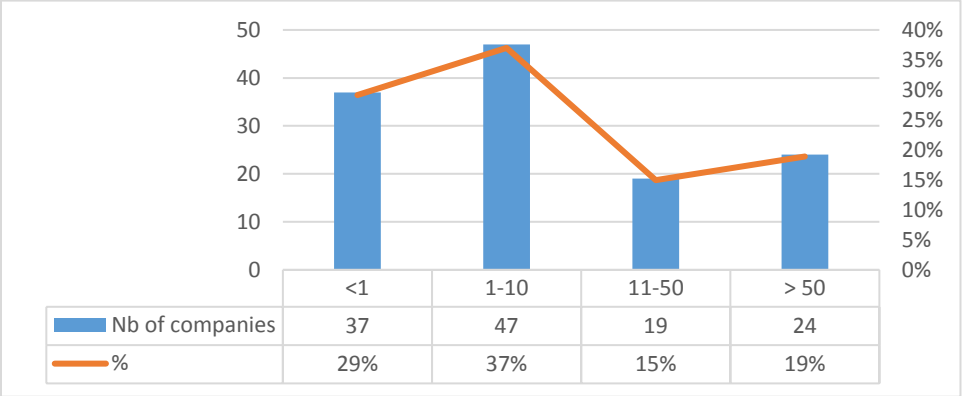


Figure 8 - Statistical distribution of companies depending on turnover

ECONOMIC SECTOR THE COMPANY IS ACTIVE IN:

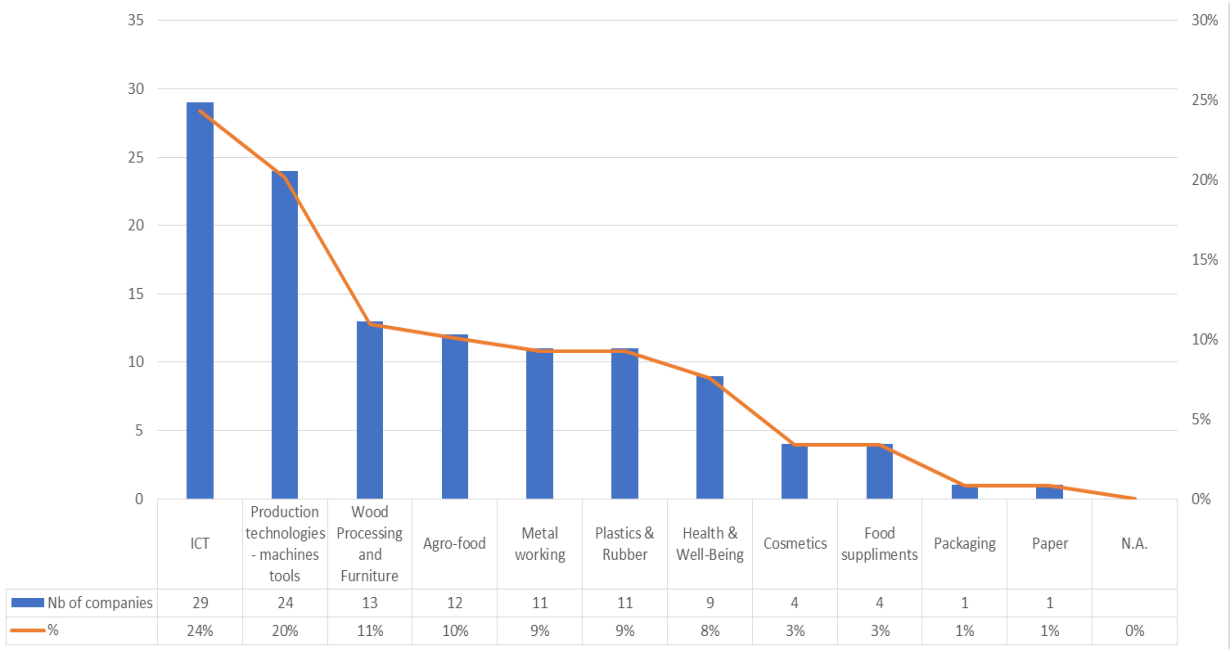


Figure 9 – Number and percentage of companies from the different economic sectors

The companies having participated to the survey are mainly active in the two sectors *ICT* (24%) and *Production Technologies & Machine Tools* (20%).

COMPANY'S ROLE WITHIN THE VALUE CHAIN (MULTIPLE CHOICE POSSIBLE)

Table 1 – Role in the value chain

Role in the value chain	Nb of companies	%
Developer	31	24%
Devices/Components	5	4%
Manufacturing Technologies	7	6%
Services	19	15%
Producer	70	55%
Devices/Components	14	11%
Manufacturing Technologies	13	10%
Materials	21	17%
Services	22	17%
User	26	20%
Devices/Components	1	1%
Manufacturing Technologies	10	8%
Materials	11	9%
Services	4	3%
Total	127	100%

The biggest group of companies are *producers* with 55%. They are well distributed in all the types of goods.

24% of the companies are *developers* with a focus on the **development of services**.

20% of the companies are *users* mainly of manufacturing technologies and materials.

Table 2 – Role in the value chain depending on the types of goods

Role in the value chain	Nb of companies	%
Devices / components	**20**	**16%**
Developer	5	4%
Producer	14	11%
User	1	1%
Manufacturing Technologies	**30**	**24%**
Developer	7	6%
Producer	13	10%
User	10	8%
Materials	**32**	**25%**
Producer	21	17%
User	11	9%
Services	**45**	**35%**
Developer	19	15%
Producer	22	17%
User	4	3%
Total	**127**	**100%**

The following groups are mainly represented:

- Producers of devices/components
- Producers and users of manufacturing technologies
- Producers and users of materials.
- Developers and producers of services

3.2 Section 2 - Objectives of companies and partnerships

3.2.1 Objectives in the near future

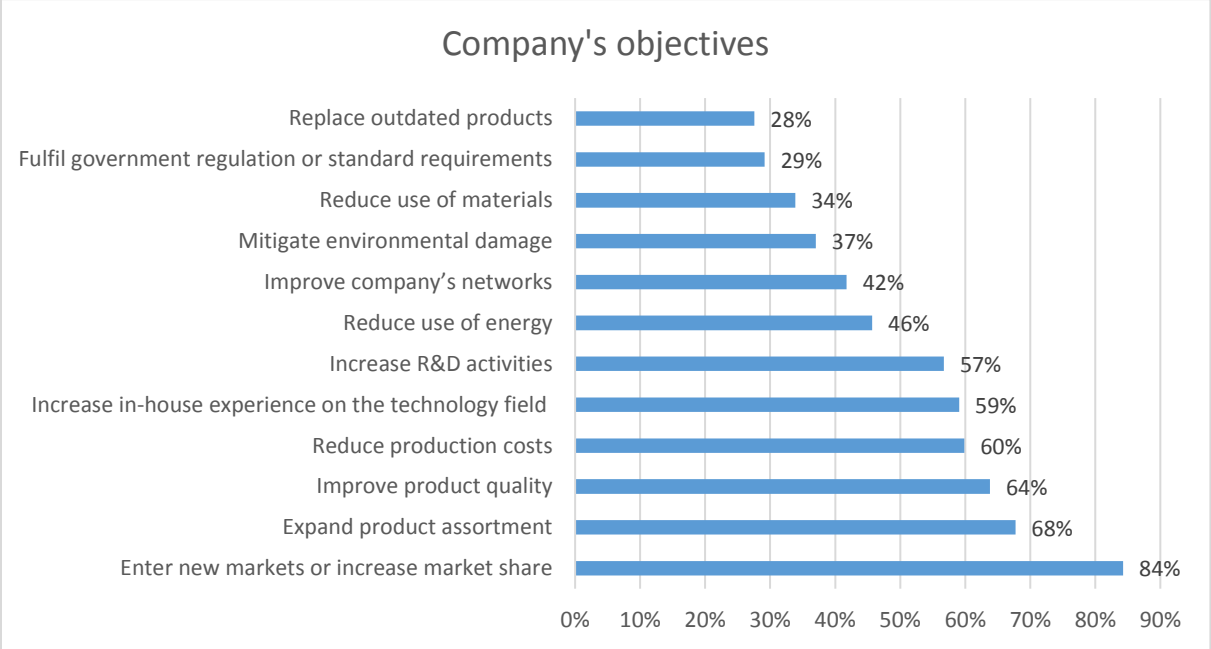


Figure 10 – Statistical distribution of objectives of companies in the near future

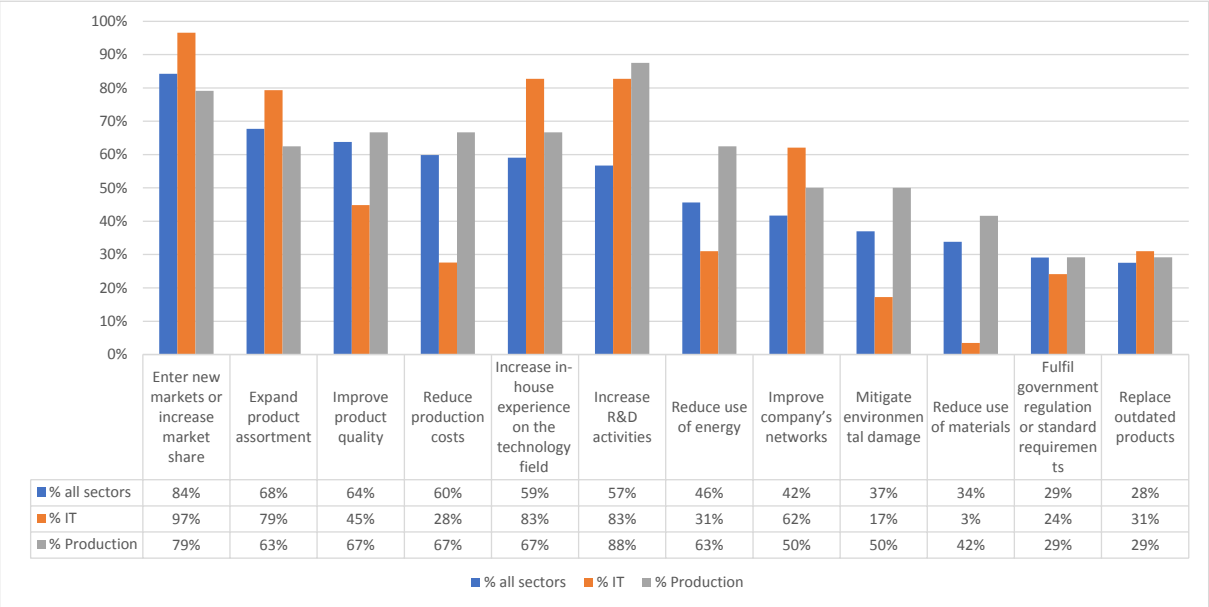
Six objectives have been appointed by more than 50% of the companies

From a *business development* point of view, the objectives are:

(i) To enter new markets or increase market share (84%)
(ii) To expand product assortment (68%)

The objectives related to the *internal development* of the company are:

(iii) To improve product quality (64%)
(iv) To reduce production costs (60%)
(v) To increase in-house experience on the technology field (59%)
(vi) To increase R&D activities (57%)



	Enter new markets or increase market share	Expand product assortment	Improve product quality	Reduce production costs	Increase in-house experience on the technology field	Increase R&D activities	Reduce use of energy	Improve company's networks	Mitigate environmental damage	Reduce use of materials	Fulfil government regulation or standard requirements	Replace outdated products
% all sectors	84%	68%	64%	60%	59%	57%	46%	42%	37%	34%	29%	28%
% IT	97%	79%	45%	28%	83%	83%	31%	62%	17%	3%	24%	31%
% Production	79%	63%	67%	67%	67%	88%	63%	50%	50%	42%	29%	29%

Figure 11 – Objectives in the near future in the ICT and production sectors

The two most represented economic sectors in the survey are ICT and Production Technologies (Machines, Equipment, Tools). The objectives in the near future of the companies in these two sectors are represented in Figure 11 above.

ICT sector

More than 60% of the ICT companies have appointed the following five objectives

The *business development* is a main objective of the companies in the ICT sector with higher percentage than the average of all companies:

(i) To enter new markets or increase market share (97%)
(ii) To expand product assortment (79%)
(iii) To improve company's network (64%)

The objectives related to the *internal development* of the company are strongly related to technological development and R&D activities:

(iv) To increase in-house experience on the technology field (83%)
(v) To increase R&D activities (83%)

It can be assumed that in order to achieve these objectives, the companies have a strong demand of *new contacts* at national and international level, as well as of *new technological knowledge*. I&TT services like matchmaking events, networking support, innovation partnerships, and also R&D consultancy, feasibility tests, prototyping or technology scouting will help the companies especially in the ICT to achieve their objectives in the near future.

Sector of Production Technologies / Machine, Equipment, Tools

Seven objectives have been appointed by more than 60% of the enterprises.

The objectives related to the *internal development* of the company are:

(i) To increase R&D activities (88%)
(ii) To improve product quality (67%)
(iii) To reduce production costs (67%)
(iv) To increase in-house experience on the technology field (67%)
(v) To reduce use of energy (63%)

The demand for knowledge transfer and specific equipment for testing purposes is especially high in this sector and specific I&TT services in the domain of Fablabs, Manufacturing Agreement for Small Series should be developed, as well as R&D Consultancy and Prototyping dedicated for this sector.

From a *business development* point of view, the objectives are:

(vi) To enter new markets or increase market share (79%)
(vii) To expand product assortment (63%)

Matchmaking events, networking support, innovation partnerships should also be further developed.

3.2.2 Partnership in the domain of research, technological development and innovation?

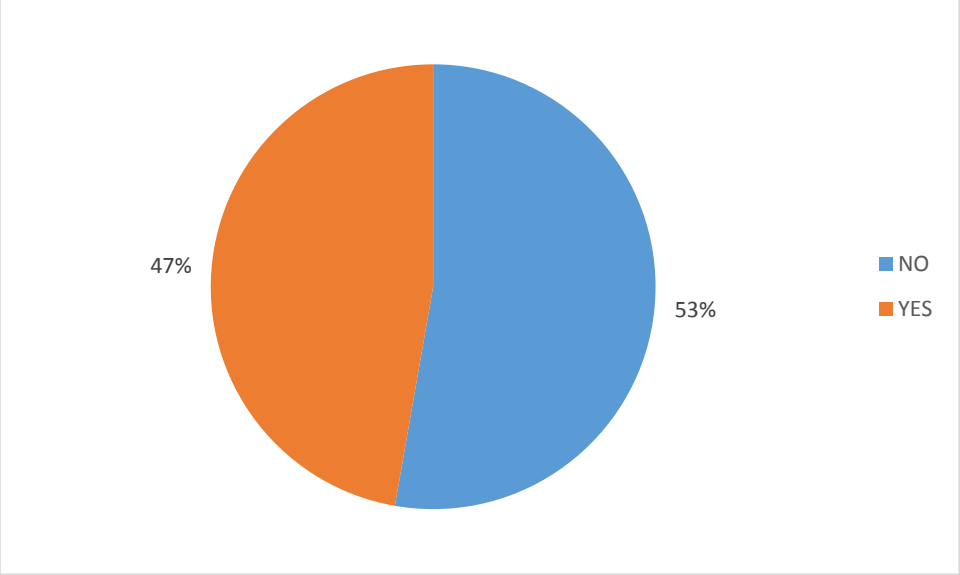


Figure 12 - RDI partnership

Nearly 50% of the companies have partnerships in the domain of research, technological development and innovation (RDI).

In the ICT and Production Technologies domains the percentage is increasing to nearly 60%.

The following figures show the geographical level of partnerships (Figure 13), as well as type of organisations they engage in cooperation with (Figure 14).

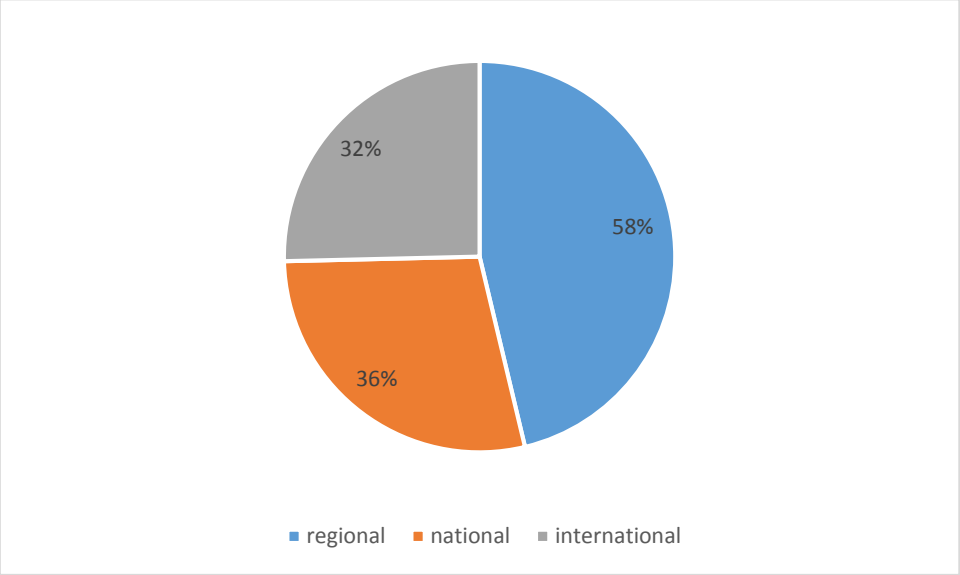


Figure 13 – Geographical level of RDI partnership

58% of the companies have the RDI partnership at regional level, 36% at national level and 32% at international level.

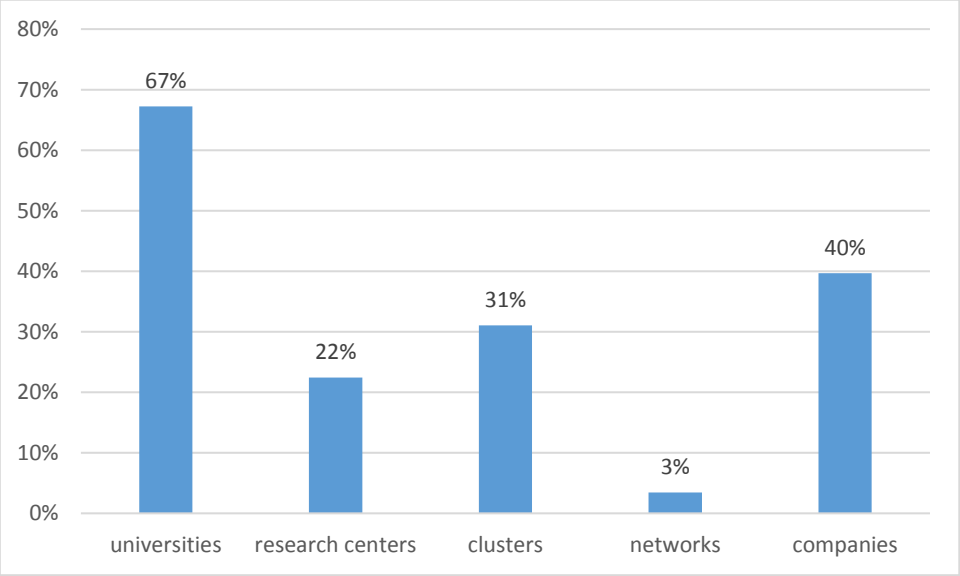


Figure 14 – RDI partnership vs. type of organisation

Around 67% of the partnerships are with universities. 40% of the partnerships are with other companies and **30% with clusters**.

The next Figure 15 shows the interest of companies not having such partnerships to join in applicable Research & Innovation projects at regional, national or European level.

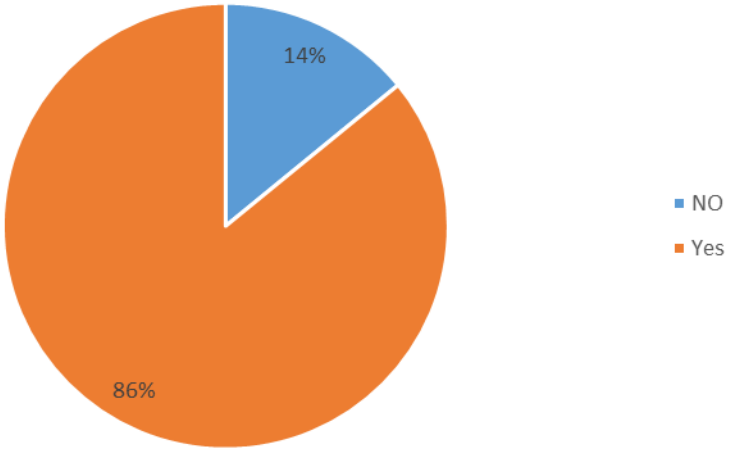


Figure 15 – Interest to join RDI partnership

From the companies not having RDI partnerships yet, more than **86%** have interest to join RDI projects. This shows a big potential for new partnerships and the necessity to have support organisations which help to initiate and organise the matchmaking between offer and demand in the domain of new technologies and innovation for companies.

3.3 Section 3 - Innovation management, new technologies and research knowledge

3.3.1 Main support services needed by companies in the domain of innovation and technology development

The following services were proposed (multiple choice possible):

- *Databases* with technology offers, studies and roadmaps
- *Brokerage Events* between companies and research organisations (study visits, conferences, fairs, idea competition and prizes)
- Contacts for innovation partnerships at regional, national and international level with Research Labs, FabLabs, Living Labs, Test Bench
- Innovation Financing / funding
- *Research contract* to integrate new knowledge/technology in products or services (prototyping, tests, consultancy, technical assistance)
- Intellectual Property Rights support (licensing centres, patent portfolio)
- *Innovation Management* support (Training / Coaching / Mentoring)
- *Technology assessment*, analysis of innovation potential
- Support to recruit *technology qualified personnel*
- *Business support (*Technology scouting, Benchmarking, Market survey)

The results are summarised in the next Figure 16.

The main support services needed by **more than 60%** of companies are in the domain of:

- Contacts for *innovation partnerships* in the domain of **research labs, fablabs, living labs, test benches** (70%)
- Innovation Financing / funding (64%)
- *Research contract* to integrate new knowledge/technology in products or services (prototyping, tests, consultancy, technical assistance) (61%)

Around 35%-40% of the companies are looking for support for:

- *Business support (*Technology scouting, Benchmarking, Market survey, commercialisation bootcamps) (45%)
- *Innovation Management* support (Training / Coaching / Mentoring) (42%)
- *Databases* with technology offers, studies, roadmaps (38%)

Less than 30% of the companies are looking for support in Technology assessment, analysis of innovation potential, brokerage events and IPR issues.

Other services mentioned: Internationalisation of innovative services, Laboratories and Testing Facilities.

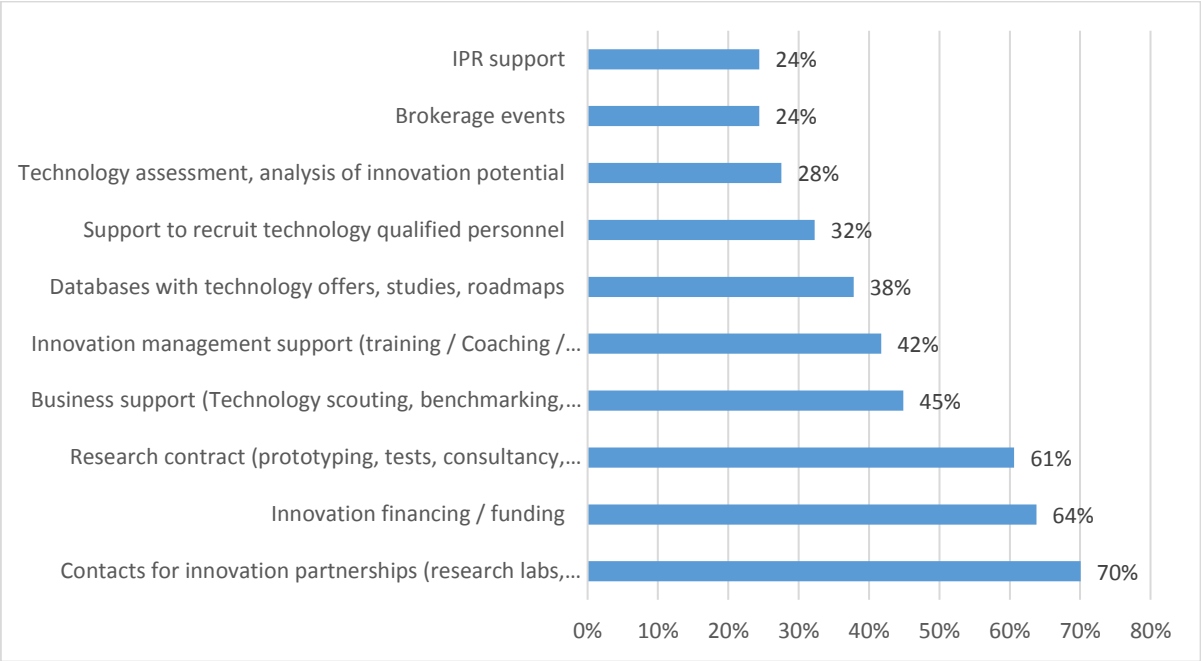


Figure 16 – Main support services needed by companies

IN THE CASE OF *CONTACTS FOR INNOVATION PARTNERSHIPS,* THE DISTRIBUTION OF ANSWERS AT GEOGRAPHICAL LEVELS (REGIONAL, NATIONAL, INTERNATIONAL LEVEL) IS THE FOLLOWING:

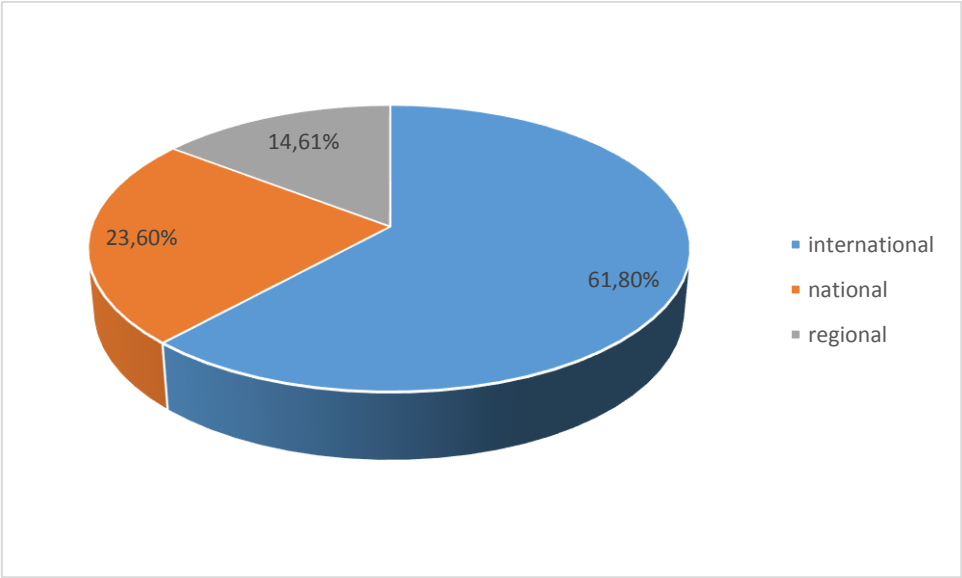


Figure 17 – Geographical level for contacts for innovation partnerships

International contacts for innovation partnerships are needed in the domain of Research Labs, FabLabs, Living Labs, Test Benches by more than 60% of the companies answering the survey.

3.3.2 Does your company have a long-term vision in terms of innovation?

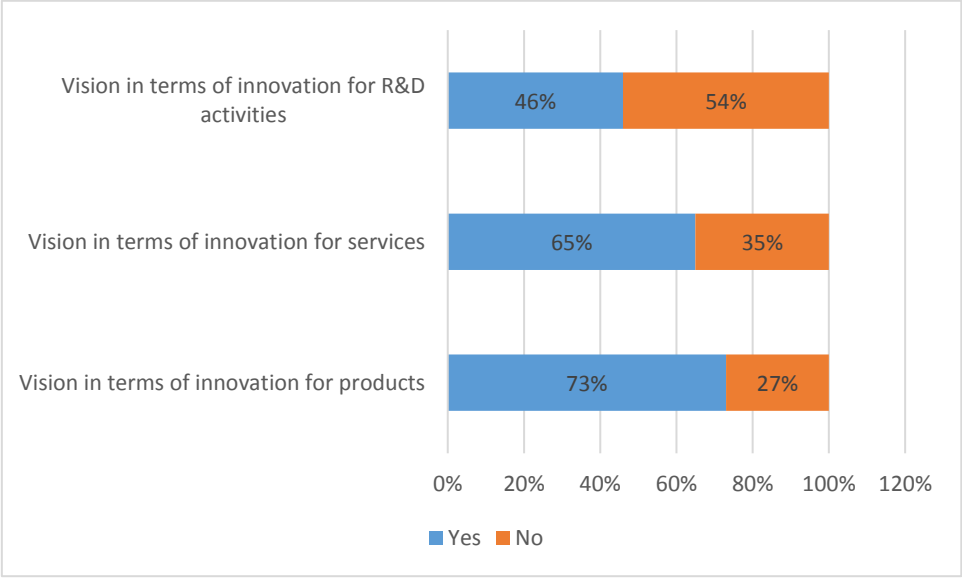


Figure 18 – Long-term vision in terms of innovation

R&D activities can be defined by a Technology Readiness Level (TRL) lower than 6. Product Innovation and Service Innovation have and TRL of 6 or higher.

It can be noticed that in all the 3 domains of product innovation, service innovation and R&D activities around 50% of the companies have a long-term vision, which shows the existing awareness of the companies on the importance of I&TT activities for the future development of their business.

Product innovation

About 75% of the enterprises have a long term vision on product innovation. It is a positive signal because it is 3/4 of the companies and this shows a very high level of awareness and a big potential for TT&I services in order to support and implement this vision.

Service innovation

The vision concerning **service innovation** is also strongly present in 65% of the companies. The I&TT services offer should be adapted to the demand in the domain of service innovation.

R&D activities

Around 45% of the companies have a long term vision on R&D activities, which is less than for the two other domains, but still shows a strong potential and a demand for I&TT support services in the next years.

3.3.3 Do you consider a specific financial budget for innovation measures?

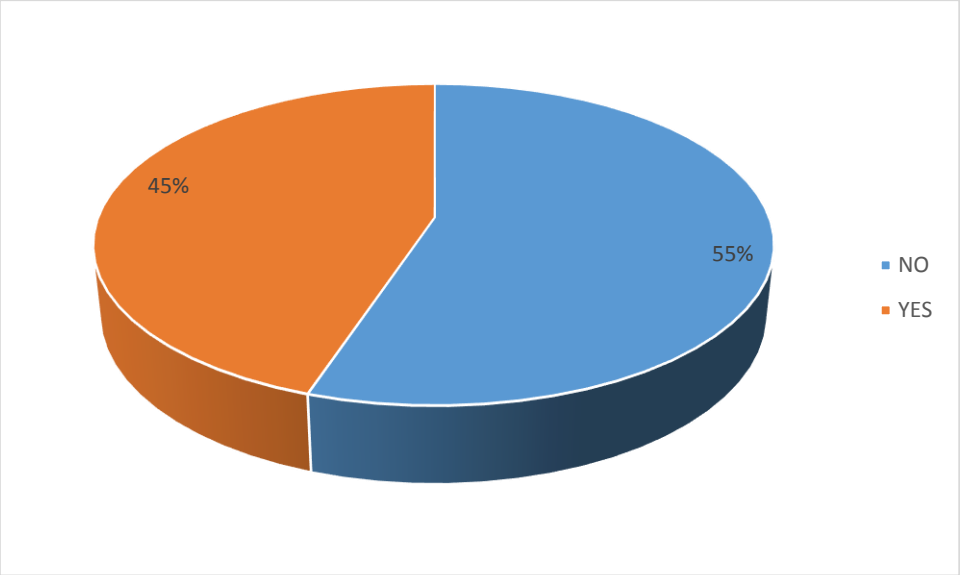


Figure 19 – Specific budget for innovation measures

More than 50% of the companies still do not have a specific budget for innovation measures. This can be a sign that these companies are not developing a dedicated and pro-active innovation strategy, which is translated in specific measures with a reserved budget. They take innovation measures on a case-by-case level by reacting to opportunities and applying a Continuous Improvement Process (CIP).

3.3.4 Does the contribution of the employees play a primary role concerning innovation?

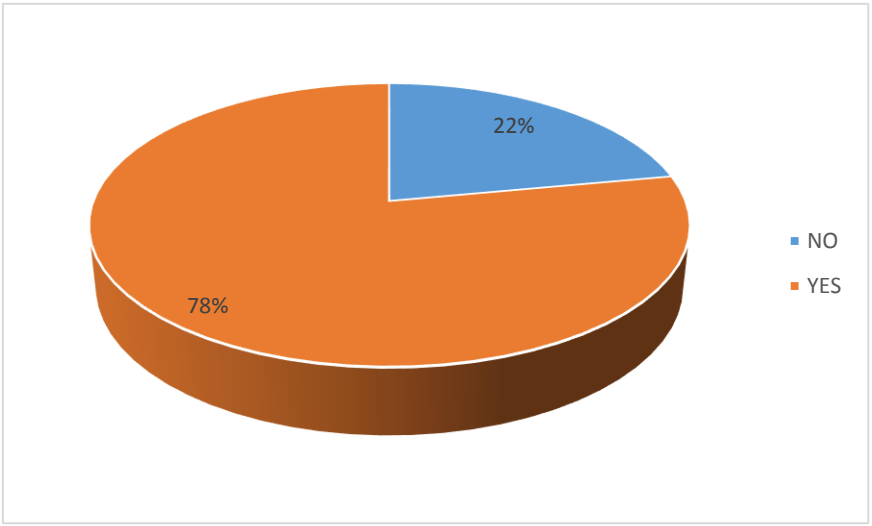


Figure 20 – Primary role of employees in the innovation process

The vast majority of companies, participating in the survey, think that the contribution of their own employees plays an important role when it comes to the capacity of the enterprise to innovate.

3.3.5 Do you have a systematic method to source and invent continuously new technologies for your future needs?

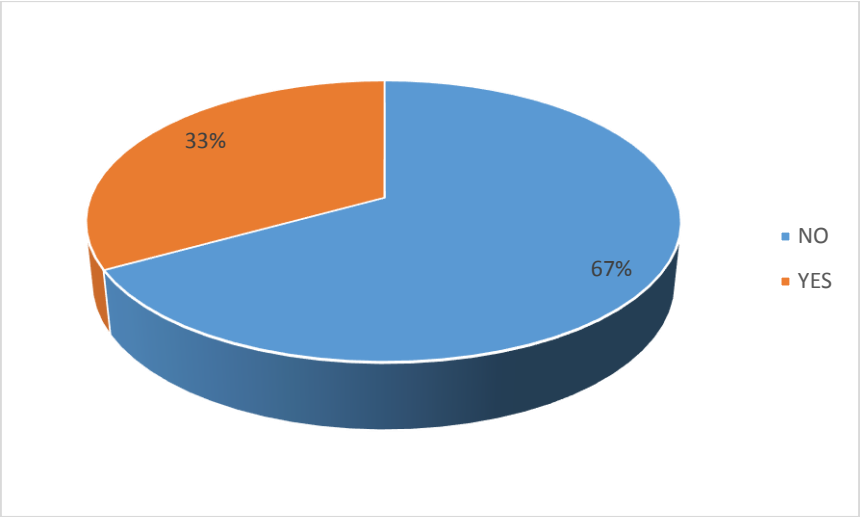


Figure 21 – Percentage of companies having systematic method to source and invent new technologies

More than 2/3 of the companies do not have a systematic approach to source or invent new technologies, i.e. they are not performing technology watch and technology scouting and using innovation management methods like open innovation or co-creation. **There is also a need in terms of methods to be introduced in the companies to better manage the innovation process.**

3.3.6 Which source(s) of information concerning innovation do you consider?

The main sources of information concerning innovation are for more than 50% of the enterprises (Figure 22 - Figure 25):

- Trade fairs, exhibitions (80%)
- Suppliers (63%)
- Universities (59%)
- Database (e.g. internet) (59%)
- Own employees (57%)
- Customers (57%)
- Conferences, publications (55%)
- Internal working groups (53%)

It can be noticed that for nearly 60% of the companies, universities play an important role as source of information concerning innovation (Figure 24).

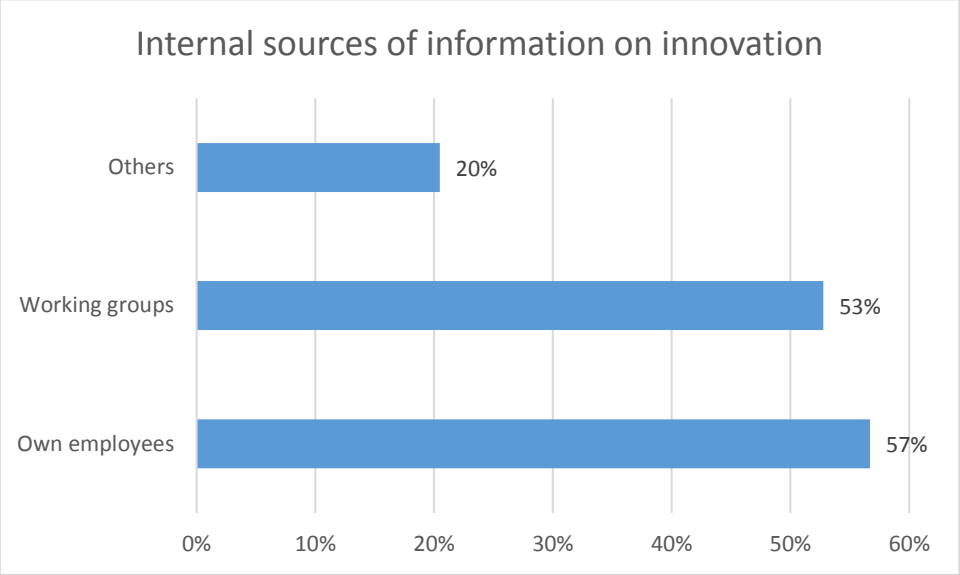


Figure 22 – Internal sources of information on innovation

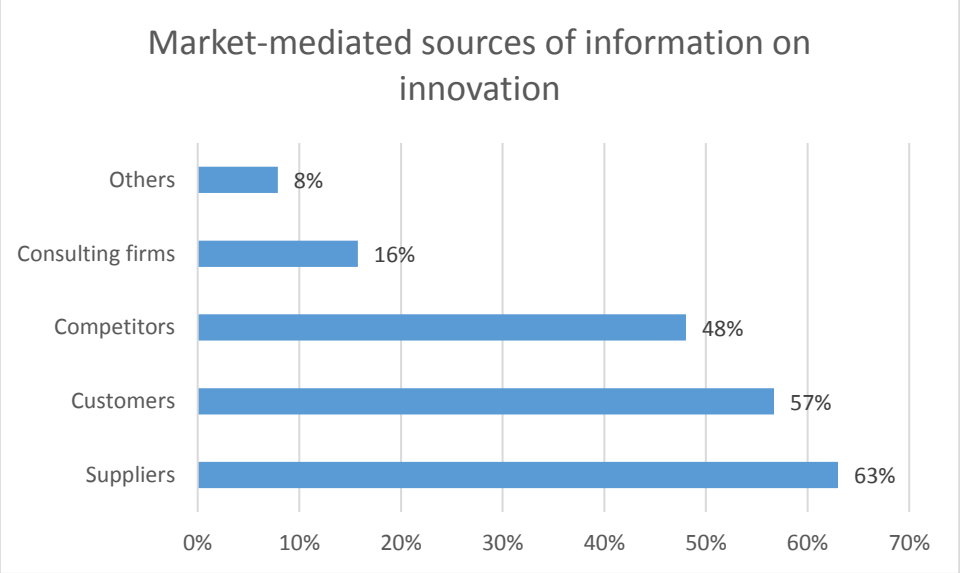


Figure 23 – Market-mediated sources of information on innovation

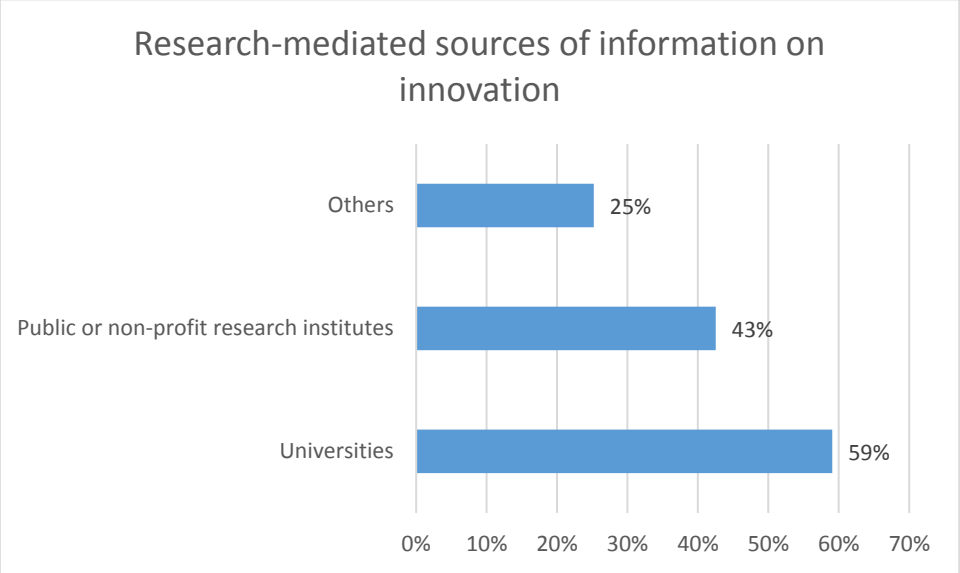


Figure 24 – Research-mediated sources of information on innovation

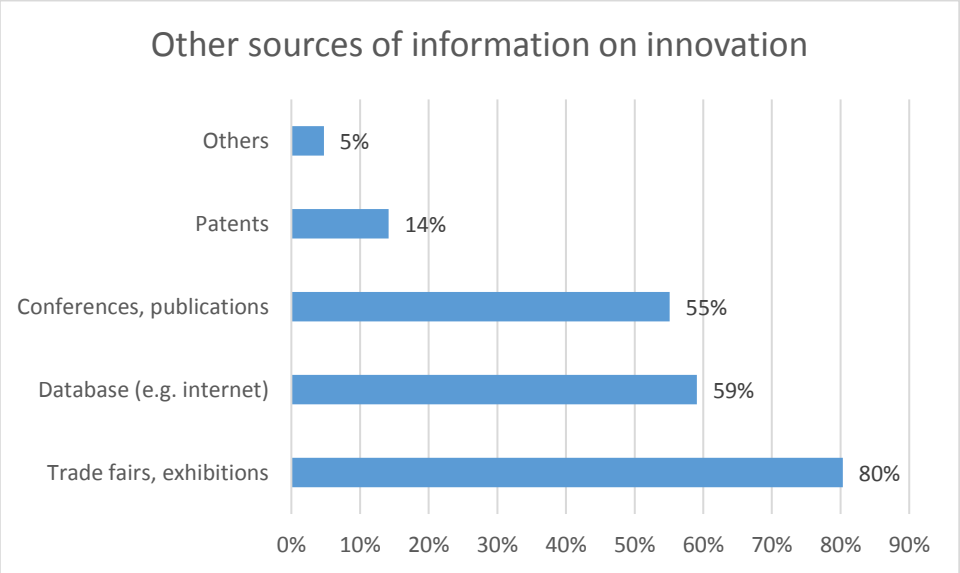


Figure 25 – Other sources of information on innovation

3.3.7 Do you already use new technologies / R&D knowledge in your products or services?

When it comes to the use of new technologies – that were regarded for the purpose of this survey, technologies be not older than 5 years – 61% of companies answer affirmatively.

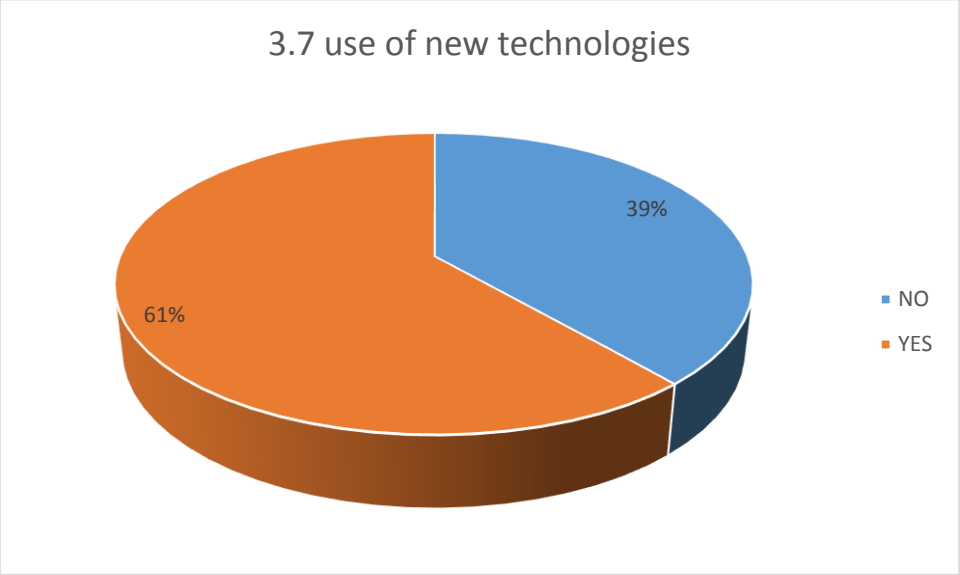


Figure 26 – Use of new technologies

The main drivers and barriers of using new technologies/ R&D knowledge are shown in the figures below:

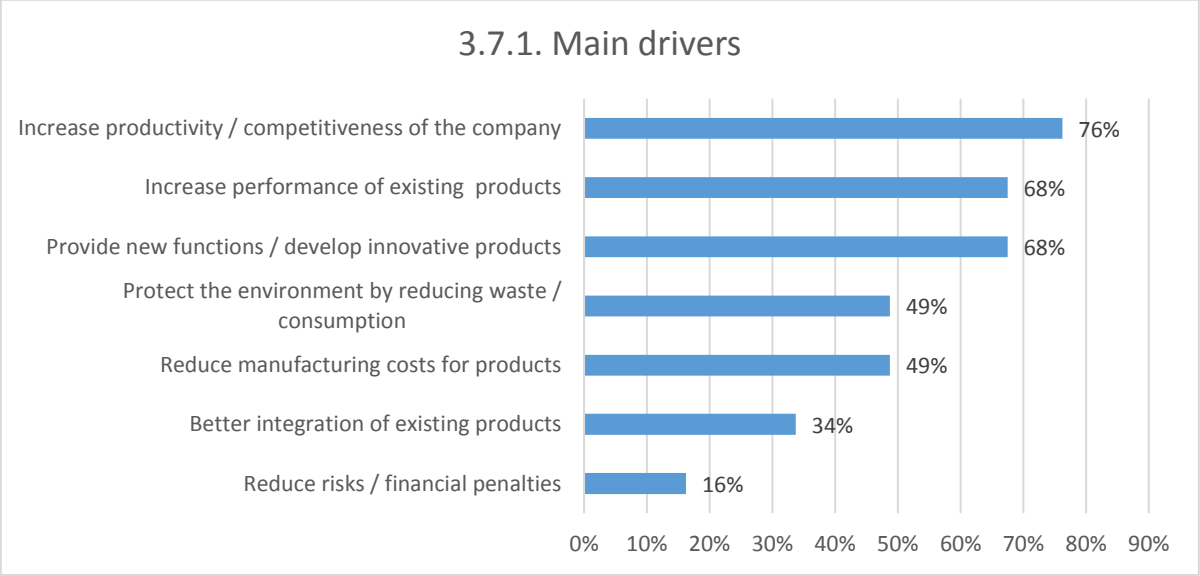


Figure 27 – Main drivers

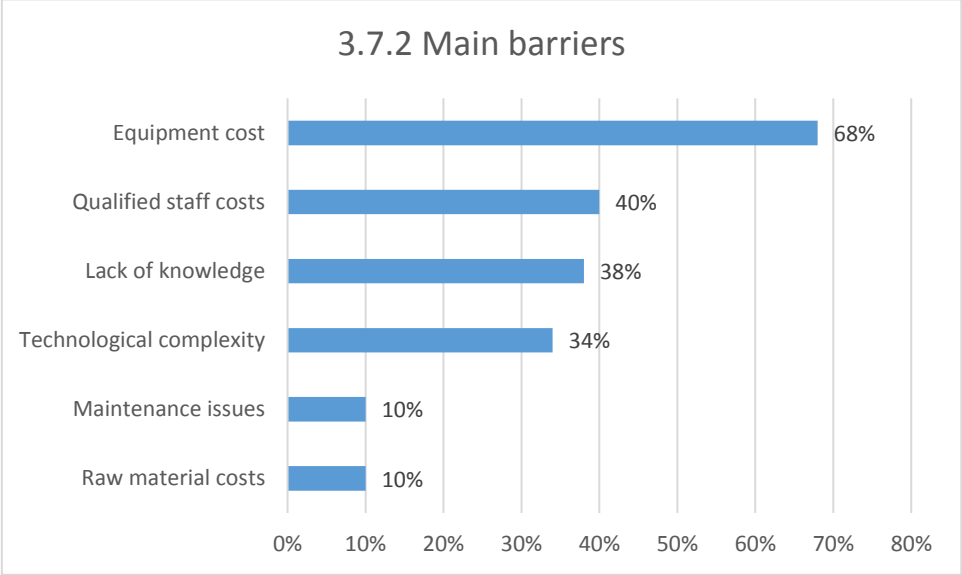


Figure 28 – Main barriers

The main drivers to use new technologies or R&D knowledge for new products or services are similar to the objectives stated in §3.2.1, namely:

- Increase productivity and competitiveness (76%)
- Increase performance of existing products / services (68%)
- Provide new functions / develop innovative products (68%)

The main barriers are:

- Equipment costs (68%),
- Qualified staff costs (40%)
- Lack of knowledge (38%)
- Technological complexity (34%)

This shows again the necessity to have test facilities and FabLabs with shared infrastructures and qualified personnel as service platforms which can be contracted by the companies. An Individual company, especially an SME, cannot afford the necessary investment by itself, the financial risk being too high.

4 Analysis of results from the on-line questionnaire concerning ITT offers of research organisations

4.1 Organisation profile

Fifteen Technology Transfer and Intermediary Organisations from different types have participated to the survey:

- 7 are officially accredited in the framework of universities, public and private R&D organisations, chambers of commerce and consultancy companies. According to the Romanian legislation they have different functions as TT organisations or TT intermediaries. Most of them are Technological Information Centres, followed by Technology Transfer Centres, and there is one Liaison Office with the Industry.
- 8 are not accredited, but in case of obtaining financing from ROP 2014-2020, aim to get accreditation. Some of them are already functioning as TTOs, mainly those in the framework of the biggest public universities from the region, based in Cluj-Napoca, i.e.: Babeş-Bolyai University, Technical University from Cluj-Napoca, University of Medicine and Pharmaceuticals, University of Agricultural Sciences and Veterinary Medicine.

Type of organisation	Number
Higher, Secondary Education Establishment	7
Research Organisation	3
SMEs	2
Cluster	1
NGO	1
Chamber of Commerce	1
Total	**15**

4.1.1 Professional experience

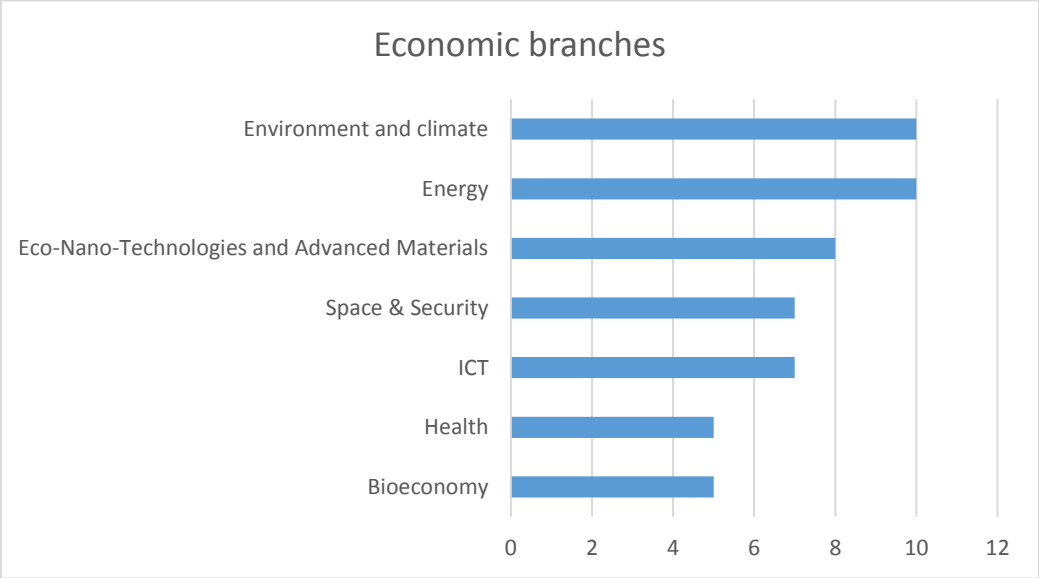
The organisations have a strong professional experience and are well established. 12 organisations have more than 15 years' experience in research. Only 3 have between 5-15 years' experience.

4.1.2 Function in the organization

Function in the organisation	Number
Manager / Director of the organization	10
Head of Unit / Department / Laboratory	3
Technology Transfer Officer / Consultant	1
Pro rector research	1
Total	**15**

It is important to notice that all participants in the survey have a management or executive function in the organisation and can give a good and representative overview about the activities in I&TT. The answers of these persons are very valuable for the results of the survey.

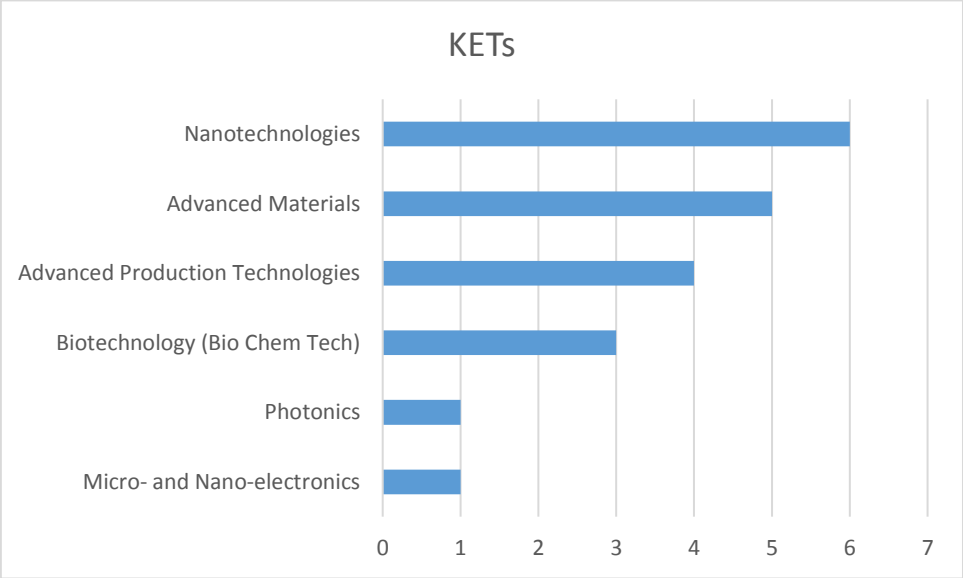
4.1.3 Economic branches in which the I&TT organisations are active



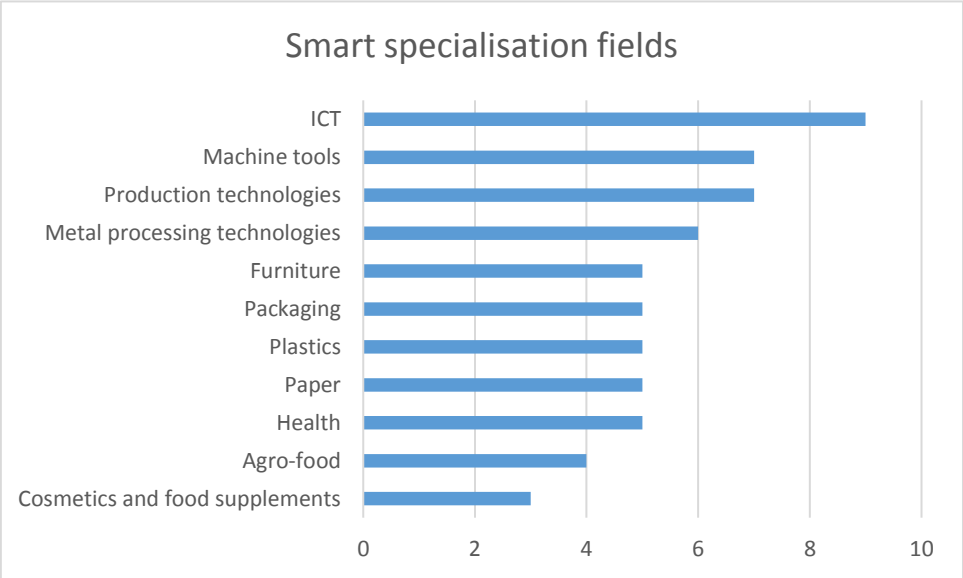
The highest number of TT organisations are active in the fields: Environment & Climate, Energy, Eco-Nano Technologies. More than 50% of the TT organisations are also active in the fields of Advanced Materials, Space & Security, ICT, Health and Bio-economy. These fields have a strong economic potential for the future and correspond to strong innovation trends. Cooperation and partnerships with companies in these domains can have a positive impact on the future economic development of the NW region.

4.1.4 Key Enabling Technology fields

As shown in the next figure, the I&TT organisations have expertise in the following Key Enabling Technology (KETs) fields: Advanced Materials, Nanotechnologies, Advanced Production Technologies and Industrial Biotechnology.



4.1.5 Fields with Smart specialization potential



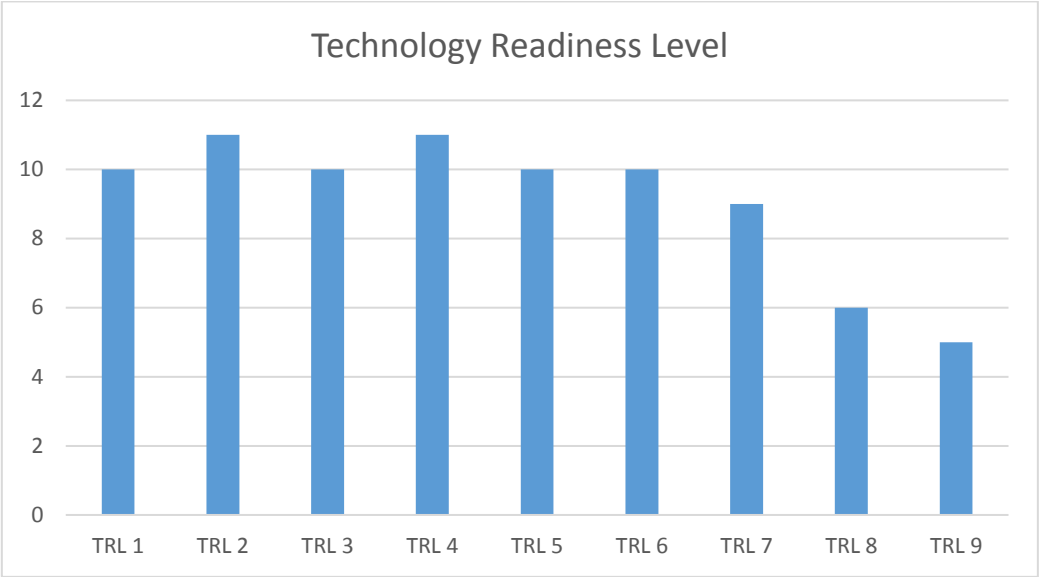
The most represented fields with smart specialisation potential are: ICT, Machine/Equipment Tools (Production Technologies) and Metal Processing.

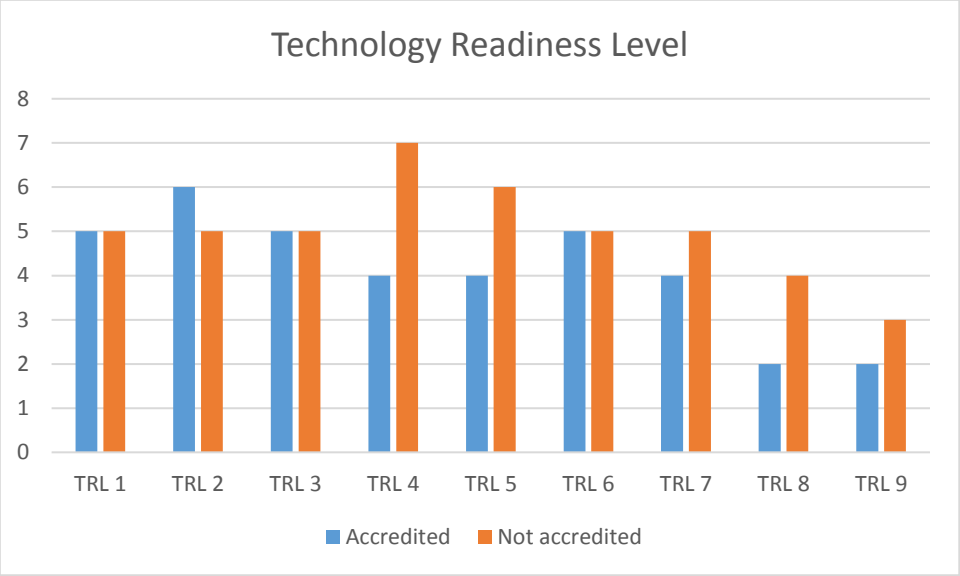
These fields are well corresponding in one hand to the economic sectors in which the companies are active (Figure 9) and on the other hands to the main domains in which regional clusters have been established. These two points are very good framework conditions to establish I&TT partnerships and projects between companies and RDI organisations.

4.1.6 Technology Readiness Level of activities in research, technological development and innovation

Several Technology Readiness Levels (TRLs[3]) can be distinguished to define the maturity of a technological results until market entry. They play a very important role in the cooperation between companies and RDI organisations, because most of the companies are interested in and have the capacity to absorb technologies with a high TRL. For this reason it is important to know if the I&TT services also address higher TRLs.

[33] https://ec.europa.eu/research/participants/portal/desktop/en/support/faqs/faq-2890.html



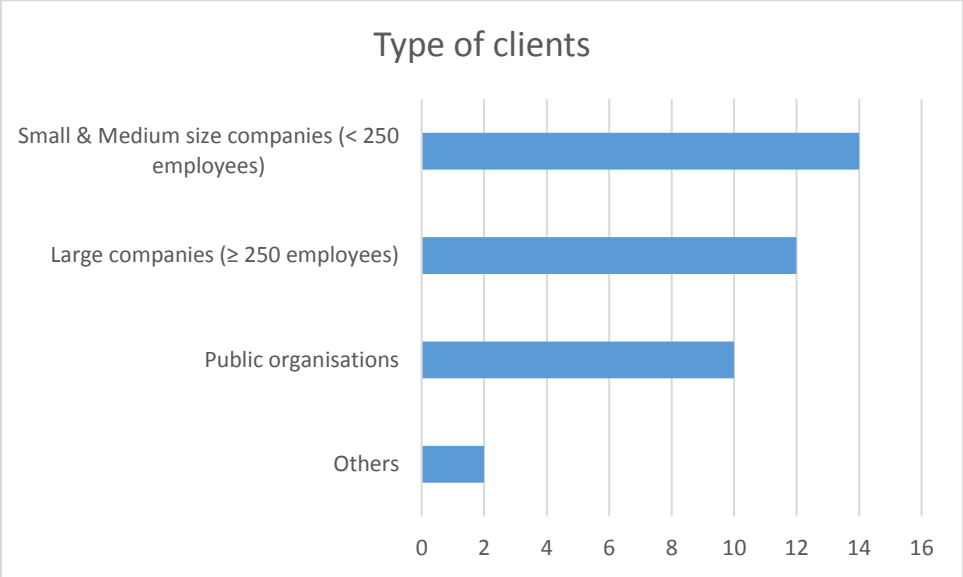


As shown in the two former figures, the activities of the RDI organisations cover all Technology Readiness Level (TRL). They are mainly active in the range of TRL1 to TRL7 covering fundamental research, proof of concept until demonstration in operational environment. Less than half of the organisations covers TRL 8 and TRL 9. Companies are looking for support in high TRL, like TRL 5 to TRL 9 dedicated to validation, demonstration and qualification of technologies and systems in an industrial or operational environment. This shows a gap in the offer of I&TT services.

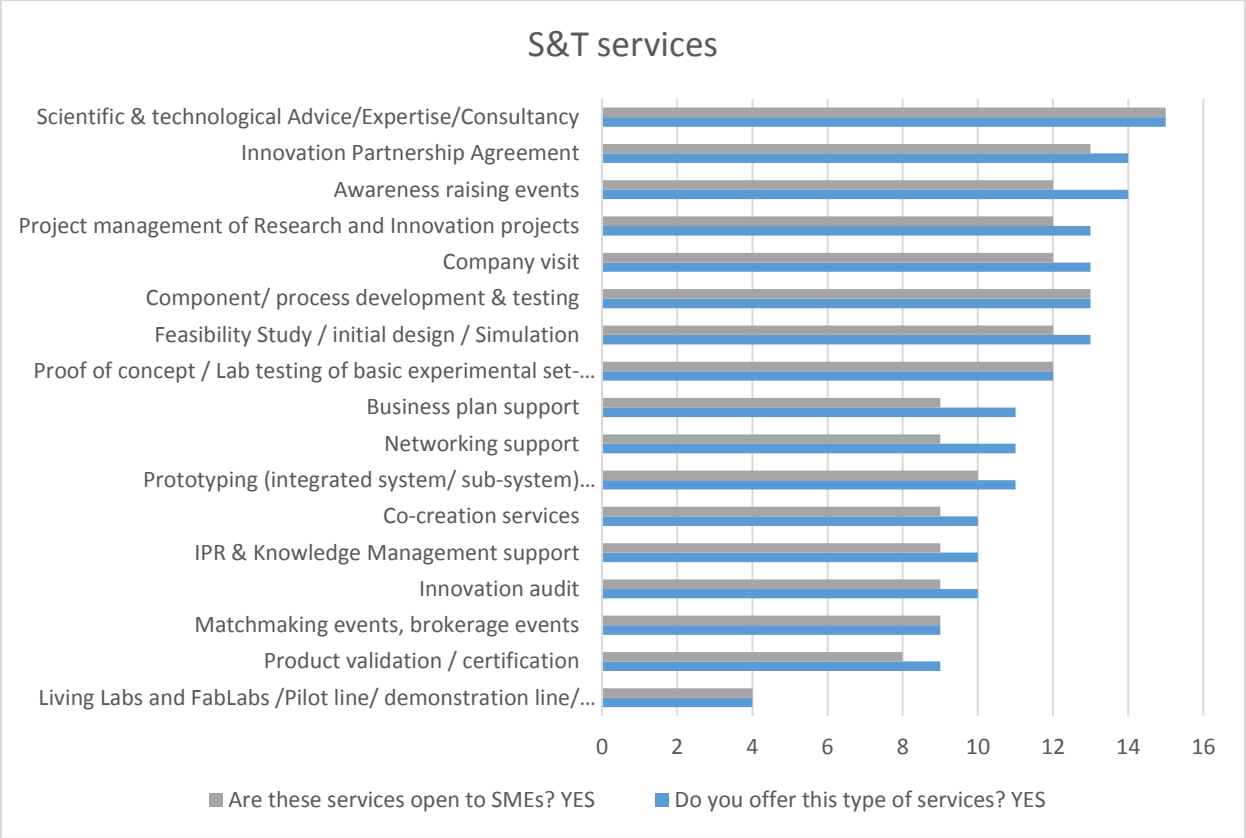
Furthermore not accredited TT organisations seems to be more active in applied research activities between TRL 4 and TRL 9. These results should be further validated by e.g. some interviews in order to have more details about the services proposed and how these services are adopted by companies.

4.2 Services

As shown in the next figure, all the 15 organisations offer I&TT services to different types of external organisations, but mainly to SMEs and large companies.



4.2.1 I&TT services related to product development offer to external organizations



(1) <u>All</u> services with the exception of the domain 'Living Labs and FabLabs / Pilot line / Demonstration line / Preseries fabrication' are offered by more than 60% of the organizations

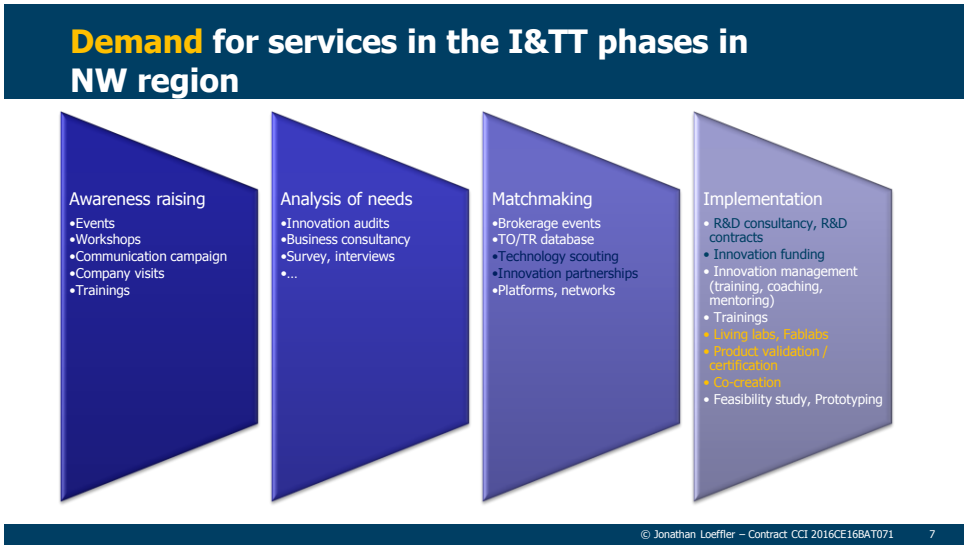
(2) The following services are proposed by <u>more than 80%</u> of the organizations:
   a. *Scientific & technological Advice/Expertise/Consultancy*
   b. Innovation partnership agreements
   c. Awareness raising events
   d. Project management of Research and Innovation projects
   e. Company visits
   f. Component/ process development & testing
   g. Feasibility Study / initial design / Simulation
   h. Proof of concept / Lab testing of basic experimental set-up/ Characterisation

(3) The following services are less developed:
   a. Product validation / certification
   b. Matchmaking events, brokerage events
   c. Living Labs and FabLabs /Pilot line/ demonstration line/ pre-series fabrication

A deficit of services is especially high in the last category 'Living Labs and FabLabs /Pilot line/ demonstration line/ pre-series fabrication'.

Deficit of services in the different phases

The following figure shows which TT services (marked with orange colour in the graphic below) are not sufficiently developed in the different phases of the I&TT process between companies and RDI organisations.



In the implementation phase services on product validation & certification, feasibility study & prototyping and co-creation in the frame of FabLabs or Living Labs should be further developed to respond to the strong demand of the companies.

In the other domains of services marked with blue colour above, the demand for services is still very high even if the services are proposed by the I&TT support organisations. **It is possible that the services are not adapted to the demand of the companies.**

- The companies have also a strong demand to support the opportunity to enter new markets and so to develop new contacts (84%). Brokerage events seem not to be the right answer, because only 24% have a need in this domain. A more individualised service dedicated to partner search and business support with technology scouting would probably be more adapted.
- The demand for innovation financing/funding and for research contracts is also high, even if most of the I&TT organisations are proposing a support in these domains.

Concerning **services opened to SMEs**, differences can be identified in the following domains:

- Awareness raising events **(specific events for SMEs should be organised)**
- Business support
- Networking support

4.2.2 Services generating most incomes

From the answers of the different organisations, it was not possible to distinguish if common services are generating the most incomes. Numerous services were quoted like

- RDI consultancy
- Intellectual Property Rights Management
- Support for business plan development
- Support for networking, matchmaking events
- Project Management for Research and Innovation projects
- Support for process development, prototyping and testing

It seems to be that each RDI organisation and TT intermediary has its specific expertise.

4.2.3 How frequently does a company use these services on average during one year?

All the RDI organisations estimate than a company will use the I&TT services **less than 5 times** during one year.

4.2.4 Barriers for SMEs to use I&TT services

The RDI organisations have identified several barriers why SMEs are not using I&TT services proposed:

- The most important barrier is that of organisational culture and lack of trust
- There is not yet a critical mass to request / generate specific technology transfer services for significant or volume impact with SMEs.
- Communication barriers
- Financial barriers (funds for co-financing SMEs),
- Lack of specialists
- Level of entrepreneurial education
- TRL level and technological knowledge not adapted to SMEs
- Lack of networking
- Promotion of innovation culture

4.2.5 Approach towards services for Small and Medium Enterprises

In order to better understand the approach of the RDI organisations towards services for SMEs, different statements are proposed and evaluated if this statement correspond to the reality of the collaboration with SMEs in the RDI organisation.

4.2.5.1 Do you agree with the following statements?

	1 – Disagree	2 – Tend to disagree	3 – Neutral	4 – Tend to Agree	5 – Agree
SMEs have shown a keen interest to acquire services from my organisation.	2	4	3	3	3
My organisation has a good understanding of the needs of SMEs in our field.	0	0	2	4	9
SMEs in our field are aware of our services and capacities.	1	3	3	5	3
SMEs can greatly benefit from our services.	1	0	0	1	13
Our services are more useful for large industrial partners rather than SMEs.	3	4	6	0	2
I expect the interest from SMEs for our services to grow.	1	0	2	3	9

The evaluation of the different statements shows that although the RDI organisations have a good understanding of SMEs needs and the SMEs could greatly benefit from their services, the interest and awareness of SMEs for the ITT services offered by RDI organisations is medium to low. **This difference in the perception of SMEs and RDI organisations underline the gap between the actors and the necessity to develop a common cooperation culture and a stronger communication between the RDI organisations and the SMEs. Although both groups are willing to cooperate and see the advantage of such cooperation for the regional economic development, it is still difficult for them to find common level of understanding to match needs and offers.**

The positive aspect is that in the future the interest from SMEs for such ITT services is expected to grow.

4.2.5.2 Cases of collaboration with an SME as an example of good practice

Most of the following examples of good practices given by the participants are project-based and mainly depend on the availability of financing sources in funding programmes. The projects give an answer to concrete technological needs of companies in various domains and in some cases have a direct relationship with a commercial success on the market.

They seems not to be the result of a pro-active approach to have regular strategic collaboration which fits with the medium-term objectives and needs of the company for new technologies, but it can be noticed that they cover several phases in the TT process. **This shows the importance to accompany and support the company in the different development phases and not only at one moment, in order to have successful commercial results.**

- Collaboration in the field of bioinformatics for big data analysis software
- Integrated ERP management system to a medium-sized company
- Collaboration covering: consultancy for accessing funds, technology audit, innovation audit, services during project implementation, product realisation, testing and then its implementation in production and contacts for business opportunities with foreign partners,. The product still represents a success for the company that is selling.
- Collaborative project for an innovative process for the development of a new material with cellular structure highly resistant to temperature, chemical agents and fully recyclable.
- Collaboration in research projects and support of the technological transfer of some results for their introduction in the production, respectively the diversification of the product portfolio
- Contract for theoretical and experimental research regarding the construction of a small electric motor vehicle for urban traffic
- Study of technical solutions for increasing the speed of testing the crack detector of plastic packaging
- In a project with European funding for the first time in Romania a pilot for the concept of smart city were tested. Part of this project was also the realisation of "near market" products. One of the solutions developed is now internationally marketed
- Collaboration with start-ups in Transylvania furniture cluster - RDI joint projects
- Collaboration with a small healthcare company that has been supported through specific consultancy to acquire equipment that has enabled him to provide innovative imaging services

The examples of services are varying from consultancy on specific technologies or for accessing funds, to technology assessment, project implementation, and also to field tests and contacts for business opportunities abroad.

4.2.5.3 Trainings to other organisations

14 Yes 1 No

14 out of 15 organisations provide trainings to external organisations and surprisingly the biggest participant groups are SMEs. This shows the interest of the companies and that the RDI organisations should continue to develop their offer of I&TT services.

TYPE OF BACKGROUND OF THE PARTICIPANTS OF THE TRAININGS

☐ Academia (9)

☐ Large industry (9)

☐ SMEs (12)

4.3 Partnerships and Collaborations

This section concerns collaborations with other **Technology Platforms, i.e.** a public or private organisation which provides technological services to industry/SMEs such as prototyping, demonstration lines, lab test facilities etc. so that they can bring new KETs products and services to the market. The focus is on applied and/or industrial research projects.

4.3.1 Collaboration with other Technology Platforms on applied research projects

12 Yes 3 No

A very positive result is that 12 out of 15 organisations are already collaborating with other Technology Platforms on applied research projects. Only 1/3 have partnerships at international levels. The collaborations are with all types of organisations, i.e. universities, research Centres, Clusters and companies.

It is interesting to notice that either the participants have less than 5 active cooperation or more than 15. These are both in the same KET fields as well as in other KET fields.

4.3.1.1 At which geographical level:

(8) regional (10) national (5) international

4.3.1.2 With which type of organisation:

☐ Universities (10) ☐ Research Centres (9) ☐ Clusters (8) ☐ Networks (5) ☐ Company (8)

4.3.1.3 How many active collaborations on applied research projects does your organisation have?

○ 0 (2)
○ 1 – 5 (6)
○ 6 – 10
○ 11 - 15
○ >15 (5)

4.3.1.4 Are the collaborations within the same KET field?

○ From the same KET field (1)
○ From different KET fields
○ Both from the same and from other KET fields (10)
○ None (4)

Only 3 RDI organisations are not yet collaborating. The barriers for such collaboration are listed in the next paragraph.

4.3.1.5 Principal reason(s) for not collaborating with Technology Platforms

- Difficulty to identify and establish a partnership.
- Lack of opportunity to collaborate until now.
- Still no clearly defined demand for these types of collaborations in Romania.

4.3.1.6 Type of activities performed with other organisations

Most of the collaboration concerned common research projects. But joint service offers to SMEs are also performed by more than 50% of the RDI organisations. A deficit exists in the performance of common activities by sharing technological infrastructure. This confirms the gap identified in former paragraph concerning platforms for shared technological infrastructures.

Common Research Projects	Joint service offers to SMEs	Exchange of Staff	Joint Trainings	Sharing of technological infrastructure
(11)	(8)	(7)	(7)	(5)

4.3.1.7 Internal active support for collaboration and international level

The following table shows that:

- The demand to collaborate at international level is very strong and of high importance.
- Internally in the organisation the active support for such collaboration is medium.
- The collaboration in other KET fields is not an easy task.

	1 – Disagree	**2 – Tend to disagree**	**3 – Neutral**	**4 – Tend to agree**	**5 – Agree**
Your organisation actively supports collaborations with other KETs Technology Platforms.	0	1	5	4	3
It is important that the collaborating KETs Technology Platform is of the same technological field.	3	4	2	1	3

Collaborating with KETs Technology Platforms from other EU countries is of great importance.	0	0	1	4	8
It is easy for your organisation to collaborate with other KETs Technology platforms.	0	3	5	4	1
Your organisation would be interested in developing new collaborations with KETs Technology Platforms from others EU28 countries.	0	0	2	2	9

5 Conclusions

125 companies have participated to the survey - 78% of the companies are established companies older than 5 years and **22% younger than 5 years–** all sizes of companies are represented (<10, 10-50, 51-250 and >250 employees), especially micro-enterprises.

The economic sectors represented are Agro-food, Cosmetics & food supplements, Health & Well being, IT&C, Metal working, Plastics & Rubber, Production technologies, Wood processing & furniture.

As explained before, the companies have the two main objectives which are strongly linked: to support their business development and to have innovative products or services which remain them competitive on the market by integrating new technologies.

As shown in the survey, the main objectives of the companies are to enter new markets or to increase their market share (84%) by expanding their product assortment (68%), by improving their product quality (64%), by reducing production costs (60%) and by increasing R&D activities (57%).

As a consequence it is important for the business development of companies to be active at international level. To build their own commercial network abroad is a big financial investment and risk for SMEs. For this reason it is important to find partner having a complementary product portfolio in order to avoid a direct competition and having already clients interested by the products on these markets.

I&TT services can support these objectives by organising **partnership agreements at international level** in the frame of matchmaking event or individual partner search in order to find right partners abroad for the local SMEs. Enterprise Europe Network of the European Commission has already develop tools and is organising several matchmaking events to support such partnerships in the frame of different types of agreements for licensing, joint venture, manufacturing (subcontracting & co-contracting) or commercial agreement with technical assistance.

Only 32% of the companies have RDI partnership at international level and out of the companies not having RDI partnerships yet, more than **86%** have the interest to join RDI projects. This shows a big potential for new partnerships and the necessity to have support organisations which help to initiate and organise the matchmaking between offer and demand in the domain of new technologies and innovation for companies.

The domain of *business development* is especially strong in the ICT sector with 97% of the companies having the objective to enter new markets or to increase their market share.

The domain of *R&D activities* and *technological development of products/services* is also very important for nearly 60% of the companies with the objectives to *improve the product quality*, to *reduce production costs*, to *increase their in-house experience on technology fields* and to *increase their R&D activities*.

This domain is especially strong in the sector of Production Technologies/Machine Tools and ICT with more than 80% of the companies appointing R&D objectives in the near future.

In order to achieve these objectives the following ITT services are needed by the companies. The main support services needed from more than 60% of companies are in the domain of:

- Contacts for *innovation partnerships in the domain of* research labs, fablabs, living labs, test bench (70%)
- Innovation Financing / funding (64%)
- Research contract to integrate new knowledge/technology in products or services (prototyping, tests, consultancy, technical assistance) (61%)

International contacts for *innovation partnerships* are needed in the domain of research labs, fablabs, living labs, test benches by more than 60% of the companies.

Around 35%-40% of the companies are looking for support for:

- Business *support (*Technology scouting, Benchmarking, Market survey, commercialisation bootcamps) (45%)
- *Innovation Management* support (Training / Coaching / Mentoring) (42%)
- *Databases* with technology offers, studies, roadmaps (38%)

Considering the ITT services offered by the RDI organisations in the NW region, it can be noticed that:

(4) All services with the exception of the domain 'Living Labs and FabLabs / Pilot line / Demonstration line / Preseries fabrication' are offered by more than 60% of the organizations

(5) The following services are proposed by more than 80% of the organizations:
- Scientific & technological Advice/Expertise/Consultancy
- Innovation partnership agreements
- Awareness raising events
- Project management of Research and Innovation projects
- Company visits
- Component/ process development & testing
- Feasibility Study / initial design / Simulation
- Proof of concept / Lab testing of basic experimental set-up/ Characterisation

(6) The following services are less developed:
- Product validation / certification
- Matchmaking events, brokerage events
- Living Labs and FabLabs /Pilot line/ demonstration line/ pre-series fabrication

But although a large support in the different domains of services is proposed by the RDI organisations in the NW region, the demand from the companies is still very strong in the same domains. Two reasons can be responsible for this situation: either a lack of resources at I&TT organisations to respond to the demand or the services proposed are not adapted to the demand. A combination of both can also be considered.

Two examples can be given:

- The companies have a strong demand to be supported in the opportunity to enter new markets and also to develop new contacts (84%). Brokerage events seem not to be the right

answer, because only 24% have a need in this domain. A more individualised service dedicated to partner search and business support with technology scouting would probably be more adapted.

- The demand for innovation financing/funding and for research contracts is also high, even if most of I&TT organisations are proposing a support in these domains.

A deficit of services is especially high in the last category **'Living Labs and FabLabs /Pilot line/ demonstration line/ pre-series fabrication'**. ITT services in the implementation phase on product validation & certification, feasibility study & prototyping and co-creation in the frame of FabLabs or Living Labs should be further developed to respond to the strong demand of the companies. This shows again the necessity to have test facilities and FabLabs with shared infrastructures and qualified personnel as service platforms which can be contracted by the companies. An Individual company, especially an SME, cannot afford the necessary investment by itself, the financial risk being too high.

These gaps and the fact that the services are not adapted to the demand of companies were confirmed by the interviews of the ITT organisations having submitted a Letter of Intent:

- With some few exceptions, the maturity level of the I&TT services proposed are not yet in the domain of TRL higher than 6. This is a barrier for the acceptance of the services by the companies, which need support to bring the technologies on the market.
- The majority of the project are not demand driven based on the needs of companies. Only few LoI involve from the beginning companies in the conception phase and the analysis of companies' needs.

Furthermore the evaluation of the different statements of the RDI organisations shows that although the RDI organisations have a good understanding of SMEs needs and the SMEs could greatly benefit from their services, the interest and awareness of SMEs for the ITT services offered by RDI organisations is medium to low. **This difference in the perception of SMEs and RDI organisations underline the gap between the actors and the necessity to develop a common cooperation culture and a stronger communication between the RDI organisations and the SMEs. Although both groups are willing to cooperate and see the advantage of such cooperation for the regional economic development, it is still difficult for them to find common level of understanding to match needs and offers.**