Final Report on the activities for the Romanian regions North-West and North-East and for the implementation of Lagging Regions Initiative in Romania

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Analysis of Needs, Offers and Gaps - Increasing innovation in companies by supporting innovation and technology transfer entities in the areas of smart specialisation

Expert Contract N° CCI 2016CE16BAT071

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1 Introduction

1.1 Context of the activities

The Romanian Ministry of Regional Development, Public Administration and European Funds (MDRAPFE) as Managing Authority for Regional Operational Programme 2014-2020 plan to 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 (I&TT) services offered by Technology Transfer organisations in North-West and North-East Development Regions of Romania (referred to further on as North-West and North-East Romania) is really important. Thus, the initiative to identify the I&TT needs of the companies and the gaps in the existing competences of the regional I&TT 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) and North-East Regional Development Agency (RDA NE).

The goal of the performed activities was to exploit the potential for innovation and strengths in the regions by focusing on a limited number of priority areas, where there is already a competitive advantage, or one can be developed.

Premises of the activities, 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 and North-East 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 and services. 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 Documents for RIS3 as ones with smart specialization potential.

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, especially for applied research aspects was also performed at regional level. The final outcome of this

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

initiative are recommendations on how to support the access of companies of the NW and NE regions to Innovation Support Services and Technological Platforms[2].

For this reason the methodology used for the different activities was combining two approaches:

1. **A market-driven approach**, based on the needs of the companies.
2. **A technology-driven approach**, based on the offers of the existing regional I&TT structures especially for applied research aspects.

Furthermore it is important to distinguish between Innovation and Technology Transfer (I&TT) services, which will **support the development of existing companies** and services which will **support the creation of new companies**, like start-up or spin-off companies. This report will concentrate more on the support of existing companies (older than 2 years) in order to strengthen the economic development of the two regions.

Additionally to the detailed analysis of I&TT activities in the two regions previously described with the goal to increase the capacity of the regional innovation system to contribute to the regional economic development, further complementary activities were performed in order to:

- Improve the policy mix used in the region to attract investments for economic development by preparing a road map for installing a systemic approach for increasing FDI volume in North-East Region.
- Perform capacity building of business environment through training activities to permit a more efficient use of available funds in North-West Region.
- Support pilot activities on specific sub-sector to enhance cooperation between businesses, education, research-development-innovation institutions and public administration in order to support and develop SME's in one competitiveness sector identified in North-West Region.

An overview of the results of the different activities are given in section 3. A detailed description of the activities is presented in the different deliverables, which are listed in section 2. The time allocation and deviations from the planned tasks are described in section 4.

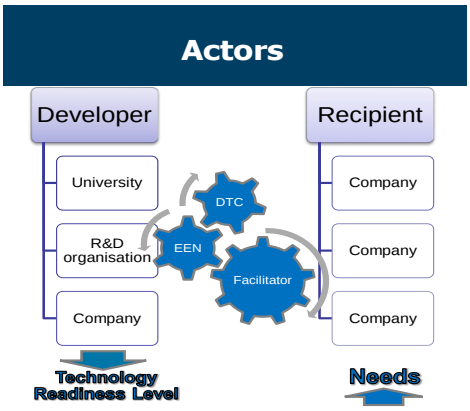
1.2 Types of innovation

In a simplified manner, the following types of innovation were considered in the report:

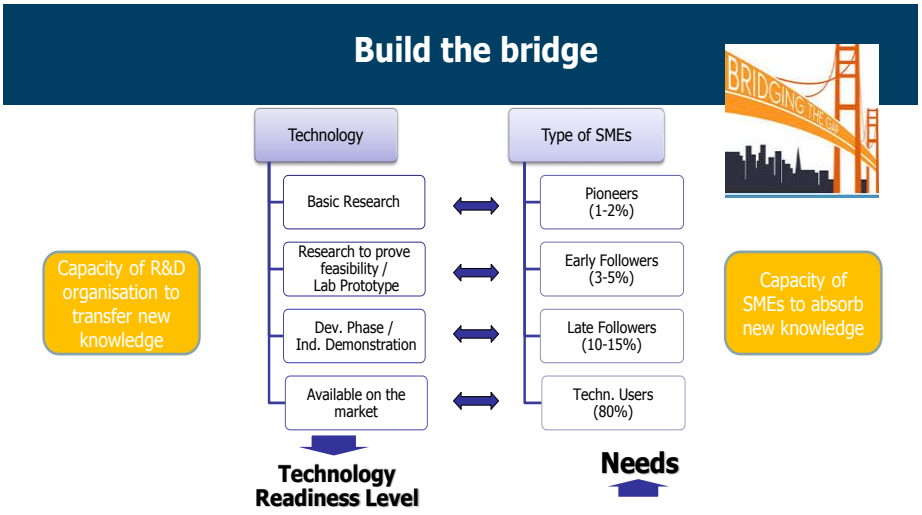
- **Product innovation**, e.g. to integrate new functionalities or new design in products, which are not available on the market yet and respond to client needs or market trends.
- **Process innovation**, e.g. to decrease manufacturing costs or improve the product quality of existing products in order to obtain a competitive advantage on the market.
- **Service innovation**, including social innovation, e.g. to develop services which respond to societal challenges like ageing society, circular economy or health & well-being.
- **Organisational innovation**, e.g. to improve the internal organisation of the company through innovation management techniques.

[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

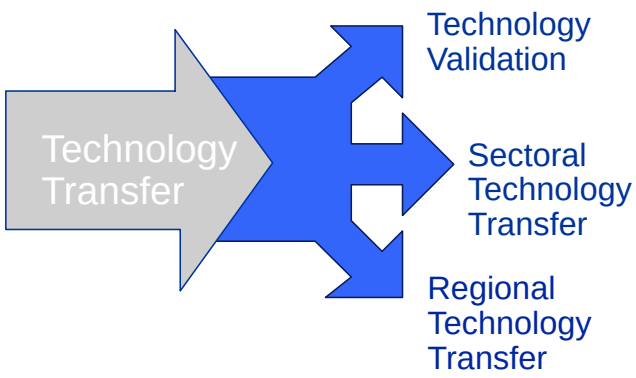
1.3 Knowledge and Technology Transfer



A simple definition of technology transfer can be the successful application and/or adaptation of a technology developed in one organisation (developer) to meet the needs of one or more other organisations (recipients). The success factor is to build the bridge between the two groups of actors with the support of intermediary organisations, which play the role of facilitator.



Three different types of activities can be distinguished:



- **Valorisation of scientific results** developed in research centres by testing and demonstrating the feasibility of the technology in an industrial environment as well as the commercial potential of the new products or services
- **Sectoral transfer** of a technology already used in an industrial sector and which will be adapted to another application in a second industrial sector. Several examples of such transfers exist between aeronautics and automotive concerning new materials, sensors or software.
- **Regional transfer** of a technology successfully introduced on the market in one geographical region which will be transferred and adapted in a second region e.g. in the domain of renewable energies or bio-economy.

2 Overview of the activities achieved

2.1 List of achieved deliverables compared to the initial plan

The different activities and deliverables can be separated in 3 parts as described in the next figure:

1. The specific activities for the North-East region
2. The specific activities for the North-West region
3. The activities for the Ministry of Regional Development and for coordination purpose

What has been done ?

North-East region

1. **Survey on companies' needs** on ITT services – 780 companies (April – July 2017)
2. **Survey on TT structures** offering innovation and TT services – 10 organisations (April – July 2017)
3. **Peer review visit** – September 5th & 6th in Karlsruhe and Stuttgart Germany with 10 German TT organisations
4. **FDI workshops** – July 25th & 26th Pietra Nems
5. **FDI roadmap report** – (October/November 2017)
6. **Final report** on Needs, Offers and Gaps for I&TT Services for Companies

North-West region

1. **Survey on companies' needs** on ITT services – 127 companies (April – July 2017)
2. **Survey on TT structures** offering innovation and TT services – 15 organisations (April – July 2017)
3. **Interviews** of 15 organisations having submitted LoI (June 27th, July 4th & 5th)
4. **2 trainings on H2020 SME instruments** (June 28th & September 26th)
5. **Consultancy** offered to the promoters of project ideas in H2020 SME instrument
6. **Methodology, kick-off & final meetings** for the Regional Committee for Dialogue (quadriple helix) – May 16th / November 22nd
7. **Final report** on Needs, Offers and Gaps for I&TT Services for Companies

Ministry of Regional Development and coordination activities

- **Review report of the 6 concept notes** of Romanian regions (March-April 2017)
- Participation to **meeting on the 31.03.2017 in Bucarest** and presentation of the methodology
- Participation to the **final conference on 6th&7th decembre 2017 in Piatra Nems** and presentation of the results
- **Summary report** for the JRC in Octobre 2017

In order to classify the different deliverables planned in the contract on page 19-21, it was chosen to use the following numbering method:

- The deliverables for the North-East region start with D1
- The deliverables for the North-West region start with D2
- The deliverables for the Ministry of Regional Development start with D3
- The deliverables concerning horizontal tasks and coordination activities start with D4

The deliverables with their different sub-parts are gathered in one electronic folder to be downloaded from the following Dropbox address:
https://www.dropbox.com/sh/j21ok1ezxcyq5o4/AACsyUH0yjWR9RoZ1X2OQsa2a?dl=0

2.1.1 List of deliverables for the North-East Region

Reports/deliverables	Content	Status	Comments
North-East			
D1.1 - Work methodology for identification and prioritisation of the I&TT services that companies need to receive in North-East Region, aligned with the RIS3 NE areas	D1.1.1 • Methodology for sampling the SMEs in NE Region • Set of instructions and timetable for organization and implementation of the survey in 8 weeks (sending and collecting questionnaires, organisation of the face-to face interviews) • Work Methodology and description of the instruments to be used for on-line data collection D1.1.2 • Template form for data collection D1.1.3 • Centralized table template for collected data (which shall be translated into EN as basis for the survey report)	Achieved Achieved Achieved	
D1.2 - Survey Report with the assessment of the need for I&TT services requested by companies in NE Region aligned with each RIS3 area	• Interpretation of data collected • Set of recommendation for the menu of I&TT services that need to be developed in North-East Region aligned with the RIS3 NE areas	Achieved	
D1.3 - Inventory list of the existing I&TT services and facilities offered in the region	D1.3.1 • Work methodology for gathering information from existing I&TT structures, organization of data collection and face to face interviews • Work Methodology and description of the instruments to be used for on-line data collection D1.3.2 • Template form for data collection D1.3.3 • Centralized table template for collected data (which shall be translated into EN) as basis for the **inventory list** with TT structures and laboratories that offer innovation and TT services to the companies in North-East Region aligned with RIS3 NE areas	Achieved Achieved Achieved Achieved	In the same document than D1.1.1
D1.4 - Preparation of the peer review workshop between I&TT centres and scientific parks in North-East Region and similar performant EU entities	• D1.4.2 – D1.4.3: Methodological guidance for the organization of the peer-review workshop dedicated to I&TT and scientific parks to ensure: o balanced participation of similar structures both from advanced and lagging regions of EU; min 4 structures from North-East Romania are participating o conditions for knowledge exchange and learning based on practical examples and site visits (particularly related to method of organization(how it is established and then developed such infrastructure), sources of funding(for investment and operationalization), development of the services menu oriented (mainly) on regional demand and key elements for success • D1.4.4 Tentative program description for the peer-review workshop • D1.4.5 – D1.4.11: PPT template for the introduction of each case study • D1.6.1 Templates form to ensure that main challenges and possible solutions are identified by participants and gathered • D1.6.2 Template for feed-back report from participants	Achieved	The template are similar than the empty evaluation documents D1.6.1&D1.6.2

Reports/deliverables	Content	Status	Comments
D1.5 - Peer review workshop organized under TAIEX Regions Peer-to Peer Program	• Identification of EU counterparts to be invited at the peer-review workshop • Input for review of the TAIEX application form • Detailed program description for the peer-review workshop • Coordinating the organization of the workshop and participation	Achieved	
D1.6 - Peer-review workshop report	• A set of conclusions and recommendations based on the feed-back collected from participants	Achieved	
D1.7 - Recommendation report for increasing the number and volume of FDI in North-East Region	• Information gathered individually through desk research based on the specificity of the North-East Region development potential, the FDI policies and support system in Romania and correlated with the 3.1 activity output, namely the position paper • Set of recommended feasible solutions to be implemented in the North-East Region	Achieved	
D1.8 - Preparation and organization of FDI workshop for RDA staff to explain the path for implementation	• Workshop agenda prepared • List of participants and relevant guests • PPT presentation based on the report material • Road map for implementation developed and agreed during the workshop	Achieved	

2.1.2 List of deliverables for the North-West Region

Reports/deliverables	Content	Status	Comments
North-West			
D2.1 - Training material (project cycle management of Horizon 2020 SME Instrument projects and 1 project idea description template)	• Training material: Presentation of Horizon 2020 SME Instrument, presentation of each phase of the project cycle tailored to the 3 phases of SME Instrument • Power point presentation based on the training material • Project idea description template: main parts of a project description based on the application form of H2020 SME Instrument	Achieved	
D2.2 - Two trainings held	• 2 trainings held with theoretical and practical parts in accordance with the training material for 30-35 SME representatives • List of participants	Achieved	
D2.3 - Three selected project ideas improved	• Recommendations, observations on 3 selected project ideas taking into consideration H2020 SME Instrument guidelines, evaluation criteria, programme rules and procedures	Achieved to 50%	Evaluation of 7 project ideas and 3 were recommended for submission. The participants did not gave feedback and did not submit the proposals.
D2.4 - Methodology and instruments for cooperation in quadruple helix put in place	D2.4.1 • Initial methodology and instruments for cooperation and needs assessment • Report and PPT-Presentation D2.4.2 • Initial methodology and instruments for cooperation and needs assessment improved/refined • Reports on kick-off and final meeting (synthesis of discussions and conclusions)	Achieved	
D2.5 - Methodology and instruments for the functioning of regional Consortia for Technology Transfer put in place	• Initial methodology and instruments provided	Replaced by another task strongly	In order to align the activities of the 2 regions it was decided to

Reports/deliverables	Content	Status	Comments
	• Report containing meeting conclusions and synthesis of discussions, as well as guidelines on further adaptation of methodology and instruments provided • Report on meeting conclusions and synthesis of further discussions with key actors; Working procedures, mechanisms and instruments improved/refined	related to D2.6	perform individual interviews of all the I&TT organisations in the NW region
D2.6 - Needs assessment and recommendation on technology transfer	• D2.6.1 & D6.2.2 - Questionnaire and interview templates addressed to SME's, technology transfer entities and RDI institutions • D2.6.3 - Report on findings including following sections: a) bottlenecks in cooperation between SME's – technology transfer entities/RDI institutions, b) list of the most suitable technology transfer services from the "low and high cost service lists", c) list of complementary measures and services d) recommendation for future activities of the consortia	Achieved	

2.1.3 List of deliverables for the Ministry of Regional Development and Public Administration

Reports/deliverables	Content	Status	Comments
Ministry of Regional Development and Public Administration			
D3.1 - Assessment of the Concept Notes elaborated by the Regional Development Agencies	• Participation as external expert in the evaluation board. • Report and recommendation stemming from the critical review of the Concept Notes submitted. • National inventory and mapping of TTOs, including outline of potential inter-regional synergies.	Not performed Achieved Not performed	No evaluation meeting organised The translation from Romanian in English language of hundreds of pages was not foreseen. Lack of time
D3.2 - Provide support to the Managing Authority for the Regional OP in assessing the Letters for expression of interest submitted by TTOs under Axis 1 of the programme	• Critical review and input in the templates prepared by the Managing Authority. • Report and recommendations stemming from the critical review of the letters submitted by the applicants.	Partially achieved to 20%	List of Evaluation Criteria

2.1.4 List of deliverables for horizontal activities

Reports/deliverables	Content	Status	Comments
Horizontal (North-East, North-West, DG REGIO)			
D4.1 - Final report	Detailed overview of all tasks and activities carried out including results and deliverables.	Achieved	
D4.2 - Participation to meetings, coordination tasks and other activities required by the project	• D4.2.1 - Participation to **meeting on the 31.03.2017 in Bucharest** and presentation of the methodology. • D4.2.2 - Presentation of survey results at the Regional Innovation Consortia and meeting with rectors of 2 universities in Iasi as follow-up of peer-to-peer TAIEX visit on the 15th&16th November 2017. • D4.2.3 - Participation to the **final conference on 6th&7th December 2017 in Piatra Nems** and presentation of the results. • D4.2.4 - **Summary report** for the JRC in October 2017.	Achieved	

3 Overview of the results achieved in the different activities

First a summary of the analysis of needs for I&TT services for companies in both NW and NE region will be given in section 3.1, because a similar approach was chosen in both regions in order to have the possibility to compare the results.

Then, the other activities performed in the NE region and NW region will be presented separately in section 3.2 and 3.3, as well as the activities for the Ministry of Regional Development and Public Administration (section 3.4) and the coordination tasks (section 3.5).

3.1 Analysis of needs, offers and gaps for I&TT services for companies in NW and NE regions

3.1.1 Introduction of the structure of the analysis of I&TT services

The details of the methodology are given in the deliverables D1.1 and D1.3. 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 services can be offered by research 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 (I&TT) services offered by research organisations in the North-East and North-West Regions of Romania?

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

- 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:
    i. To develop **attractive products and services with new functionalities** as well as,
    ii. 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:
    i. To **improve the quality** of the existing products/services
    ii. 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

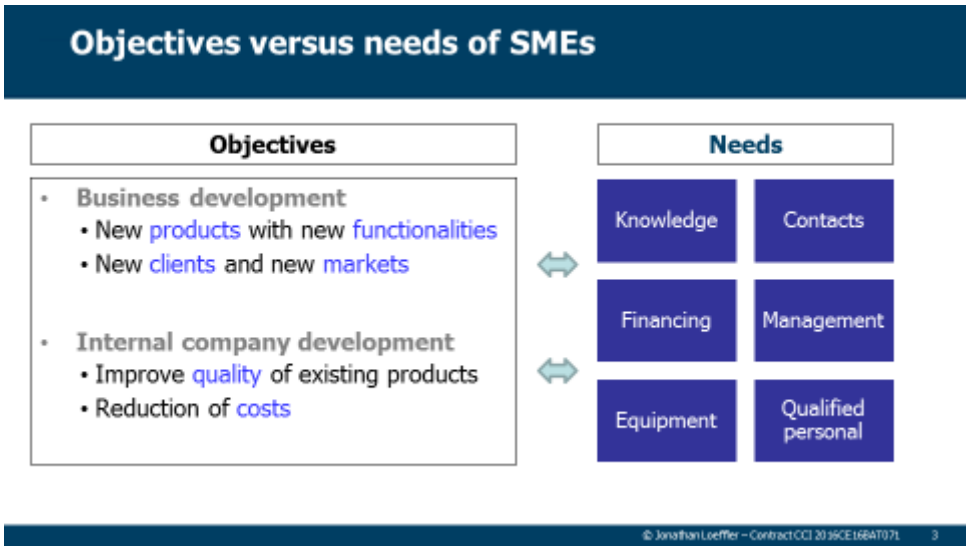


Figure 1 – Simplified model of companies' needs to achieve their main objectives

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 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 sustainability at long term 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.

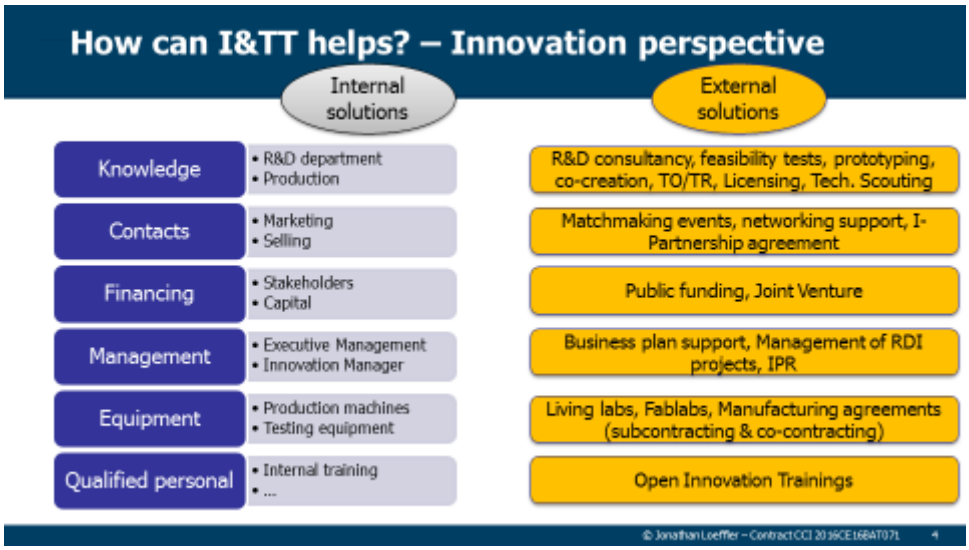


Figure 2: Link between I&TT services and companies' needs in the domain of innovation

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

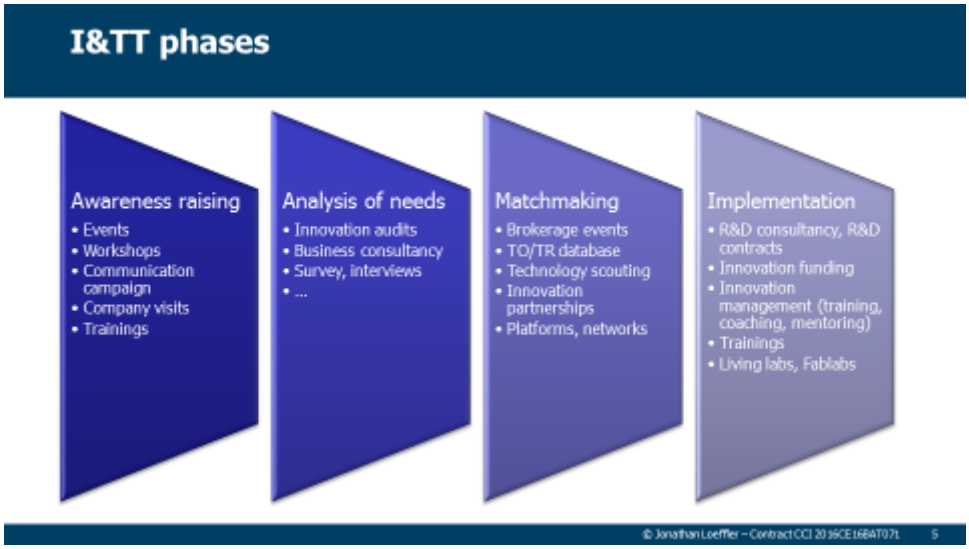


Figure 3: Services in the 4 main phases in the I&TT support process

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

3.1.2 Analysis of North-East Region

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

1. Company's objectives and partnerships in terms of Research, Innovation and Technology Transfer
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. 783 companies have participated to the survey.

The details of the analysis are presented in the deliverable D1.2.

3.1.2.1 Results on companies' objectives and partnerships

3.1.2.1.1 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.

Five objectives have been appointed by more than 60% of the companies.

Three objectives are mainly *related to internal development* of the companies*:*

(i) To reduce production costs (75%)
(ii) To improve the quality (68%)
(iii) To reduce energy consumption (65%).

Especially in the sectors Agro-food, BioTech and Environment the improvement of the product quality, the reduction of production costs by reducing the use of raw materials and the energy consumption is a higher priority compared to the other sectors. The improvement of the product quality is also a stronger priority in the IT&C sector.

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

(iv) To develop the company's network (75%)
(v) To reach new markets (63%).

The objective to 'enter new markets' is of higher priority in the sectors Agro-food and Biotech compared to the other sectors.

Concerning *R&D activities*, the objective to increase of R&D activities is especially strong in the sectors of IT&C (52%), Environment (40%) and Biotechnology (38%) compared to an average of 26% considering all sectors.

3.1.2.1.2 Partnerships

Only around 10% of the companies have a partnership in the domain of research, technological development and innovation (RDI) with research organisations. These represent 85 companies in the region. They have RDI partnership at regional and national level. **Only one** of these companies has cooperation also at international level. **A focus on the support of international RDI contacts is necessary.**

Around 60% of the partnerships are with universities or research centres. 30% of the partnerships are with other companies and 10% with other types of organisations like NGO. In the ICT and BioTech sectors the highest percentage of companies have already partnership in the RDI domain. The lowest percentage is in the domain of Tourism.

The most cited reasons for not having a RDI partnership are the following:

- It does not suit to the company, company is not ready, no interest or necessity at the moment
- Not aware about the possibility, lack of information, no opportunity, lack of organisation to support the management of such partnerships
- Involve large costs, lack of funding, lack of financial resources
- Lack of human resources, company is too small
- R&D department was recently set up
- Could not find the right partners, no contact in this domain
- No institute regionally available in the domain
- Risk concerning IPR

From the companies not having RDI partnerships yet, more than 46% 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.

3.1.2.2 Results on Innovation Management, new technologies and research knowledge

Support services needed in I&TT (§3.3.1)

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

1. The main support services needed from more than 40% of companies are in the domain of the recruitment of technology qualified personnel, innovation financing, business support and databases.
2. Around 25%-30% of the companies are looking for support for research contract, innovation management, brokerage events, technology assessment and contacts for innovation partnership.
3. Only 17% need support for IPR issues or other types of services (11%).

The strong demand in the first group for technology qualified personnel, innovation financing and business support is even higher in the sectors **environment, agro-food, biotech and IT&C**.

This strong and diversified demand can be answered in a first step by **specific RDI consultancy projects**, which are flexible and adapted to the specific need of the company. Although this type of services is offered by all the RDI organisations in the region, the demand from the company is still high. This reveals an existing gap. This situation can be improved by two type of measures: a focus on awareness, analysis of needs and matchmaking phases is necessary and also more dedicated resources should be available at the RDI organisations.

A gap can also be observed in the 2nd group of services. Especially middle size companies with 51-250 employees have a stronger demand compared to the other categories for support services of the 2nd group in the following domains:

- Research contract (43% compared to an average of 31%)

- Innovation management (41% compared to an average of 31%)
- Brokerage events (41% compared to an average of 29%)
- Technology assessment (33% compared to the other categories)

This shows that middle size companies with 51-250 employees should be considered as a major target group.

The demand is also especially high for these services in the sectors **environment, agro-food and IT&C**.

The demand for databases (73%) and innovation management (50%) is much higher for companies with > 250 employees compared to the other categories and in the sectors of IT&C (64%), but also Agro-food (58%) and Textiles & Clothing (50%).

Long term vision on innovation (§3.3.3)

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

54% 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. **The demand for product innovation is especially strong in the sectors Agro-food (70%), Biotech (75%) and Textiles & Clothing (76%)**.

Service innovation

The vision concerning **service innovation** is strongly present compared to product innovation or R&D activities. Nearly 68% of the companies declare to have a long term vision for innovative services. This shows a specific demand for a support in the domain of service innovation in the NE region, especially in the domain of **Tourism, IT&C and Environment**.

Especially in the domain of service innovation **nearly 80%** of the **micro-enterprises** have a vision at long-term. This shows a strong awareness of the enterprises for the importance of innovation, which is success factor for starting TT&I services in this domain.

R&D activities

Around 40% 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 corresponding to approx. **300 enterprises**. This especially the case in the sectors IT&C (56%), Biotech (50%) and Environment (49%).

Focus on micro-enterprises

More micro-enterprises (<10 employees) have a vision concerning innovation in all 3 categories of product innovation, service innovation and R&D activities compared to bigger enterprises. For this reason **specific support should be propose for micro-enterprises** e.g. through consultancy and brokerage events.

Specific budget for innovation measures

Around 40% of the enterprises have a budget dedicated to innovation. The percentage is especially low in the agro-food sector with only 20% compared to the other sectors.

Contribution of employees

The role of the employees is especially recognised in the sectors IT&C and Textiles, but not in environment, tourism and agro-food. A change of mentality is necessary in these sectors.

Systematic method to source and invent new technologies

Only 20% of the companies have a systematic approach to make technology watch and technology scouting. This deficit is especially strong in the sectors of agro-food and environment and in medium sized companies with 10-250 employees.

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 performance of existing products / services (67%)
- Increase productivity and competitiveness (67%)
- Reduce manufacturing costs (63%)

To 'reduce the manufacturing costs' is especially strong in the sector of biotech and environment. In the Textiles & Clothing sector to 'increase the performances of existing products' is especially strong.

The main barriers are:

- Equipment costs (63%),
- Qualified staff costs (45%)
- Raw material costs (35%).

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.

The barrier concerning equipment costs is especially present in the sectors Agrofood, Environment, Textiles and IT&C.

3.1.2.3 Results of the survey on I&TT services offered

Ten research organisations from different types have participated to the survey in the NE region: 3 universities, 7 research organisations, from which 1 define itself as an SME. The organisations have a strong professional experience and are well established. 8 organisations have more than 15 years' experience in research. Only 2 have less. The highest number of research organisations are active in the sectors agro-food, biotechnology and environment. They have expertise in the following technological fields: advanced materials, nanotechnologies and industrial biotechnology.

There activities covers different Technology Readiness Level (TRL). They are mainly active in the range of TRL1 to TRL4 covering fundamental research, proof of concept and validation in the lab. Very few organisations are active in TRL 5 to TRL 7 and none of them in 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.

9 out of 10 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:

i. All I&TT organisations of the NE region which have participated to the survey propose services in the domain of *Scientific & technological Advice/Expertise/Consultancy*. For 2 of them these services are not open for SMEs.

ii. Around 50% of the organisations offers services in the following domains:
   - Company visits
   - Innovation partnership agreements
   - Proof of concept / Lab testing of basic experimental set-up/ Characterisation
   - Component/ process development & testing
   - Project management of Research and Innovation projects

iii. Between 30% and 40% offer services for:
   - Awareness raising events
   - Feasibility Study / initial design / Simulation
   - Prototyping (integrated system/ sub-system) development & testing
   - IPR & Knowledge Management support
   - Co-creation services

iv. Less than 30% offer services for:
   - Innovation audit
   - Matchmaking events, brokerage events
   - Networking support
   - Living Labs and FabLabs /Pilot line/ demonstration line/ pre-series fabrication
   - Product validation / certification
   - Business plan support

A deficit of services is especially high in the two last categories of services.

On the other side these services like matchmaking events, brokerage events, networking support and Living Labs and FabLabs /Pilot line/ demonstration line/ pre-series fabrication or Product validation / certification are very important for companies.

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 RDI organisations.

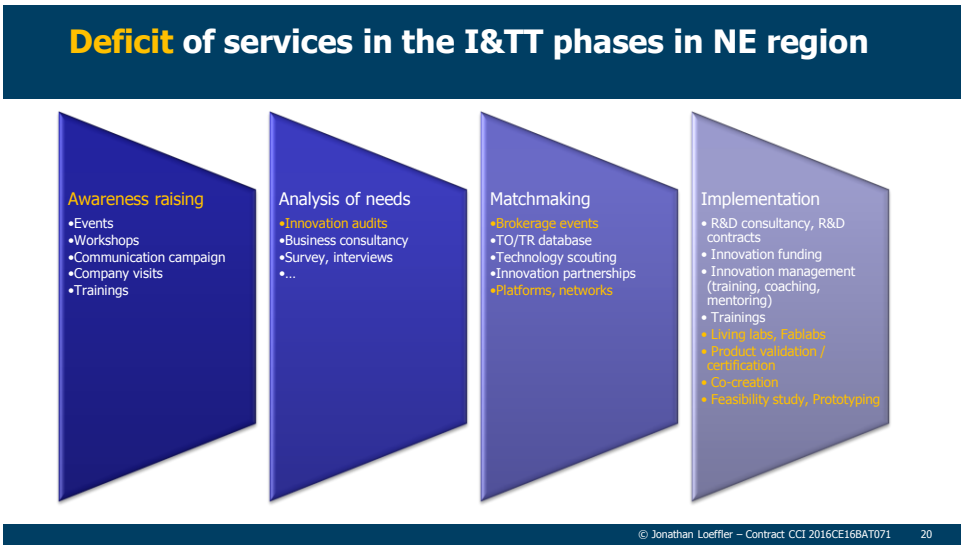


Figure 4 – Deficit of services in the different I&TT phases in NE region

- The awareness raising phase is not sufficiently developed. The companies need more information and an overview of the services offered.
- The services of innovation audits to analyse the specific needs of the companies is missing.
- More matchmaking events and support for new contacts in different networks are necessary to be more extended.
- 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.

Concerning **services opened to SMEs (less than 250 employees)**, differences can be identified in the following domains:

- Awareness raising events (specific events for SMEs should be organised)
- Feasibility Study / initial design / Simulation
- Business plan support
- Co-creation services

In a self-assessment perspective, the research organisations show a high interest in supporting SMEs, a good understanding of their needs and a high potential for the development of services in the future. But compared to the answers given by SMEs concerning partnerships with research organisations, a gap appears because only around 10% of the companies have a partnership. The most cited reasons for not having a RDI partnership are: the right partners could not be found, no contact in this domain, not aware about the possibility, lack of information, no opportunity, no institute regionally available in the domain, lack of organisation to support the management of such partnerships, lack of funding, lack of financial resources.

This shows again that the gap is mainly in the domain of awareness, information, support of the partnership process (matchmaking) and financial resources.

3.1.3 Analysis of North-West Region

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

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.

The details of the analysis are presented in the deliverable D2.6.

3.1.3.1 Results on objectives of companies and partnerships

3.1.3.1.1 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. 127 companies have participated to the survey.

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%)

3.1.3.1.2 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**.

From 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.

3.1.3.2 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 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 cannot afford the necessary investment. The financial risk is too high.

3.1.3.3 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
- 8 are not accredited

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 sectors environment & climate, energy, Eco-nano technologies, Advanced materials, Space & Security, ICT, Health and Bioeconomy. They have expertise in the following technological fields: advanced materials, nanotechnologies, advanced production technologies and industrial biotechnology.

The most represented smart specialisation fields are: ICT, machine tools, production technologies and metal processing.

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 TRL8 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 organizations 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 RDI organisations.

- Matchmaking events are necessary to be more extended to support the opportunity to develop new contacts.

- 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.

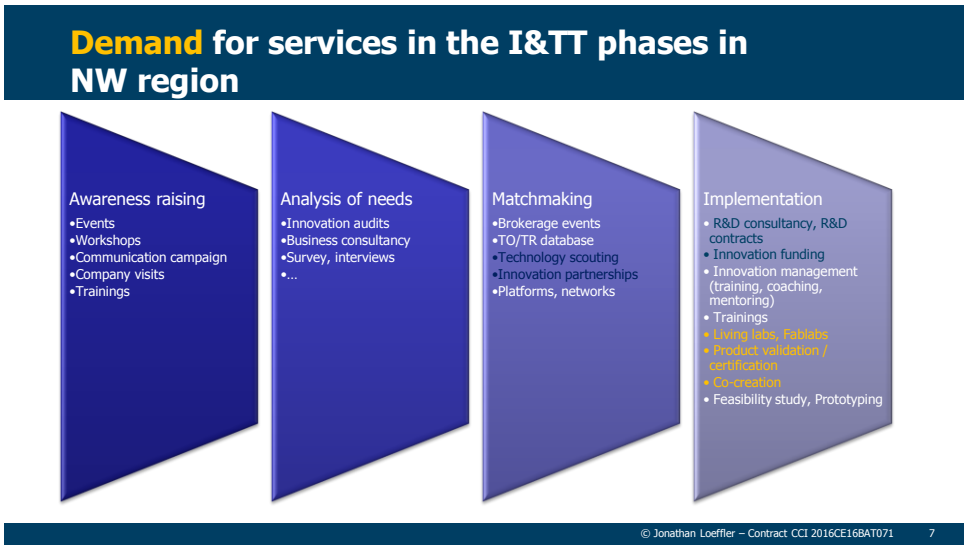


Figure 5 – Deficit of services in the different I&TT phases

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 in blue, 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 plan support
- Networking support

3.1.4 Conclusions on the analysis of North-West and North-East regions and recommendations on I&TT services

The I&TT process between companies and RDI organisation is complex and have very different aspects. For this reason this section only gives a summary of the conclusions and recommendations. The details for each region and each aspects are described in the deliverable D1.2 for the NE region and D2.6 for the NW region.

3.1.4.1 Differences and communalities between NW region and NE region

The portfolio of services in the domain of innovation and technology transfer proposed by RDI organisations is more developed in the NW region. Services addressing TRL 5 to TRL 9 are less present and should be further developed in the NE region.

The companies have in the NW region a stronger focus on business development objectives to gain new markets and new clients. In the NE region, the improvement of the product quality and the reduction of costs in the domains of production, energy and materials are stronger objectives.

Concerning RDI partnership the following differences can be noticed:

- 47% of companies in NW region have RDI partnership compared to only 11% in the NE region.
- 32% of companies in NW region have RDI partnership at international level compared to only one company in NE region.
- Clusters play a more important role in NW region as 30% of the companies have RDI partnership with clusters and only 6% in NE region.
- Considering companies not having RDI partnerships yet, more than 46% in NE region and 86% in NW region have interest to join RDI projects.

Concerning I&TT services needed by companies, in both regions the demand is strong for Innovation financing support (NW 64%, NE 50%) and business support (Technology scouting, Benchmarking, Market survey) (NW 45%, NE 46%). Furthermore in NW region, a priority is given to *Contacts for innovation partnerships* in the domain of research labs, Fablabs, living labs, test bench (70%) and to *Research contracts* to integrate new knowledge/technology in products or services (prototyping, tests, consultancy and technical assistance) (61%).

The long-term vision on innovation is stronger on product innovation in NW region (75% of companies) and on service innovation in NE region (68%).

In both regions a high percentage of companies have no systematic approach on innovation (80% in NE and 67% in NW). The organisation of trainings in the domain of Innovation Management would be very helpful.

3.1.4.2 Recommendations on I&TT services for NE region

The recommendations on I&TT services for the NE region can be summarised with actions in the following domains:

1. Innovation partnerships between companies and RDI organisations should be further developed, because only 11% of companies have partnerships until now. Furthermore there is a strong demand of 46% of companies not having a partnership yet. The involvement of clusters in this process should also be further emphasised, because only 6% have partnerships with clusters. The clusters can play a role of platform and catalyst for such innovation partnerships.

2. A focus should be also given on I&TT services supporting process innovation to reduce production costs and improve product quality (e.g. shared technological infrastructures with equipment and qualified personnel as service platforms for companies).
3. A strong demand exists also for services supporting innovation financing. Information events, trainings and a network for individual consultancy should be further developed.
4. A focus on the missing links in the value chains in the sectors ICT, Agrofood and Biotech/Pharma will help to offer services in order to bridge these gaps and allow the sector to better develop in the region. Combining these strategic innovation measures with FDI activities will also permit to the region to be more attractive.
5. Offering trainings on Innovation Management for companies will help to achieve an innovation culture in the region, because 80% declare to have no systematic approach on innovation.

3.1.4.3 Recommendations on I&TT services for NW region

The recommendations on I&TT services for the NW region can be summarised with actions in the following domains:

1. A strong demand from 70% of companies exists for having contacts to develop innovation partnerships in the domain of research labs, Fablabs, living labs, test bench. (shared infrastructures). Because these infrastructures are mainly not available in Romania yet, contact at international level with such KETs platforms dedicated to SMEs[3] should be supported. The European Commission has developed a tool to provide details for 187 technology centres in Europe providing services to enterprises, such as help with prototyping, testing, upscaling, first production and product validation. In parallel such platforms can be developed in dedicated domains corresponding to the S3 strategy in the NW region.
2. The existing I&TT services proposed by RDI organisations should be adapted to the demand of companies and more resources should be dedicated to these activities. Although a large support in the different domains of I&TT 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. The following services present a strong demand from companies and can be considered as priorities:
    a. 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 e.g. technology scouting would probably be more adapted.
    b. The demand for innovation financing/funding (64% of companies) and for Contractual Research to integrate new knowledge/technology in products or services (prototyping, tests, consultancy, technical assistance) (61% of companies) are also high, even if most of I&TT organisations are proposing a support in these domains.
3. Training on Innovation Management for companies is also strongly recommended because 67% of companies do not have a systematic approach on innovation.

[3] https://ec.europa.eu/growth/tools-databases/kets-tools/kets-tc/map

3.2 Other activities for NE Region

3.2.1 Peer review workshop

A peer review workshop was organised between 7 organisations of the NE region and 10 similar entities in Baden-Wurttemberg on September 5th&6th. The technology transfer system in Germany with its different models was presented and also specific approaches of each entities. The view of companies, Living labs and clusters were also presented.

The main issues addressed during the exchange were:

- The sustainability of the different TT models.
- The types of services offered by the RDI entities and the financing rules for these services.
- The attractiveness of the services for companies and how to motivate them.

The good practices and lessons learned presented to the participants were on:

- The internal organisation of the Technology Transfer Department
- The identification of companies' needs
- The strong cooperation between the different stakeholders combined with a freedom to act for each actor.
- The importance of the regional framework conditions.
- The diversity of the different successful models.

The detailed programme, the different case studies as well as the participant list are presented in the deliverables D1.4, D1.5 and D1.6.

3.2.2 Roadmap for increasing FDI volume

As stated in different publications[4], FDI is an important factor to achieve regional economic growth. Especially the articulation of the Regional Innovation Strategy with the FDI activities and with internationalisation actions is very important to improve the attractiveness of the region and especially to underline and demonstrate the strengths of the region with concrete facts and actions for the marketing and communication towards potential foreign investors. The combination with the innovation strategy permits to have a more focused and pro-active approach of potential investors based on the needs and opportunities in the regional sectors. It gives the possibility to better define target groups of investors which could have the potential to invest in the region, because their interests match with the offer of the region. E.g. the existence of a strong regional Global Value Chain in an economic sector with specific missing links allow to directly address industrial investors which could cover this missing links through Joint Venture with regional actors or green field investment with a high potential of success.

The following different types of measures were considered:

- A first group of actions directly addressed to investors:

[4] External dimensions of smart specialisation: Opportunities and challenges for trans-regional and transnational collaboration in the EU-13, S3 Working Paper Series No 09/2015, Slavo Radosevic and Katerina Ciampi Stancova, 2015

- **Communication and marketing**: dedicated actions addressed to potential investors e.g. information campaign, company mission, regional delegation, contact with Multinational Enterprises (MNE)
- **Value-chains, supplier network:** e.g. actions with clusters and networks to structure the value-chains in the different economic sectors and achieve a continuous supply chain.
- **Use of public investment planned to leverage private investment (PPP)**

- A second group of **indirect actions**, which will *improve the regional framework conditions* and *increase the attractiveness* of the region in the following domains:
  - **R&D, Innovation, High-tech:** e.g. Fablabs, Testing facilities, Science network in specific domains with excellent equipment, university initiatives, …
  - **Infrastructures:** e.g. highways, roads, logistics centres, technology parks, RDI Institutes
  - **Education**
  - **Tax investment facilities:**

In order to develop the roadmap, different time lines will be considered for the achievement of the measures depending on the resources available and the barriers to be overcome (Figure 6):

- Short-term: 6-12 months
- Medium-term: 1-2- years
- Long-term: 3-5 years

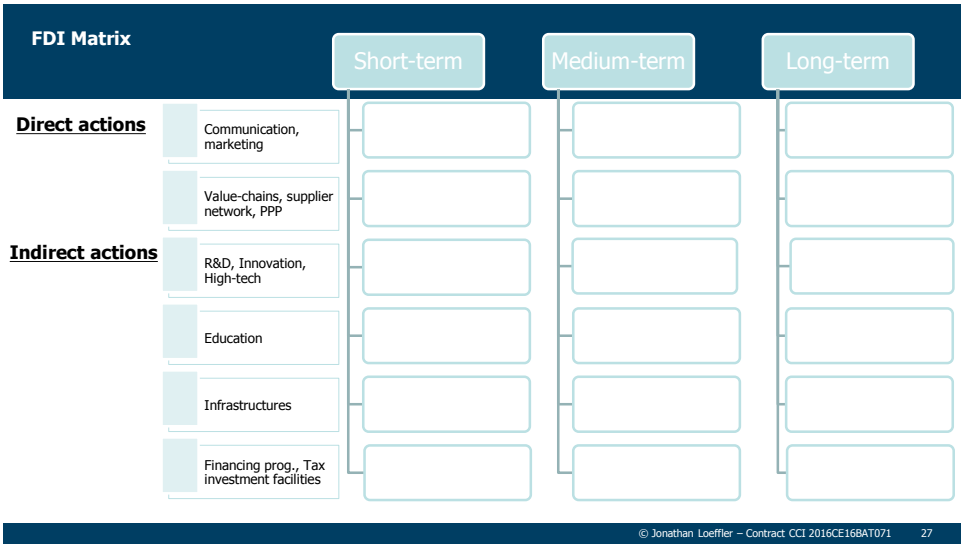


Figure 6 – FDI matrix

Such a matrix were developed for three economic sectors which are a priority for the NE region based on the North-East RIS3 policy paper: ICT, Biotech/Pharma and Agro-food. A matrix for horizontal measures, which can have an impact on all the sectors was also proposed.

The roadmap is based on the recommendations of the expert Florin Bondar and also on the results of two workshops with regional stakeholders and the Regional Development Agency conducted on July 25th-26th in Piatra Nems.

The detailed methodology used and results obtained are described in the deliverables D1.7 and D1.8.

3.3 Other activities for NW region

3.3.1 Trainings on H2020 SME Instrument programme

Two trainings has been hold on June 27th 2017 and September 26th 2017 on H2020 SME instruments. The training materials, the power point presentation, the lists of participants and a project idea description template are available in the deliverables D2.1 and D2.2.

3.3.2 Evaluation and support of project ideas for the SME Instrument programme

The participants of the trainings proposed 7 project ideas, which have been evaluated based on the SME instrument guidelines and evaluation criteria. 3 project ideas were recommended for submission. The participants did not gave further feedback and did not submit the proposals probably due to a lack of resources. For this reason this task could only be achieved to 50%.

The description of project ideas and the recommendations based on a quality check are available in the deliverables D2.3.

3.3.3 Methodology to support the regional Committee for Dialogue

The objective of this methodology was to foster the dialogue between stakeholders from the quadruple helix at regional and local level, but also with the national administrations in order to improve the framework conditions for the future economic regional development of the North-West region of Romania. It was done in the frame of a Regional Committee for Dialogue to support the cooperation between public administrations, businesses, Higher Education & RDI institutions and civil society. The objective was to develop mechanisms and instruments for horizontal cooperation, i.e. cooperation on local/regional level, as well as for vertical cooperation, i.e. that of the Committee with the central administration.

The challenge is that the Smart Specialisation Strategies at national and regional levels have a positive impact at local and organisational levels. In order to achieve this, the involvement of the different actors in an interactive and open dialogue is necessary.

The methodology was presented at the kick-off meeting on May 16th 2017 and revised after the final meeting on November 22nd 2017.

The proposed methodology was adopted and was successful in giving a good kick-off to the regional dialogue. Concrete pilot initiatives like the digital platform proposal based on the digital hub approach were developed. A proposal for funding and support was submitted and is in the evaluation process with positive perspective of success. The part concerning the cooperation agreement should be revised.

The Regional Development Agency plays an essential role of facilitator and catalyst of the process and should have more resources to maintain the dialogue between all the actors, when concrete projects are identified and need support.

This regional dialogue in the frame of the quadrupled helix cooperation is an investment for the future economic development of the North-West Region and should be further supported by public actors during the next 2 years to maintain the dynamic achieved until now.

More details are presented in the deliverable D2.4.

3.3.4 Interviews of I&TT entities

Based on the experience of the expert, it was decided with the RDA NW to perform individual interviews of all the 14 I&TT organisations in the NW region having submitted a Letter of Intent, instead of developing working procedures for a Regional Consortia for Technology Transfer. Individual interviews give the possibility to have a more detailed opinion on the capacity and the experience of the organisations to collaborate with companies and to respond to their demand.

The interviews brought the following conclusions.

The different LoIs respond to actual technological and societal trends in the domains of Health, Digitalisation and New Materials. This is positive and show that the organisation are aware of the technological trends important the future economic development.

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.

Business plans were not developed in details yet in order to plan which I&TT services and at which price the services will be proposed in order to finance in a sustainable manner at medium-term the different I&TT centres.

A summary of the different interviews is available in the deliverable D2.5.

3.4 Activities for the Ministry of Regional Development and Public Administration

3.4.1 Review of the 6 concept notes of Romanian regions

The complete report is available in the deliverable D3.1.

3.4.1.1 Summary

The concept notes of the following Romanian regions were reviewed: North-East Region, North-West Region, South Muntenia, West Region, South West Oltenia and Center Region.

This report will:

- give an overview for the different regions on the methodology and the sectoral priorities chosen;
- point out some possible further aspects to be addressed and barriers to achieve the implementation of the Priority Axis 1.

The different concept notes are very well structured and contain the necessary information about the regional economic context, the potential for innovation, the existing innovation and technology transfer infrastructures, the positioning of the region at national and regional level completed by an analysis of the strengths-weaknesses-opportunities-threats (SWOT) and the regional strategy for research and innovation linked to the smart specialisation.

The arguments and conclusions are underlined by numerous statistics and existing studies performed at regional, national and international level.

The sectoral analysis with clustering potential and possible smart specialisation in specific economic sectors is well described. Especially the description of value chains identified is of strategic

importance to define the priorities for the support given by Innovation & Technology Transfer services adapted to the regional economic context.

These value chains and sectoral priorities give the framework conditions to identify the correspondence between the objectives of the Letter of Intends and the regional smart specialisation strategy. Based on this analysis it was possible to achieve a good correlation between:

- the priorities of the Regional Framework Documents and Regional Development Plans,
- the vertical and horizontal priorities of the smart specialisation,
- the concrete measures to be implemented.

For the different priorities and measures proposed, target groups and monitoring indicators were in most of the cases defined.

The areas/sectors for smart specialisation can be divided into three categories:

- **Traditional areas,** which contribute to the formation of a regional identity, such as e.g. agri-food, wood and furniture, textiles, tourism;
- **Emerging areas** with great potential for the future, such as new materials and biotechnology;
- **Areas with beneficial effects on other sectors / activities** such as ICT and environment.

In order to define these sectors the following criteria were considered:

- Existence of industrial clusters, networks and associations;
- Existence of regional skills and results in R&D and I&TT;
- Existence of competitive advantages for the export of goods;
- Good knowledge of the issues / needs / constraints facing by the sector and clear vison for potential solutions required to overcome them;
- Maturity level of initiatives launched in the sector;
- Identification of major societal challenges relevant to smart specialisation strategy in the region and overlapping with the national Smart Specialisation sectors of Romania
- Natural resources available

Three domains should be furthermore considered:

- The domain of innovation services could be more emphasis, especially in relation to social innovation aspects e.g. in the domain of health, ageing society and sustainable tourism.
- The description of value chains could be further developed in some concept notes. This would help to identify where I&TT services would have a high impact in the development process of innovative products or services. The analysis of the company needs based on the survey performed in the North-East and North-West regions will help to achieve this aspect.
- Based on the discussion during the meeting held in Bucharest on the 31st March 2017, the financial implementation of the projects and the coordination of the time schedule between the regions seems to be still a difficult issue. Especially the funding rate of 50% and the Letter of Intent in the domain of agro-food/bioeconomy are open points to be further discussed.

The good correlation between the four main phases of the technology transfer process depending on the regional context is also well described.

Considering the following 4 main phases of the technology transfer process:

1. Awareness raising

2. Analysis of needs
3. Matchmaking
4. Implementation

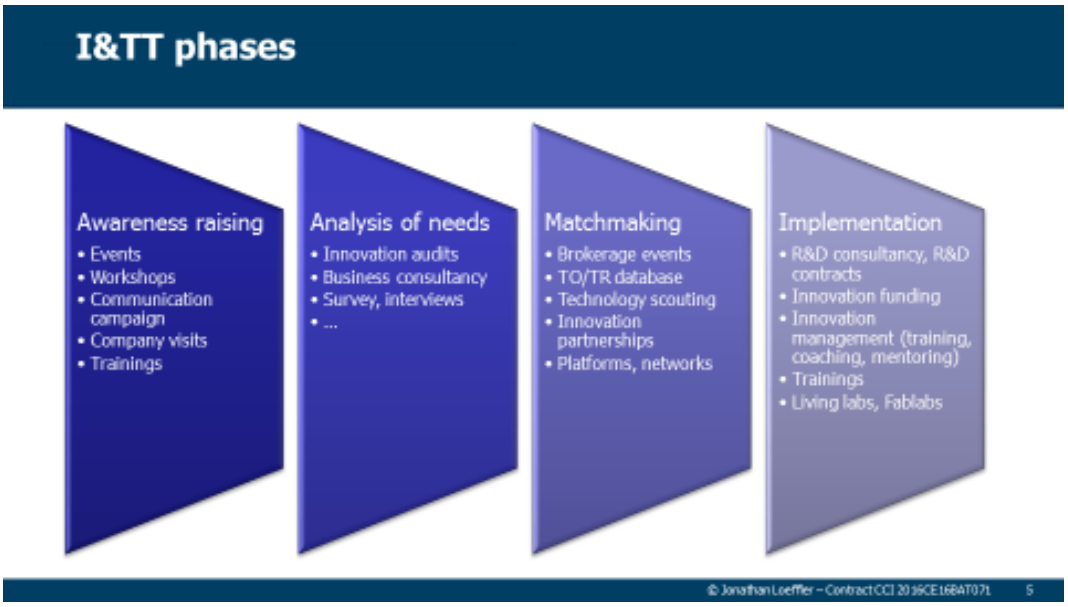


Figure 7 – Phases of I&TT support process

It is very important to invest time and resources in the first two phases to achieve awareness at the actors and to know their needs, before investing in the third and fourth phases. It will be a challenge to respect a good balance between the four phases.

As a conclusion, the concept notes from the different regions give a very clear picture about the framework conditions and the priorities which should be addressed by the Innovation & Technology Transfer projects supported in each region by the Priority Axis 1. The objective to focus on specific domains, which will have a high impact on the regional economy in a mid-term perspective, is achieved.

3.4.1.2 Overview

Value chains

In a bottom up approach, the economic sectors with potential for development in the regions were defined and analysed.

The objective of the analysis was to identify the challenges faced by each economic sector that represent or lead to blockages in the economic development of their respective region. At the same time, it sought to identify new growth opportunities, both vertical and cross-sectoral process to ensure continuity and economic growth.

The analysis aimed at examining all elements and actors involved in the main activities generating value in these sectors, namely each part that constitutes sectoral value chains.

Value chain is perceived as a subdomain activity of an economic sector, a closed circuit where the loops which are primarily present and active are clearly defined and presented complementary activities. These activities together give dynamic to a functional chain, generating extra value of the

final product which reaches the consumer, and thus gives the opportunity to achieve an economic profit which returns to the entire value chain.

Therefore, stimulating sustainable development as many complete and profitable value chains in key sectors of the region, and on leveraging emerging business opportunities helps to increase its economic growth.

Sectors with potential for smart specialisation

The following sections give an overview of the sectors chosen by the different regions as priorities for I&TT support.

Table 1 – List of the areas/sectors for smart specialisation in the six regions

	North-East Region	North-West Region	West Region	South Muntenia	South West Oltenia	Center Region
Areas/sectors for smart specialisation (vertical priorities)						
Traditional areas	- Agro-food - Wood and furniture - Textiles - Tourism	- Agro-food - Furniture - Production technologies, machinery, equipment - Metal processing	- Automotive components - Textiles	- Agriculture and food - Construction machinery, components and production equipment - Tourism and cultural identity	- Industrial Engineering and Transport - Agriculture and Food - Tourism and cultural identity	- Automotive - Aerospace - Textiles - Forestry, wood processing, furniture
Emerging areas	- New materials - Biotechnology	- Cosmetics and food supplements - Plastics, Paper and Packaging	- Agro-food - New construct-ion materials	- Bioeconomy, Circular economy - Smart Cities	- Sustainable Energy and Environment - Bio-technology - Innovative Medicines	- Food - Sustainable construction - Healthy and seaside tourism
Areas with beneficial effects on other sectors/activities	- ICT - Environment - Energy	- ICT - Health	- ICT	- High technologies	- ICT	- Mechatronics - IT and creative industry

3.4.2 List of criteria to evaluate the Letter of Intent

A list of criteria was proposed to evaluate the Letter of Intent from I&TT entities and Science&Technology parks:

- Eligibility criteria.
- Evaluation criteria.

The evaluation criteria can be divided in:

- Quantitative criteria.
- Qualitative criteria.

All the 5 main parts of the LOI were considered:

1. Action plan
2. Estimated results
3. Ability of the organisation
4. Financial data
5. Monitoring system

The detailed list and description of criteria is given in the deliverable D3.2.

3.5 Horizontal activities and coordination tasks

The following horizontal activities and coordination tasks were performed.

3.5.1 Final report

This report is described as Deliverable D4.1 from the list of deliverable in section 2.

3.5.2 Meeting on the 31.03.2017 in Bucharest

Participation to meeting on the 31.03.2017 in Bucharest and presentation of the methodology for the analysis of I&TT services in the two NW and NE regions (Deliverable D4.2.1).

3.5.3 Meetings on 15-16.11.2017 in Iasi

Presentation of survey results at the Regional Innovation Consortia of the NE region and meeting with rectors of 2 universities in Iasi as follow-up of peer-to-peer TAIEX visit (Deliverable D4.2.2).

3.5.4 Final conference on 6-7.12.2017 in Piatra Nems

Participation to the final conference on 6th&7th December 2017 in Piatra Nems and presentation of the results (Deliverable D4.2.3).

3.5.5 Intermediary summary report for the JRC

The JRC asked for an intermediary summary report in October 2017 in the frame of a meeting with the Ministry of Regional Development in Bucharest (Deliverable D4.2.4).

4 Overview concerning time allocation

The following tables gives an overview for each task (and the corresponding deliverables) of the time allocation planned in the contract on pages 16-19 and the time used to perform the tasks.

4.1 Time allocation for activities for the North-East region

Task	Deliverable	Status	Time allocation planned		Time used	
			Time allocation (days)	Travelling required (days)	Time allocation (days)	Travelling required (days)
North-East						
Increase the capacity of the regional innovation system (CDI and TT structures) to contribute to the regional economic development						
Identification and prioritisation of the ITT services that companies need and the ITT structures has to offer in North-East Region according to the smart specialization areas	• **D1.1 & D1.3 - work methodology for data collection** • **D1.2 - Report with** interpretation of data collected and recommendation for the type of ITT services need to be developed in the North-East Region	Achieved Achieved	11	0	11	0
Assess the performance of the existing ITT services and facilities offered in the region	• **D1.2 Section 4 - 1 inventory list** with TT structures and laboratories that offer innovation and TT services to the companies in North-East Region • **D1.4, D1.5, D1.6 - 1 Peer review workshop** organized with performant similar EU entities	Achieved Achieved	15	2	15	2
Improve the policy mix used in the region to attract investments for economic development						
Prepare a road map for installing a systemic approach for increasing FDI volume in North-East Region	• D1.7 - Recommen-dation report • D1.8 - 1 workshop organized with RDA staff to explain the path for implementation	Achieved Achieved	6	1	6	1

There was no deviation with the planned time allocation.

4.2 Time allocation for activities for the NW region

Task	Deliverable	Status	Time allocation planned		Time used	
			Time allocation (days)	Travelling required (days)	Time allocation (days)	Travelling required (days)
North-West						
Capacity building of business environment to more efficient use of available funds						
Project cycle management training for SME's tailored on Horizon 2020 SME Instrument	• D2.1 - 1 training material for participants • D2.2 - 2 trainings in PCM of H2020 SME Instrument projects • D2.3 - Selection of the 3 best project ideas out of the ones submitted by participants based on qualitative criteria • D2.3 - Consultancy offered to the promoters of the 3 project ideas selected	Achieved Achieved Achieved Not performed	10	2	5	2
Pilot on specific sub-sector to enhance cooperation between businesses, education, research-development-innovation institutions and public administration in order to support and develop SME's in one competitiveness sector identified						
Supporting the Regional Committee for Dialogue to develop working instruments and mechanisms of cooperation and dialogue	• D2.4.1 - Providing a methodology and instruments for cooperation in quadruple helix • D2.4.2 - Revision, improvement of methodology • D2.4.3- D2.4.4 Participation at the kick-off and final meeting of the Regional Committee for Dialogue	Achieved Achieved Achieved	7	2	7	2
Pilot to address needs linked to technology transfer						
Elaboration of working procedures for Regional Consortia for Technology Transfer - **Change of activity**	• D2.5 Interviews of ITT organisations in NW regions having submitted an LOI. • Initial working procedures, mechanisms and instruments provided • Analyses of Romanian legal environment. • Guidelines on how to adapt initial working mechanisms and instruments • Procedures, mechanisms and instruments improved based on stakeholders' feed-back	Achieved Not performed Not performed Not performed Not performed	8	2	3	1
Gathering, analysing needs connected to	• D2.6.1 & D2.6.2 - Questionnaire and	Achieved	10		10	

technology transfer, as well as existing RDI activity and/or RDI results available and needs in terms of technology transfer services necessary	interview guideline elaborated for SME's and technology transfer/RDI entities • D2.6.3 - Answers synthesised, recommendations formulated based on answers, including feedback on how to continue activities	Achieved				

Deviations with the planned time allocation can be observed in two tasks:

Project cycle management training for SME's tailored on Horizon 2020 SME Instrument

The deviation is in the task concerning the evaluation and support of project ideas submitted by the participants of the trainings. As explained previously, the participants of the trainings proposed 7 project ideas, which have been evaluated based on the SME instrument guidelines and evaluation criteria. 3 project ideas were recommended for submission. The participants did not gave further feedback and did not submit the proposals probably due to a lack of resources. For this reason this task could only be achieved to 50%.

Elaboration of working procedures for Regional Consortia for Technology Transfer

As explained previously, based on the experience of the expert, it was decided with the RDA NW to perform individual interviews of all the 14 I&TT organisations in the NW region having submitted a Letter of Intent, instead of developing working procedures for a Regional Consortia for Technology Transfer. Individual interviews give the possibility to have a more detailed opinion on the capacity and the experience of the organisations to collaborate with companies and to respond to their demand. Only three days were necessary to perform this tasks.

4.3 Time allocation for activities for the Ministry of Regional Development and Public Administration of Romania

Task	**Deliverable**	**Status**	**Time allocation planned**		**Time used**	
			Time allocation (days)	**Travelling required (days)**	**Time allocation (days)**	**Travelling required (days)**
Ministry of Regional Development and Public Administration						
Expertise for the Ministry of Regional Development and Public Administration • Assessment of the eight regional concept notes elaborated by the Regional Development Agencies • Critical review of the proposed types of interventions at regional level, to steer	Participation as external expert in the evaluation board that will assess the regional Concept Notes and the Letters of expression of interest (to be submitted by applicants) D3.1 - Report and recommendations to enhance the effectiveness of the planned	Not performed (no invitation to meetings) Achieved (more time necessary	10	2	8,5	0

coordination and complementarities and synergies at national level and • Supporting the review of the letters for the expression of interest submitted by applicants with a view to exploit synergies and model an optimal deployment of services at regional level	investments stemming from the Concept Notes, including i.e.: • Assessment of the compliance with the methodology • review and validation of the links between regional smart specialisation fields (sub-fields) and the national ones, as identified in the National Strategy for R&I	for the translation from Romanian language of several hundreds of pages)				
	Inventory of existing TTOs (including their fit into regional and/or national smart spec fields, critical review of their capacity to satisfy requirements under the Regional Operational Programme 2014-20	Not performed due to a lack of time				
	D3.2 - Report and recommendations to enhance the effectiveness of the planned investments stemming from the Letters of intent submitted by applicants.	Partially achieved				

Deviations with the planned time allocation can be observed in the following tasks:

Participation as external expert in the evaluation board

This task could not be performed, because no invitation was sent to the expert to participate to meetings

Report on the regional concept notes

Six concept notes of the Romanian regions North-East Region, North-West Region, South Muntenia, West Region, South West Oltenia and Centre Region were reviewed. The concept notes were submitted in Romanian language and had first to be translated in English. Each concept note had between 70 and 130 pages:

- Centre Region: 108 pages without annexes
- South West Oltenia: 114 pages with annexes
- South Muntenia: 70 pages without annexes
- North-East Region: 107 pages without annexes
- West Region: 78 pages with annexes
- North-West Region: 130 pages with annexes

Due to the high number of pages and although google translate software has been used, it took between 1 to 1,5 day for each concept note to be translated and reviewed. A total of 7 days was necessary for this part.

An additionally day was necessary to write the review report. A total of 8 days were necessary to perform this task.

Inventory of existing TTOs

This task was not performed due to a lack of time.

Recommendation to enhance the effectiveness of the planned investments stemming from the Letters of intent

A list of criteria to evaluate the letter of intent was prepared. This task took 0,5 day.

4.4 Time allocation for horizontal activities and coordination tasks

Task	Deliverable	Status	Time allocation planned		Time used	
			Time allocation (days)	Travelling required (days)	Time allocation (days)	Travelling required (days)
Horizontal (North-East, North-West, DG REGIO)						
Participation to meetings, coordination tasks and other activities required by the project	• D4.2.1 - Participation to meeting on the 31.03.2017 in Bucharest and presentation of the methodology. • D4.2.2 - Presentation of survey results at the Regional Innovation Consortia and meeting with rectors of 2 universities in Iasi as follow-up of peer-to-peer TAIEX visit on the 15th&16th November 2017. • D4.2.3 - Participation to the final conference on 6th&7th December 2017 in Piatra Nems and presentation of the results. • D4.2.4 - Summary report for the JRC in October 2017.	Achieved Achieved Achieved Achieved	10	6	10	6

There was no deviation with the planned time allocation.