



## Summary Report on the regional S&T intermediary system

### The current state of intermediation services

*Romania - Cluj*

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## **1. Introduction – wider context of S&T intermediation system**

### **Institutional and legal framework for innovation and the knowledge economy in**

#### **Romania**

The RTDI governance is centralised and a correlation of national policies with the re-launched Lisbon Strategy is ensured by a secretary of state within the Ministry of European Integration. The regional institutions involved in RTDI are more advanced in the famous university centres and with a lower extent in the other regions.

The main institution in charge with designing, implementing, monitoring and evaluation of R&D and Innovation policy is the Ministry of Education and Research (MER), through the National Authority for Scientific Research (NASR), headed by a president who also is a secretary of state. Its main objective is to harmonise national R&D and innovation policy with the EU trends and in particular with the Lisbon Strategy. The NASR also is responsible for the elaboration of the National RDI Plan. It also assumes a role of coordinator since it chairs the Inter-ministerial Council for STI, which ensures the correlation of RTDI policies with other government strategies and programmes.

Currently, the National Scientific Research Council of Higher Education (NSRCHE) and the Executive Agency for Higher Education and Research Funding (EAHERF) coordinate the National RDI Strategy for the period 2007-2013 within the National Foresight Exercise. The project is scheduled to be finished by the end of 2006. The coordination of the National Reforms Programmes for the Lisbon Strategy is ensured by the Ministry of European Integration through a Secretary of State. Moreover, there are two consultative committees for the elaboration of RTDI policy. The former, the National Council for Science and Technology Policy has the main mission to establish the National Strategy on Scientific Research and Technological Development and to create the legislative framework for implementing RDI activities by leading broad consultation and cooperation between the main stakeholders involved in formulating and implementing RDI policies. It is headed by the Prime Minister and it is composed of eight ministers and the President of the Romanian Academy. The latter, the Inter-ministerial Council for STI ensures the correlation of RTDI policies with other government strategies and programmes.

The process of formulation, elaboration and implementation of RTDI programmes is supported by the consultative body to the Ministry of Education and Research. The Advisory Board for R&D and Innovation includes the most representative personalities of the S&T community (R&D institutes, universities, industry, services), The National Scientific Research Council of Higher Education is composed of Higher Education representatives involved in research having six committees divided by specialised fields. It is a consultative body of the Ministry of Education and Research and ensures the liaison with the Higher University Research Community in the process of allocation of R&D funds for universities as well as evaluation of research performance and the Social Dialog commission which ensures the consultation with the association of employees and companies from the R&D sector.

The Romanian Academy has a special role in taking strategic decisions, the design and implementation of R&D policies as well as the national R&D programmes. The academy of

science and the specialised agencies coordinates a network of 65 research institutes and centres and conducts its own research programmes. Under the supervision of several Ministries, there are different categories of public research institutions: National R&D Institutes in 15 research fields, coordinated by 8 different ministries, 18 of which are co-ordinated by the MER-Research; Academy of Medical Sciences: 23 institutes and research centres; Academy of Agriculture and Forestry Sciences 25 institutes and research centres; National Agency for Atomic Energy; Romanian Space Agency (ROSA); Universities (56 public, 18 private universities).

Within the Ministry of Education and Research, there are two bodies with role of funding agencies: the National Centre for Programme Management in order to co-ordinate and optimise the management of RDI programmes and projects. It currently manages three programmes of the National RDI Plan (i.e. CORINT, BIOTECH and INFOSOC) and the Executive Agency for Higher Education and Research Funding, which finance R&D university, programmes.

Concerning the regional and local level, the institution, which have the attributes to be involved in the regional RTDI policy are the Regional Development Agency, the County and Local Council. However, only the RDAs have modest capacities to input to the development of innovation and knowledge policies. This is due to the legal framework which is not in favour of developing regional policies and the lack of support for strengthening the regional programming capacity.

The main public R&D and innovation funds providers are the Ministry of Education and Research through the National Agency for Scientific Research and the National Scientific Research Council of Higher Education. In addition to this, the Romanian Academy finance research programmes in mainly in natural, exact and socio-humanistic sciences.

#### Main organisations per policy area.

	Type of organisation	
Policy objectives	National (and/or regional) public authorities and agencies	Key private or non-profit organisations
<b>Improving governance of innovation and knowledge policies</b>	<ul style="list-style-type: none"> <li>• National Agency for Scientific Research (Ministry of Education and Research)</li> <li>• Romanian Academy</li> <li>• Secretary of State in charge with the Lisbon Strategy (Ministry of European Integration)</li> <li>• Ministry of European Integration</li> <li>• Ministry of Economy and Commerce</li> <li>• Ministry of Finance</li> <li>• Ministry of Communication and Information Technology</li> </ul>	<ul style="list-style-type: none"> <li>• Regional Development Agencies</li> <li>• Chambers of Commerce</li> </ul>
<b>Innovation friendly environment</b>	<ul style="list-style-type: none"> <li>• National Agency for Scientific Research (Ministry of Education and Research)</li> <li>• Ministry of European Integration</li> <li>• National Agency for Small and Medium Sized Enterprises and Co-operatives</li> </ul>	<ul style="list-style-type: none"> <li>• Apart from the commercial banks, there are no major venture capital or seed capital organisations supported via public policy</li> <li>• Four private venture capital organisations are listed as members of the EVCA.</li> </ul>

		Type of organisation	
		<ul style="list-style-type: none"> <li>• Ministry of Labour, Social Solidarity and Family</li> <li>• Ministry of Communication and Information Technology</li> </ul>	
<b>Knowledge transfer and technology diffusion to enterprises</b>		<ul style="list-style-type: none"> <li>• National Agency for Scientific Research (Ministry of Education and Research)</li> <li>• National Agency for the Partnership between Universities and Socio-Economic Environment (Ministry of Education and Research)</li> <li>• National Agency for Small and Medium Sized Enterprises and Co-operatives</li> </ul>	<ul style="list-style-type: none"> <li>• 7 S&amp;T Parks in different regions of the country.</li> <li>• 10 Technology Transfer Centres (e.g. SC TT&amp;I Centre SA Iasi, CENTI Cluj-Napoca, CENTAISIM Timisoara, ICPE-CA Bucharest, CTT-AVANMAT Bucharest, CTT-Baneasa Bucharest)</li> <li>• 9 Technology &amp; Business Incubators</li> <li>• 4 Technology Information centres (e.g. CENTIREM Bucharest).</li> <li>• Over 50 Business Innovation Centres – initiated and funded by MER as ‘Business Incubators centres’ and subsequently widened based on private funding in support of regional development.</li> <li>• The Innovation Relay Centres Network. (two IRCs co-ordinated by the Ministry of Education and Research and six regional partners which provide information to SMEs, universities and research organisations).</li> <li>• Industrial Liaison Offices established with PHARE assistance in the framework of the “S&amp;T Restructuring System” Programme that stimulates technology transfer and quality management</li> </ul>
<b>Innovation poles and clusters</b>		<ul style="list-style-type: none"> <li>• National Agency for Scientific Research (Ministry of Education and Research)</li> </ul>	<ul style="list-style-type: none"> <li>• There are no institutions within this area</li> </ul>

	Type of organisation	
Policy objectives	National (and/or regional) public authorities and agencies	Key private or non-profit organisations
Support creation to and growth of innovative enterprises	<ul style="list-style-type: none"> <li>• National Agency for Scientific Research (Ministry of Education and Research)</li> <li>• National Agency for Small and Medium Sized Enterprises and Co-operatives</li> </ul>	<ul style="list-style-type: none"> <li>• 7 functional S&amp;T Parks in different regions of the country (e.g. Software Park Galati, Softex Braila, CyberLAB Slobozia, Software Park Brasov, Minatech-Ro Bucharest).</li> <li>• 9 Technology &amp; Business Incubators (e.g. SC IPA SA - CIFATT Craiova, CETI-ITA UPB Electronic Centre Bucharest)</li> <li>• Over 50 Business Innovation Centres – initiated and funded by MER as ‘Business Incubators centres’ and subsequently widened based on private funding in support of regional development.</li> </ul>
Boosting applied research and product development	<ul style="list-style-type: none"> <li>• National Agency for Scientific Research (Ministry of Education and Research)</li> <li>• Romanian Academy</li> </ul>	<ul style="list-style-type: none"> <li>• 34 National R&amp;D Institutes in 15 research fields co-ordinated by eight ministries. About 72% of the R&amp;D organisations are specialised in technological research in nearly all the processing industries, while about 28% are specialised in scientific research.</li> <li>• 227 public research institutions, subordinated to MER, other ministries, the Romanian Academy and the Academy for Agricultural and Forestry Sciences</li> <li>• 15 R&amp;D institutes operating on the basis of the Government Decision 100/1991 which are in a re-organising process according to the legal norms in force;</li> <li>• 310 joint-stock public or private companies having R&amp;D as main object of activity</li> </ul>

Source: Study team based on national/regional policy documents, TrendChart reports, OECD reports, etc. See appendix C for a detailed definition of the policy categories.



**Cluj county** is part of the North West Region while **Hunedoara county** is included in the West Region. Both regions are characterised by a relatively good innovation and knowledge potential and a more dynamic economic sector than the other regions except Bucharest region. The regional contribution to national GDP in 2002 was 12% for the North West and 10% for the West Region. Moreover, the North West regional indicator has improved since 2004 when high FDI-driven growth in Cluj County started to boost the regional economy. After Bucharest-Ilfov, the West Region is leading in terms of attracting FDI. The North-West Region has increased the rate of attracting FDI over the past three years. The number of SMEs per capita is above the Romanian average in both regions and the value of this indicator has increased over the period 1998-2003.

The economic structure of these two regional economies is dominated by Machinery and Electrical equipments; Chemical industry; Wood and furniture industry; ICT; Food industry and Textile industry. Steel industry is present in the West Region in the less developed counties. However, the service sector provides a higher contribution to regional GDP than the industrial sector. The population engaged in agriculture is higher in the North West than in the West Region.

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Besides Bucharest, Cluj-Napoca and Timisoara are the main university centres in Romania and the major knowledge cities in North-West and West Regions, respectively. The regions are characterised by the second largest graduates supply after Bucharest, with an important number of well-qualified S&E graduates, particularly from the Timisoara and Cluj university centres. This group of regions has an important number of research institutions and very good quality of human capital. While the collaboration between academia and business works well in Cluj-Napoca and Timisoara with foreign companies, the same does not apply for domestic SMEs. Both Timisoara and Cluj-Napoca University towns are currently hosting IT clusters, and a solar energy cluster is about to be created in Cluj-Napoca.

In terms of innovation and knowledge infrastructure, the regions lag behind Bucharest in terms of Business Incubators and Science and Technology Parks. While the number of industrial parks increased, S&T Parks are in an incipient phase. This group of regions has a relatively high potential for R&D and innovation in the Romanian context.

While West and North West regions have similarities concerning innovation statistical indicators, between Hunedoara and Cluj counties there is large gap in terms of innovation system.

Cluj county hosts the oldest and one of the most famous university in Romania. Moreover, R&D has a large tradition. On the other hand, Huendoara county lacks of university and R&D tradition. Moreover, the lack of S&T intermediaries and has also an influence of a lack of SME R&D activities. Therefore this report focuses mainly on Cluj county while in Hunedoara county will be organised seminars in a second half period of the project in order to disseminate the results and increase the awareness fro R&D.

### ***National Policy mix assessment***

This section provides a summary overview and analysis of the national and regional policy mix in favour of innovation and knowledge in which the Structural Fund interventions take place. The analysis is conducted with respect to seven broad categories of objectives of innovation and knowledge policies (see appendix C for an explanation of each category).

Measures identified per category of the policy objectives are then further sub-divided in terms of the direct beneficiaries of funding (or legislative) action. To simplify, the report adopts three broad types of organisation as targets of policy intervention:

- Policies supporting academic and non-profit knowledge creating institutions;
- Policies supporting intermediary/bridging organisations involved in innovation support, technology transfer, innovation finance, etc.;
- Policies supporting directly innovation activities in private sector.

The matrix below summarises the current policy mix in at national level. A simplified coding system is used with intensity of support (financial or political priority) for different policy areas and targets indicated by a colour coding system.

## Exhibit 1: Policy mix for innovation and knowledge

Policy objectives	Target of policy action		
	Academic /non-profit knowledge institutions	Intermediaries/bridging organisations	Private enterprises
Improving governance of innovation and knowledge policies			
Innovation friendly environment			
Knowledge transfer and technology diffusion to enterprises			
Innovation poles and clusters			
Support to creation and growth of innovative enterprises			
Boosting applied research and product development			

Legend:

Top policy priority	Secondary priority	Low priority
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Source: calculations of study team based on national/regional policy documents, TrendChart reports, OECD reports, etc.

### Improving governance of innovation and knowledge policies.

The only policy objective identified within this area is the “Strengthening the Institutional Capacity “of the public institutions which have a role in designing and implementing the R&D and innovation policy. This objective is clearly mentioned in Chapter 6 dedicated to R&D and Innovation policy within the **Government Programme 2005-2008**. At the regional level there are not any policy objectives linked with this area due to the lack of understanding of regional politicians of R&D and innovation policy.

Hence, the National Agency for Scientific Research (Ministry of Education and Research) appointed a consortium in order to elaborate the **National Strategy for R&D and Innovation over the period 2007-2013** which is expected to be ready by the end of 2006. On the other hand, the West Regional Development Agency has already elaborated a Regional Innovation Strategy (RIS). However, there are no budgetary means available to finance the measure identified in the strategy. The RIS for the other regions with the exception of Centre and South-West regions are currently in the process of elaboration. The National Strategy for R&D and Innovation should become, if well elaborated, a very useful document for measure identification. The financing priorities in the Operational Programmes for the period 2007-2013 are already identified. However, it seems that the measures and priorities are identified before the elaboration of the strategy, which is a contradictory process.

## **Innovation friendly environment**

The main policy objective in this policy area is the *encouragement of the private sector involvement in R&D*. This objective is included in the 2005-2008 Government programme, and several measures have been defined to this purpose, such as:

- Implementation of co-operation mechanisms between regional technology transfer centres, entrepreneurial management centres and business incubators to facilitate the dissemination of information on research and innovation and the technological transfer to economy, especially to SMEs;
- Implementation of a programme for the development of a National Risk Capital Fund for R&D and Innovation. The fund will be initially based on state capital from the state and will be further developed with private funds;
- Evaluation of private sector RDI needs in order to facilitate thematic planning at national level;
- Consideration of RDI expenditure as fiscally deductible expenditure.

However, very little progress has been marked towards the implementation of these measures and in the overall business environment, there are few actions that contribute to improving the innovation friendly environment.

The 2005-2008 “Research of Excellence” Programme adopted in May 2005 by MER aims at supporting collaboration between R&D units, universities and firms, especially on “Human resources development for training, mobility of researchers and increasing attractiveness of research carriers”. Moreover, two other programmes of the National RDI Plan, i.e. CALIST National Programme for Quality and Standardisation (Services) and INFRAS National Programme aim to consolidate the standardisation and quality infrastructures (Infrastructures). ICT diffusion is promoted through several projects monitored by the Ministry of Communications and Information Technology, especially in the area of e-government. Advanced e-business and e-government applications are developed through the “Knowledge-Based Economy” project financed by the World Bank loan.

The Multi-annual funding programmes for SMEs 2002-2005 provide a general framework for several entrepreneurship and enterprise creation promotion programmes (not innovation related), namely targeting young people and SMEs and micro-enterprises. PHARE project 'Support Services for Business Development' launched on 24 October 2005 aims to facilitate access for Romanian SMEs to consultancy services in order to help them increase their competitiveness in view of the country's accession to the EU.

## **Knowledge transfer and technology diffusion to enterprises**

The main policy focus within this policy area is *to stimulate the technology transfer from public and academic R&D centres towards enterprises*. The objective was also included in the 2005-2008 Government Programme and several measures have been defined for its implementation, including:

- Evaluation of economic strengths and weaknesses based on a competitive advantage model, in order to define basic and applied research priorities. In this respect, RDI project assessment will take into account the development of regional industrial clusters and development needs;
- Correlation of Romania's RDI policy with industrial policy;
- Setting up a national network for the dissemination of RDI results and stimulation of technology transfer. In a first stage, regional centres of technology transfer in

the private sector (through NGOs) will be created, followed, in a second stage, by technology transfer centres within Universities, subject to the structure of non-profit organizations;

- Implementation of an advanced technologies programme, to encourage research and technology transfer in the respective areas and to increase their international competitiveness;
- Diversification of RDI funding mechanisms, by setting up a special National Fund for RDI credit guarantee, and an investment fund for R&D oriented SMEs.
- Setting up S&T Parks in traditional University centres with R&D infrastructure

The main funding instrument in this area is MER's INFRA TECH Programme for the development of innovation and technology transfer infrastructure approved in February 2004. It consists of two sub-programmes: one for the development of technology transfer centres, technology information centres, Industry Liaison Offices, etc. and another one for the development of S&T Parks and Technology and Business incubators. In addition, the Industrial and Software Parks Programme (2002-2005) led to the creation of five Industrial and Software Parks. The programme is an attempt to stimulate regional and local development by attracting companies able to generate high added value involved in software development products. However, the programme had a limited impact in achieving its objectives.

### **Innovation poles and clusters**

The main policy objective within this policy area is also *the stimulation of technology transfer*, having as main policy measure the evaluation of the existence and evolution of industrial clusters, as well as of their development needs. Another policy measure, under the policy objective *Strengthening the Institutional Capacity Building*, is the creation of consortia between university/research institutions and private companies, which is addressed in MER's recent programme Excellence Research.

### **Support to creation and growth of innovative enterprises**

This objective is addressed by the National Agency for SMEs and Co-operation, which provides funding for SMEs' investments in priority sectors through the National Programme 2002-2004 for supporting investment realised by start-ups and SMEs investment in new technologies. However, the programme does not focus exclusively on innovative companies. TransIno Programme provides technical assistance for development of innovative companies and training for the creators of "innovative companies". Infratech programme also provides funding for the creation of business incubators.

### **Boosting applied research and product development**

Another policy measure, under the policy objective *Strengthening the Institutional Capacity Building*, is the creation of consortia between university/research institutions and private companies. This policy measure can be seen as a way of boosting applied research and product development. The funding for this policy area is ensured through the programme Excellence Research. The National RDI Plan, launched in 1997 and extended until 2006, includes 14 programmes of which several technology programmes in key technology areas. To that can be added the new "SECURITY Research, techniques and security and defence systems" Programme. Moreover, the "Sectoral R&D Programmes",

launched at the end of 2003 are complementing the National RDI Plan with the purpose to support RDI objectives related to the development of sectoral technologies and are managed by different ministries such as Ministry of Economy and Commerce. The CORINT National RDI Programme aims to boost the Co-operation and International Partnership and the participation within FP6.

### ***The regional and local authorities in Romania***

The highest regional public administration is the county council which has a directly elected council and a president elected among the councillors. Romania has 41 counties plus the Bucharest municipality. Moreover, Romanian has eight development regions without any administrative power and are associations of several counties.

The county council has among other responsibilities the socio economic development of the county. It is also responsible for the elaboration of the county development plan. It has not special responsibility for innovation and generally lacks of innovation knowledge. The regional development agencies are involved in the elaboration of the regional development plan and were involved in managing Phare grant schemes and national funds programmes. The West Regional Development Agency was the first in Romania to elaborate the Regional Innovation Strategy. However, the measures identified were not linked with any financing schemes. On the other hand, North West Regional Development Agency has recently started the initiative of developing a RIS.

The legislative and budgetary powers related to innovation remains at the national level.

Table 1. Main organisations of the regional innovation system

<i>Type of organisation</i>	<i>Name of organisation</i>
Universities and other higher education institutions	Technical University Cluj-Napoca ( UT) <a href="http://www.utcluj.ro">www.utcluj.ro</a>
	Babes-Bolyai University Cluj Napoca ( UBB) <a href="http://www.ubbcluj.ro">www.ubbcluj.ro</a>
	Iuliu Hatieganu Medicine and Pharmacy University Cluj-Napoca ( UMF) <a href="http://www.umfcluj.ro">www.umfcluj.ro</a>
	University of Agriculture Sciences and Veterinary Medicine Cluj-Napoca ( UASVM) <a href="http://www.usamvcluj.ro">www.usamvcluj.ro</a>
	University of Art and Design (UAD) <a href="http://www.uartdcluj.ro">http://www.uartdcluj.ro</a>
Public and private research institutes/laboratories	National Institute for Research & Development in Construction and Economy of Construction CLUJ-NAPOCA BRANCH ( <b>INCERC</b> )

	<a href="http://www.incerc-cluj.ro">www.incerc-cluj.ro</a> Institute of Research, Design and Production in Construction ( Procema) <a href="http://www.procema.ro/cd.htm">http://www.procema.ro/cd.htm</a>
	National Institute for Research & Development of Isotopic and Molecular Technologies CLUJ-NAPOCA Branch ( ITIM) <a href="http://www.itim-cj.ro/">http://www.itim-cj.ro/</a>
	Forestry Research Institute ( ICAS) <a href="http://www.icas.ro/">http://www.icas.ro/</a>
	IPA R&D Institute for Scientific Research and Technological Engineering for Automation Cluj-Napoca Branch ( IPA) <a href="http://www.automation.ro">www.automation.ro</a>
	Chemistry Institute “Ralula Ripan” Cluj-Napoca Romanian Academy Institute (Raluca Ripan) <a href="http://www.maxpages.com/instdechimie">www.maxpages.com/instdechimie</a>
	Analytical Instrumentation Research Institute (ICIA) <a href="http://www.icia.ro">http://www.icia.ro</a>
	Institute of Biological Research (ICB) <a href="http://www.icb.dntcj.ro">http://www.icb.dntcj.ro</a>
	Research and production Institute for Food Industry ICPIAF <a href="http://www.icpiaf.ro/">http://www.icpiaf.ro/</a>
S&T intermediaries between research and business	Centre for Science Research, Technological Transfer and Inventions Technical University Cluj-Napoca ( <b>CCSTTII</b> ) <a href="http://www.utcluj.ro/cercetare/ccsttii.php">http://www.utcluj.ro/cercetare/ccsttii.php</a>
	Centre for Technology Transfer Babes-Bolyai University Cluj Napoca ( <b>BABES</b> ) <a href="http://cttc.ubbcluj.ro">http://cttc.ubbcluj.ro</a>
	Technology Transfer Centre CTT IPA CIFATT Cluj-

	Napoca <a href="http://www.automation.ro">www.automation.ro</a>
	Technology Transfer Centre CENTI Cluj-Napoca <a href="http://www.icia.ro">http://www.icia.ro</a>
	Innovation House- EWE <a href="http://www.e-w-e.com">www.e-w-e.com</a>
	Innovation Relay Centre Cluj-Napoca IRE <a href="http://e-cat.ro/irc/">http://e-cat.ro/irc/</a>
Networks of organisations active in the field of research, technology and innovation	ARIES Cluster IT Cluster Cluj <a href="http://www.transylvaniaccluster.com">http://www.transylvaniaccluster.com</a>
	Solar Energy Cluster Cluj <a href="http://www.contherm.ro">www.contherm.ro</a>
Chambers of commerce, industry and associations	Cluj County Council EU Office <a href="http://www.cjcluj.ro/bruxelles">www.cjcluj.ro/bruxelles</a>
	Regional Development Agency (ADR) <a href="http://www.nord-vest.ro">www.nord-vest.ro</a>
	Cluj Chamber of Commerce <a href="http://www.ccicj.ro">http://www.ccicj.ro</a>

**The Technical University Cluj-Napoca.** The history of technical higher education in Cluj Napoca goes back to the beginning of the previous century. The unification of the Romanian provinces into a single state, on December 1 st 1918, opened new perspectives for education. On February 1 st 1920 the Industrial College was founded in Cluj-Napoca. The new education institution passed afterwards through a series of transformations, becoming the College for Technical Conductors in 1922. It was the only college with a major in electrical engineering in the country and the forerunner of the Cluj Polytechnic Institute. Another technical college founded in 1920 was The College for Conductors of Public Works, specializing in roads and bridges, forerunner of the Faculty of Civil Engineering. In 1937, the College for Technical Conductors, which had an excellent reputation within Romanian industry, was reorganized as The Electromechanical College. Nowadays the Technical University of Cluj-Napoca trains specialists in the technical field (mechanical, electrical and civil engineering as well as architecture) through long and

short term education programmes, postgraduate and PhD studies. It has over 12,000 students.

Scientific research has been an essential preoccupation of the academic and research staff of the TUCN. The scientific potential of the University made it capable of organizing a series of outstanding scientific events attended by a large number of Romanian and foreign specialists. The practical results of the research activity are reflected in numerous contracts and projects with domestic and international financing. The most important projects are those with CNCSIS, ANSTI, and PNCDI as well as those financed by the European Union Commission: EUREKA, COPERNICUS, COST, PC5 and PC6.

The University's correlation to European standards is reflected by the international conventions it is part of and by its participation in a wide range of European education programs: TEMPUS-PHARE, SOCRATES, ERASMUS, LEONARDO, CEEPUS. A series of international conventions, agreements and protocols were signed with universities from France, Italy, Germany, the USA, Austria etc. Since 2003 TUCN has been a member of the European Association of Universities.

Nowadays the Technical University of Cluj-Napoca is a modern technical higher education institution, passing through a period of genuine rebirth and confirming authentic capabilities for scientific and technical creation.

In the Technical University of Cluj-Napoca, Research is carried out by academic staff, Ph.D. students and undergraduates/graduates in the laboratories belonging to various departments or faculties.

The department that manages the current research activities is called The Centre of Scientific Research, Technological Transfer and Invention Implementation, in short CCSTTII. The center is directly subordinated to the top management of the university.

CCSTTII is in direct relations with the departments, deans' offices and other departments in the university, the ministry of Education and Research ? MEdC, The Academy of Romania, The National Council for Scientific Research in Higher Education? CNCSIS, The National Council for the Financing of Higher Education? CNFIS, The Executive Unit for the Financing of Higher Education and University Scientific Research ? UEFISCSU as well as other national and foreign bodies and organizations of the kind.

CCSTTII informs on and gives expert consultation in so far national competitions for grants and national research programmes are concerned, makes analysis and reports on own university research, makes proposals for strategies related to research development in the university, deals with the current financial management of the research, development, projects, consultancy and expert reporting programmes (in cooperation with the Finance-accounting department).

Beginning with 2001, CCSTTII makes the internal audit and evaluation of the research carried out in each department, using internationally accepted criteria and scores.

The technological transfer is another activity where CCSTTII has developed the following actions:

- the university involvement in European funding projects for regional and county level development strategy coordination, mainly in view of promoting those measures the could help institutions and counties evolve (see the strategy of development for the North - West region of Romania, the development strategy for the Bistrita-Nasaud county etc.);
- training staff in technological transfer issues, within a two-year project coordinated by the British Council, at the end of the project, foreign experts

evaluated The Technical University of Cluj-Napoca as situated on the first place in so far institutionalization of research and technological transfer activities were concerned;

- the commitment as a founding member to the activity of the Board of The Romanian Association for Knowledge Transfer, located in Bucharest;
- the setting up of a virtual network for improvement and technological transfer with four partners from the North ? Western region of Romania. The network is called CERT, it will be fully operational by July 2004, will own a portal for facilitating the communication with business partners concerning training, consultancy, expert reporting, applied research etc. The network was set up with Phare-origin funding support;
- the setting up of the Romanian Association for knowledge transfer, made up of over 20 members, universities and government agencies, by May 2004 where The TUCN will be a board member.
- initiatives and commitments to industrial and technological parks, such as the ones in Zalau, Campia Turzii, Bistrita);
- the project for scientific technological transfer efficient development strategy for the following four years (this project that can be seen on the TUCN web page has already been started); the project contains 18 major actions aiming at improving communication and information between the university and the business environment, increasing the capability of the university of reaching and making use of European funds in the technological transfer field, facilitating straightforward contacts among researchers and the business environment etc.

In conclusion, CCSTTII offers support for the constant development of research activities in our university while taking care of the efficient allocation of existing human and material resources.

**“Babes-Bolyai” University, Cluj-Napoca.** The Cluj University lays on the foundation of a long evolution of the attempts to establishes a site for higher education studies in Transylvania an attractive area for the Western Europeans and an arena of religious and, later on, political fights, related to the history of our continent. This evolution begins with the intention of the prince Ioan Sigismund to set up in 1567 an academy of studies in Sebes (Alba), but it is firstly materialised through the initiative of Stefan Bathory to lay the foundations, following the establishment of universities in Bratislava, Buda and Târnovo, of a college in Cluj, in 1581, under the control of the Jesuits and having the Italian Antonio Possevino and rector. This college was later closed down, and the protestants and the Unitarians set the bases of other colleges, in 1692 Gabriel Bethlen established the Calvinist college in Alba Iulia, with theology, philosophy and language studies, this college being headed by Alstedt. The Catholics took the initiative again and established, in 1688, an academy in Cluj under the control of the Jesuits. In an effort of confessional reconciliation, in 1776, Empress Maria Tereza founded a university in German in Cluj. But this enterprise was not to survive long wither, Joseph II replacing the university with the famous Piarist Highschool, where the teaching was done in Latin.

In the context of the 1848 change, the issue of setting up a university in the national language was explicitly raised. The Romanians, the majority population in Transylvania, asked for a university in Romanian. Among the then Hungarian leaders, the minister Eotvos suggested in 1868 the creation in Cluj of a university in which the teaching was to

be in Hungarian, Romanian and German, and a part of the Romanian elite supported the proposal. But, in 1872, the authorities established the University of Cluj exclusively in Hungarian, which caused the discontent of the Romanian majority. At the end of World War I, against the background of the Great Unification, the Cluj University, just like the universalities in Strasbourg and Bratislava, was taken over by the state authorities, becoming an institution of completed Romanian. On May 12, 1919, the Romanian University of Cluj was set up, whose courses were inaugurated on November 3, 1919, by Vasile Pârvan with a lecture entitled "The Duty of Our Life", King Ferdinand I solemnly proclaiming the university on February 1, 1920. The new university was set by the king of Romania under the motto that once, imprinted in marble, guarded the entrance in the central building: "dedicated to truth, through justice -the only elements leading to the agreement among the different peoples of the world this site of great culture will be useful to the people and to humanity, honouring itself and honouring us as well through its scientific work".

In 1940, as a result of the territorial revision imposed by the then Germany and Italy, the Romanian university was moved to Sibiu and Timisoara, and the Hungarian university was brought from Szeged to Cluj. After World War II, once the Vienna Dictate was abrogated, the Romanian university returned to Cluj and took the name of "Babes". In 1945 the Romanian authorities established in Cluj the Hungarian university named "Bolyai". The two universities were reunited in 1956 under the name Babes-Bolyai University, where the teaching was being done in Romanian and Hungarian. Subsequently, under the Ceausescu regime, the studies in Hungarian were gradually reduced.

In December 1989, in Babes-Bolyai University there was a very active movement of young students and academic staff with the purpose of recovering the professional and democratic tradition of the university and to reform the institution. The starting point of the new dynamics of the university was represented by the proclamation "For a New University of Dacia Superior" and the subsequent active action of many Romanian, Hungarian, German, Jewish academics, dominated by the preoccupation to re-establish the prevalence of professionalism in the university and to integrate it in the world of the free world values.

The development to the Cluj University can be illustrated by a few synthetic data of its evolution taking into account the years 1938, 1970, 1989, 1992, and 1999. In 1938, the Cluj University had 3094 students in four faculties, trained by 115 members of the academic staff (4 honorary professors, 84 full-time professors, 29 associated professors, senior lecturers, assistants) and 245 lecturers, and teaching assistants. Up to that point, the Central University Library, Academic College, the University Office, the Publishing Office, the University extension, the Institute for Experimental Psychology, the Sports Park and other units had been organised. In 1971, Babes-Bolyai University reached the maximum figure of its post-war development, having 14438 students in 8 faculties, taking 36 specialisations under the guidance of 648 members of the academic staff. Meanwhile, the university built the dormitories in the Hasdeu Complex. After 1971, as a result of the erroneous university policy of the Ceausescu regime, Babes-Bolyai University was dramatically reduced. In 1989 the number of students in our university dropped to 5940 taking courses in 7 faculties with 19 specialisations under the supervision of 626 academic staff members. In 1992, Babes-Bolyai University recreated the structure of specialisations it had during its peak previous development. The number of students reached 12247, studying in 11

faculties and 55 specialisations, being assisted by 826 academic staff members. Since 1993, the most comprehensive and the strongest development in the history of the Cluj University was recorded. Our university is now the most diversified (in terms of specialisations) and the most complex higher education institution in Romania. In 1996 the building of the new campus started, and in 199 the building of the new complex of student dorms of our university was begun. In 2004 Babes-Bolyai University reached the greatest development in its entire history.

The above-mentioned development has gone through many crucially important decisions and radically new initiatives regarding the organisation of studies, the development of scientific research, the extension of the community services offered, the modernising of the infrastructure, the creation of the modern communication network, the involvement of Babes-Bolyai University in the democratisation and the transition of Romania. The decisions of transforming Babes-Bolyai University in a prestigious university of Central and Eastern Europe (1994), of intellectual, civic, and moral commitment to the democratisation of Romania and Euro-Atlantic integration (1993), of massively expanding the infrastructure investments (1996), of reorganisation according of a multilingual and multicultural profile (1995), of transforming it into a relevant institution of the international system of universities (2000), of confronting the conditions of globalisation with new initiatives (2003) have been among the crucially important decisions for the current profiling of Babes-Bolyai University.

**The University of Medicine and Pharmacy ‘Iuliu Hatieganu’** is an institution with a long history but its modern roots can be found in the Faculty of Medicine established in 1919. It is one of the top universities in Romania, because of its innovative spirit, cultivation of excellency and active social life implication. It has 3 faculties, 10 research centers, 680 employees involved in the learning process and over 12 000 students.

The history of the **University of Agricultural Sciences and Veterinary Medicine**, Cluj Napoca began in October 1869 when, on the former domain of Manastur, was founded one of the oldest higher schools specialized in agriculture in Europe. In 1906, the Institute reached the level of Academy, becoming the Academy of Agriculture, Cluj. At present, there are four faculties, each of them providing long and short-term academic studies, Master and PhD studies. The search for excellence inscribed in the mission of UASVM, Cluj Napoca, also contains research activity which, in order to become competitive, started to be organized in powerful research centers meant to polarize and attract internal and international financing. Presently, 6 research centers have already been created. Some of them have accreditation from CNCISIS, others aspire for affirmation and participation in the training programs of multinational corporations in order to use the community programs for the integration in the European Research Area (ERA).

**The Univesity of Art and Design Cluj** began as the first Art School in Romania in 1781. UAD has a strong teaching staff benefiting from young artists of national and international renown. It holds 4 faculties which are institutions of higher education accredited by the European Accreditation Board of Higher Education Schools (EABHES). Since 2001 the ‘Creative Explorations in Art and Design’ Research Center has been functioning at the UAD. In 2003 was conferred the title *Centre of Excellence* in Artistic Creation.

**Research, Design and Experimental Production Institute in the Field of Construction and Building Materials PROCEMA S.A. Company** is one of the reference Romanian producers and distributors in the field of shaped or unshaped structural steel, of metallic cages and of welded meshes. The Research, Design and Experimental Production Institute in the Field of Construction and Building Materials is a fully private capital joint-stock company. PROCEMA has offered solutions to the Romanian economy as early as 1949, when the Research, Design and Experimental Production Institute in the Field of Construction and Building Materials was set up. The professionalism of the services and of the products of our company is attested by an experience of over 55 years in the field of construction and building materials. The thorough checking of the products by lots and orders is carried out in our own laboratory, an accredited testing laboratory for building materials and products as per SR EN ISO/CEI 17025:2001.

**Forest Research and Management Institute (ICAS)** was founded in 1933, as a public institution of national concern, specialized in research work and implementation new technologies in the public and private forestry sectors, in order to assure sustainable management of Romanian forest.

ICAS is member of IUFRO (International Union of Forest Research Organizations), EFI (European Forest Institute), IPGRI (International Plant Genetic Resources Institute), ISTA (International Seed Testing Association) and EARSeL (European Association of Remote Sensing Laboratories).

**IPA Cluj-Napoca** was founded in 1976 within IPA Bucuresti (R&D Institute for Scientific Research and Technological Engineering for Automation). It is divided in two departments:

- Research, development and technological transfer center (CIFATT) founded in 1994
- Educational center based on virtual enterprise concept (CEFOR) founded in 2001

Human Resources : 26 PhD engineers/Master engineers, 6 PhD students, 3 economical department employees, 2 production engineers.

**Raluca Ripan Chemistry Institute of Cluj Napoca** was founded in 1951 by the Romanian Academy and is a prestigious research unit from our country that undergoes fundamental research and applicative in the organic, anorganic and analytical chemistry domain.

**The Institute of Biological Research in Cluj-Napoca** was founded in 1958 as Biological Research Centre, part of the research network of the Romanian Academy of Sciences. Its leadership and first director was prof. dr. Emil Pop, member of the Romanian Academy of Sciences. At present, the Institute of Biological Research in Cluj-Napoca, branch of the National Institute of Biological Sciences, is part of the Romanian Agency for Science, Technology and Innovation under the patronage of the Ministry of National Education. There are 60 researchers and the field of activity is basic research of plant and animal taxonomy, ecology and physiology. **Research interest in key words:** Aquaculture, Biochemistry, Biological resources, Biotechnology, Botany, Cell biology, Microbiology, Physiology, Zoology, Biodiversity, Conservation, Ecology, Ecosystems, Ecotoxicology, Environmental monitoring, Impact assessment, Radiation protection.

Established in 1974 as **The Institute for Research and Production for Food and Refrigerant Industry, ICPIAF** has developed continuously. Now a private company with over 30 years of experience in research, design and production offers complete and modern solutions for all the applications in its domain. Hitech solutions and quality management guaranteed by the ISO 9001 standard is just a part of what the company has to offer.

**TRANSYLVANIA Cluster** is a group of highly specialized suppliers and service providers of Internet Technology & Communications (IT&C) solutions that cooperate to offer you a wide range of skills and more brain power to meet your needs. They have established this cluster in response to the ever-increasing demand for software outsourcing on a large scale. With over 460 experts, Transylvania Cluster is a player worthy of your attention. And this is only the beginning, as they are planning to attract other important providers of software outsourcing located in Transylvania. Its mission: to become the premier East European provider of all-inclusive software outsourcing services.

The Cluj-Napoca of the National Institute for Research & Development in Construction and Economy of Construction (**INCERC**), like the central organisation from Bucharest and the other branches, is one of the largest centres for the generation, cultivation and promotion of the science and technology of construction in Romania. The institute is functioning under the authority of the Romanian Ministry of Public Works, Transportation and Housing

**INCERC** Cluj-Napoca assists the partners from the sector of construction and from the building materials industry to implement in useful time the most adequate solutions in the problems generated by the building materials, urban and rural housing, energy conservation and environment protection, conservation of the historical heritage, structural safety and soil mechanics.

**INCERC** Cluj-Napoca has an authorised national laboratory of grade I (the highest rank in the hierarchy of the testing and research laboratories in Romania) and is the most important consulting centre within the region. The branch has implemented the quality system according to SR EN ISO 9001.

The branch from Cluj-Napoca is an active centre for the harmonisation of the Romanian technical legislation in construction with the European one, and promotes the Romanian engineering creation in the entire world. The branch develops integrated R&D programs, cooperating with universities (it has a traditional partnership with Technical University of Cluj-Napoca), professional associations and other institutes. Since 2002, it is co-organiser of the international conference "Bearing Historical Structures and Calamities", beside Transylvania Trust Foundation, Technical University of Cluj-Napoca, The Association of the Restorers of Historical Monuments from Transylvania and Minister of Culture and Cults.

The Technology Transfer Centre –**CENTI**– was accredited by the National Authority for Scientific Research in 2005 and it desires to represent an ideal partner so as:

- To identify, for builders and economic agents, the market requirements regarding the technologies, services and products in the fields of environmental protection and instrumentation for assessing and monitoring environmental factors;
- To identify the market requirements for the medical instrumentation constructors, to make market and feasibility studies, that will lead to the implementation of the

instrumentation which is truly needed and will induce a real and significant turnover increase;

- To provide technology transfer assistance in the field of biofuel production and installations
- To provide the producer- designer connexion, in order to elaborate some technologies and systems as well as to draw up and construct some equipments for diversifying and increasing the volume and quality of the agricultural and food production
- To help the SMEs in accessing national and international funds through specific programmes

The Centre for Technology Transfer and Office for Collaboration with HE Institutions and the Economic Environment Babes-Bolyai University Cluj Napoca (**BABES**) is a unit of the Babes-Bolyai University and focuses mainly on awareness raising activities for enterprises and for the scientific community, coordinating and disseminating information on available S&T services for companies, IPr and Assistance in accessing public funding for RTDI activities

The Centre for Science Research, Technological Transfer and Inventions ( **CCSTTI**) is also an university subunit (Technical University Cluj-Napoca).Its mission is :

- To perform scientific and technological consultancy and expertise in microengineering for industry, SME's, NTBFs and R&D centre
- To perform technological transfer toward SME's (included R&D results obtained in national R&D projects)
- To help SME's and NTBFs to develop its own R&D activity and to support them in participating to the national and international R&D contests (by consulting and/or partnership) in the focused domain
- To enlarge technological development (including technological compatibility techniques), expertise and manufacturing
- To support spin-off activities in the microengineering domain
- To encourage specialized studies for students, PhD students, postdoctoral studies in the focused domain
- To identify the industrial market requirements for technologies, services and devices in microengineering domain
- To implement and develop a specific marketing activity for R&D in high-tech domain

The National Institute for Research & Development of Isotopic and Molecular Technologies CLUJ-NAPOCA BRANCH ( **ITIM** ) is structured in six research laboratories, a prototype workshop and an administration department.

The main research domain concerns the stable isotope physics: isotopic effects, separations, stable isotope applications in biology, geology, ecology, etc., molecular physics and biophysics.

The Cluj County Chamber of Commerce ( **CCI-CJ** ) is a non-governmental self-sustaining organization which supports the business community's interests and mostly of its members in the dialogue with the national authorities and international organizations. The CCIR acts to create a steady coherent business environment favorable to the development of the private sector in Romania, as well as to create a real market economy open towards the foreign markets and companies. **CCI-CJ** is supporting the business

community also by providing business services such as: organizing economic missions, training programs, seminars or debates, providing valuable information from its databases and detecting business opportunities. In the context of the Romania's integration in the European structures, the National Chamber has begun a campaign of preparing the business environment for adopting the EU norms.

**IRE- Transylvania Business Center CAT** was founded in September 1992 to create a unique NGO/NPO business center for the membership of the area of Transylvania. It has the requested capacity to serve the local clients, particularly SMEs in technology transfer, exploitation of RTD and innovation. However, they lack in knowledge and specialized personnel.

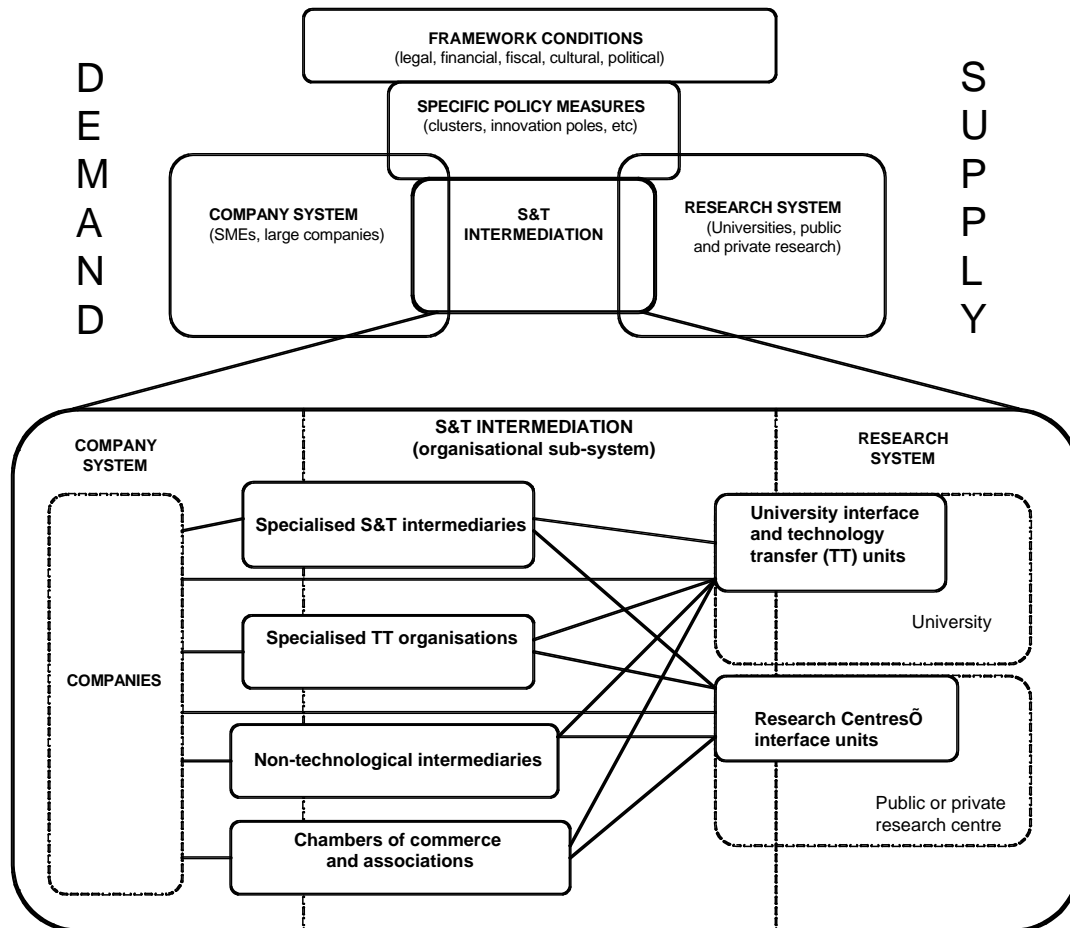
**North West Regional Development Agency (ADR-NV)** is determined to develop and promote the region as a whole, nationally and internationally. ADR N-V will contribute to the sustainable development and prosperity of the Region by encouraging investments, participating in the industrial restructuring process and creating new jobs. Together with other regional actors, RDA West will draft a number of strategic planning documents which will help achieve the social and economic cohesion objectives. It is a non-governmental, non-profit public-use agency. It is part of a configuration of regional and national financial instruments and bodies described in [Law 315/ 2004](#), modified and completed by [OUG 111/ 2004](#) as a national system for regional development, initiated in order to grant Romania a better absorption capacity for pre-accession funds.

The main objectives: managing development funds allocated by the EU to the NW Region; strategic programming of the region's economic and social development, in partnership with local actors; promoting cooperation and information/competency transfer between business, science, and technology units that would contribute to developing the region; coordinating agency intra- and inter-regional partnerships as well as international relationships; promoting the North-West Region nationally and internationally; and participating in projects with a major impact on the regional development.

**Solar Energy Cluster** is an initiative of the Contherm which is a Romanian company which produces Solar Panel. They are in discussion with the Faculty of Physics in Cluj and the The National Institute for Research & Development of Isotopic and Molecular Technologies.

**Innovation House** is an initiative of EWE in order to create a network of major Innovation and R&D stakeholders in Cluj and Hunedoara. Innovation House also will deliver specialised services in IPR, Licencing, support for innovative companies and new product and services development.

Exhibit 1. S&T intermediation in the wider regional innovation system



The Regional Innovation system of the Cluj County is one of the most developed in Romania with a long tradition of university research. However, there is a need for more S&T Intermediaries and increasing the variety of services offered as well as better networks among the current organisation. Therefore, EWE is launching the Innovation House which is a concept for boosting collaboration between innovation stakeholders and increasing the awareness of Technology Transfer. Moreover, the Regional Innovation Strategy is under the elaboration by the Regional Development Agency.

## 2. Profile of S&T intermediaries

### 2.1. General information

#### 2.1.1. Status of S&T intermediaries

The organisations described in the above table have been interviewed. The research activities are mainly organised in universities and research institutes. The technology transfer centres are based either in universities or in research centres. S&T intermediation is not the main activity of any of the organisations interviewed. It

should be notice that the concept of the Innovation House which is current under launch has as aim to bring together the S-T intermediaries and SMES under the same network.

### 2.1.2. Sectors and research areas covered by S&T intermediaries

There are S&T intermediaries which cover several fields such as unites of Technical University and Babes-Bolyai University and other which cover only one field as National Institute for Research & Development in Construction and Economy of Construction.

Research covers a very large area i.e. Chemistry; mechanical engineering; optics; biotechnology; informatics; logistics; medicine; robotics; ICT; food processing; metrology; construction; advanced materials; industrial design; transport equipment; mechanics; energy; nanotechnology; agriculture and wood processing.

**Table .** Sectors and research areas covered by intermediaries

<i>no specialisation</i>	3	electronics	1,2	textiles	
chemistry	1,2	mechanical engineering	2	optics	1
biotechnology	1,2	informatics	1,2	logistics	
medicine	1	robotics	1,2	ICT	1,2
food processing	2	metrology	2	construction	2,4
advanced materials	2	industrial design	2	transport equipment	2
mechanics	2	wood processing		energy	1,2
nanotechnology	1,2	agriculture		other, specify please	2 (environmental technology),5 regional development

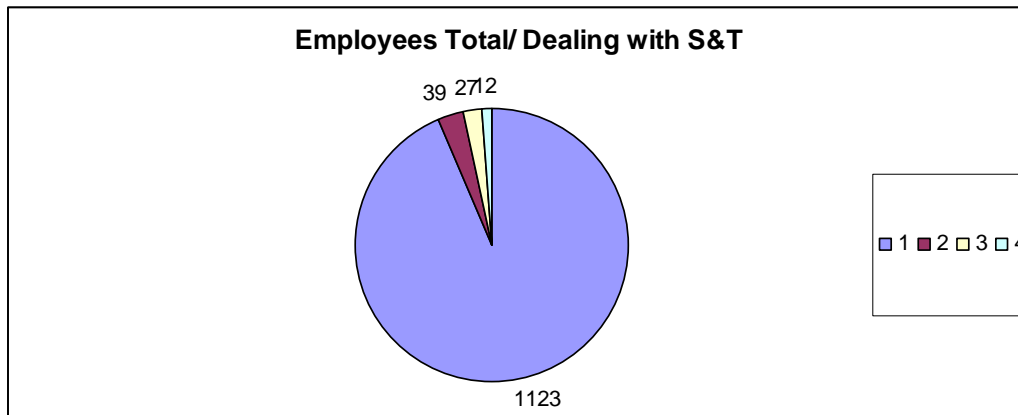
\* 1 – BABES, 2- CCSTTI, 3-CAT, 4-INCERC, 5-ADR NV

### 2.1.3. Profile of assisted SMEs

The SMEs have benefited the most from the S&T intermediaries. The returning clients are largely more important than the new clients. The services of S&T intermediaries are both oriented to group of clients and particular clients.

### 2.1.4. Human resources

Exhibit 2. Personnel of S&T intermediaries <sup>1</sup>



- 1-Total Employees
- 2- Total employees dealing with S&T intermediation
- 3- Total employees dealing with S&T intermediation full time
- 4- Total employees dealing with S&T intermediation part time

**BABES**, is considered to be a department of the University. The total number of employees dealing with S&T intermediation is 12. 9 of them technicians and 3 are specially trained managers. There are also engineers and researchers that collaborate with the institution besides the specially trained managers who deal with the intermediation and the technicians.

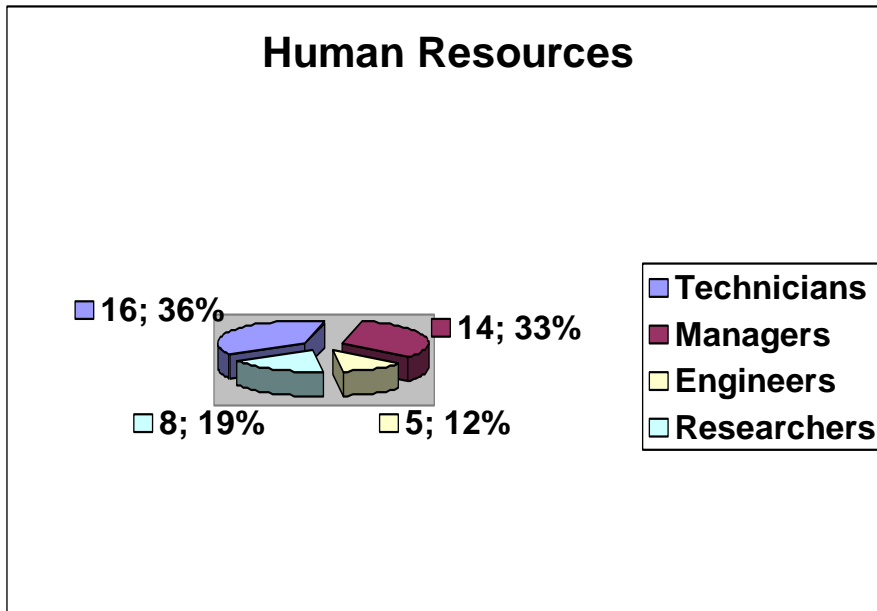
**CCSTTI** is a subunit of the Technical University of Cluj Napoca. The university has around 1000 employees, from which approximately 700 are involved in research activities. The intermediation centre however, has only 7 employees, 3 technicians and 4 specially trained managers, that are directly involved in technological transfer towards SMEs.

**CAT** has a total of 11 employees, 5 dealing with S&T intermediation. They also use foreign experts( about 10 ), especially for technological audit.

**INCERC** as a subsidiary of a national research institute has 30 employees, 15 dealing with intermediation.

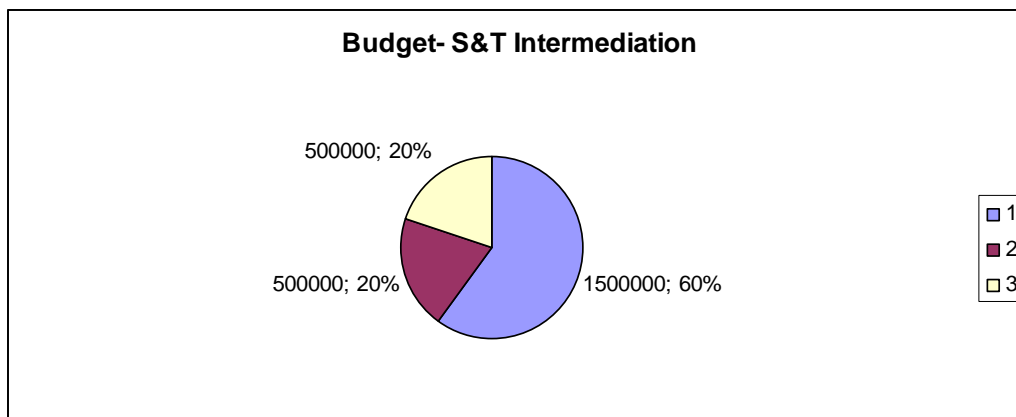
**ADR NV** has 43 employees, still only 2 are specially trained and deal with S&T intermediation.

<sup>1</sup> Questionnaires received from UT,UBB,ADR, IRE, INCERC



#### 2.1.5. Budget

Exhibit 2. Budget for S&T intermediation by source of funding –Technical University Cluj



- 1- National Public
- 2- From enterprises
- 3- Own Funds

The most important funding sources are public from national budget.

The total budget of the BABES institute is somewhere around 7.000.000 Euro. Part of the money comes from research contracts and basic financing. The “intermediation budget” (part of the total budget) is used for paying the personnel’s salary and for the expenditure of the Research Department and the Technological Transfer Center.

CCSTTI has a budget of around 2.5 mil Euro for intermediation. Taking in consideration that not all the 7 mil from BABES are used for intermediation and that INCERC has a

budget of about 300.000 euro we can approximate that the budget for all 4 institutions is somewhere around 5,5 mil euro.

Some of the institutions have source of funding based on membership fees (private funding). For example 85% of INCERC's money come from private funding.

## 2.2. Categories of S&T intermediaries

S&T intermediaries are diverse organisations with different missions and scope of service. This report introduces a categorisation of intermediaries based on distinctions between (1) generic or sectoral orientation and (2) technological or non-technological character of service.

Generic -- or multi-sectoral -- intermediaries provide services to companies independently of their sector. The examples can include both collective services such as awareness raising campaigns and one-to-one services such as support for start-ups and spin-offs. Sectoral intermediaries are specialised and focus on a particular sector or technology field. Technological intermediaries focus on providing support for development, commercialisation or transfer of technology whereas non-technological services include activities with a focus on management and organisation, S&T staff training and placement schemes, IPR etc. Some intermediaries may provide both technological and non-technological services. These are referred to as 'hybrid'.

The exhibit below present the categorisation of S&T intermediaries active in the region of *Cluj*. The classification takes into account S&T intermediaries having direct contact with SMEs.

Exhibit 3. Categorisation of regional S&T intermediaries

	Generic	Sectoral
Technological		Technology Transfer Centre CTT IPA CIFATT Cluj-Napoca
		Technology Transfer Centre CENTI Cluj-Napoca
		Solar Energy Cluster Cluj
		National Institute for Research & Development in Construction and Economy of Construction CLUJ-NAPOCA BRANCH ( <b>INCERC</b> )
		Institute of Research, Design and Production in Construction
		National Institute for Research & Development of Isotopic and Molecular Technologies CLUJ-NAPOCA Branch

		Forestry Research Institute
		IPA R&D Institute for Scientific Research and Technological Engineering for Automation Cluj-Napoca Branch
		Chemistry Institute “Ralula Ripan” Cluj-Napoca Romanian Academy Institute
		Analytical Instrumentation Research Institute
		Institute of Biological Research
		Research and production Institute for Food Industry ICPIAF
Non-technological	Innovation Relay Centre Cluj-Napoca IRE	
	Cluj County Council EU Office	
	ARIES Cluster IT Cluster Cluj	
	Regional Development Agency (ADR)	
	Cluj Chamber of Commerce	
Hybrid	Centre for Technology Transfer Babes-Bolyai University Cluj Napoca ( <b>BABES</b> )	
	Centre for Science Research, Technological Transfer and Inventions Technical University Cluj-Napoca ( <b>CCSTTII</b> )	
	Innovation House	

**The Technological S&T intermediaries are sectoral specialised while non technological have covers multi- sectors. Concerning the hybrid S&T intermediaries have also multi-sectors coverage. The S&T intermediaries organisations are a result of a long term tradition for research activity in Cluj.**

### 3. Service areas covered in regional S&T intermediation system

#### 3.1. General offer of S&T intermediation services

The following table presents an overview of the service areas covered and services delivered by the interviewed regional S&T intermediaries over last 2 years.

Exhibit 4. Services in the regional S&T intermediation system

The exhibit is based on information provided by **CCSTTI**, **BABES**, **CAT**, **ADR NV** regional S&T intermediaries.

S&T intermediation service area and services	Number of intermediaries delivering service	Number of services delivered over last 2 years	Total number of services
<b><i>Collective actions</i></b>			<b>151</b>
awareness raising activities for enterprises (e.g. study visits, presentations and conferences)	4	50 6 20	76*
awareness raising activities for the scientific community on research commercialisation and IPR	4	30 3 20	53*
technology watch - analysis of evolution of the technological needs of the region	3	3 0 1	4*
Collecting and disseminating information on relevant existing technologies	3	2 0 1	3*
coordinating and disseminating information on available S&T services for companies	4	10 4 1	15*
<b><i>Support for technological and scientific cooperation</i></b>			<b>986</b>
Technological audit – analysis and identification of needs of enterprises	3	136 20	136*
Search for regional and national scientific partners for R&D projects	3	25 100 15	125*
Search for international scientific partners for R&D projects	3	5 10 20	15*
Search for regional and national industrial partners for R&D projects, and S&T support	3	50 50	100*
Search for international industrial partners for R&D projects, and S&T support	2	5	5*
Technical and legal support for preparing projects and agreements related to S&T collaboration	3	125 400 25	525*
<b><i>Support for new product and service development</i></b>			<b>306</b>
Technical assistance for preparing a feasibility study of the product/service	3	53 50	103*
Assistance for developing a business plan for the new product/service	3	53 50	103*
Assistance for prototype development (e.g. fast prototyping etc.)	1	64	64*
Assistance for prototype testing	1	25	25*
Support in product launch or service implementation	2	11	11*
<b><i>IPR and commercialization</i></b>			<b>18**</b>
Initial IPR check for products and services before their development			
Assistance in commercialisation of industrial research projects, identification of results requiring IPR protection	2	5 7	12*
Assistance in depositing patents and management of patent portfolio	2	3 3	6*

<b>Licencing</b>			0
Industrial partner search for licencing			
Preparing and negotiating conventions (licence agreements)			
<b>Support to innovative start-ups and spin-offs</b>			14
Legal support in creating a start-up			7
Legal support in creating a spin-off			
Search for private financial partners for start-up/spin-off creation	1	2	3
Preparing cahier des charges and budget for spin-off creation			
Monitoring and promotion of start-up/spin-off	2	2	4
<b>Human capital mobility</b>			68
Placement schemes between research and industry			*
Search for highly specialised R&D personnel	3	31 20 2	53
Search for highly specialised management personnel (e.g. innovation management, knowledge management)	2	8 5 2	15

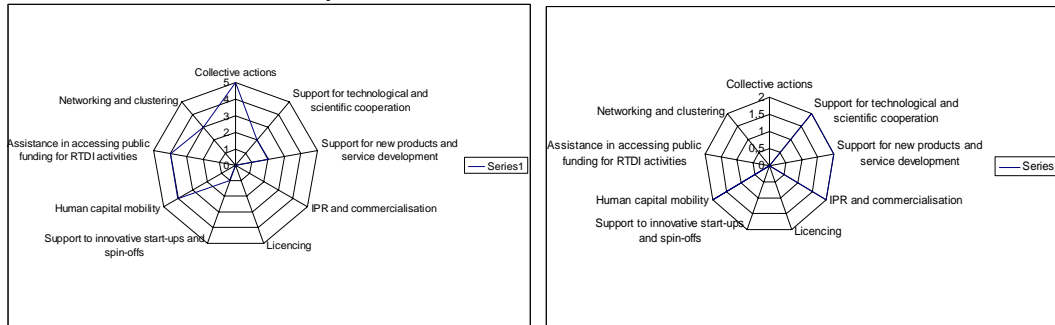
S&T intermediation service area and services	Number of intermediaries delivering service	Number of services delivered over last 2 years	
<b>Networking and clustering</b>			12
Supporting and creating business networks (B2B)	3	3 2	5*
Supporting and creating networks of SMEs and research base (University, research centres)	3	5 2	7*
Supporting and creating clusters, and promotion of SMEs and research base participation			
<b>Assistance in accessing public funding for RTDI activities</b>			1282
Search for public funding and monitoring of public tenders	4	525 500 5	1030*
Assistance in accessing funds from EU Framework Programmes	4	25 200 20	245*
Assistance in accessing funds from EU Structural Funds	4	5 2 1	8*

\*ADR NV did not provide the number of services because this institution does this continuously (everyday activity).

\*\* STATE OFFICE FOR INVENTIONS AND TRADEMARKS and THE ROMANIAN OFFICE FOR AUTHOR RIGHTS also offer integrated assistance in his field. They are national institutions and currently they haven't got a regional office t a

### 3.2. Services offered by category of S&T intermediary

Exhibit 5. Core and secondary activities of S&T intermediaries



Generic non-technological

Sectoral technological

**Collective actions.** Except for INCERC, all intermediaries are active in awareness raising activities for enterprises and this is one of the main activities. As for the 2 Technological Transfer units that are part of the Universities, we can say that some of the services are actually provided by the university. ADR NV offers financial support for SME's and support for searching/matching/economic links with national/international partners (PHARE funded programmes/governmental programmes/other EU programmes).

**Support for technological and scientific cooperation.** One of the most active fields.

CCSTTI, ADR NV, CAT and Innovation House-EWE offer services of technological audit. Leader of the group is CCSTTI, taking in consideration that is part of a Technical University. Most of the search for industrial partners is regional and national. By far the most active in the field of preparing projects and agreements is Babes with 400 projects. CAT uses foreign experts for this kind of services: SES (Senior Experten Services) a foundation of German industry for international cooperation.

ADR NV is offering assistance for developing business infrastructure such as industrial parks, business incubators and support the localization of companies.

Also NW RDA has elaborated Regional Plan for 2007-2013 and offered support for the elaboration of Counties Development Plan and promotion of the activities, which are resulting from the regional growth policies and strategy.

**Support for new products and service development.**

This is another active sub-section.

ADR NV offers technical assistance for preparing feasibilities studies, business plans and marketing studies for applicants. CCSTTI offers the whole range of services included in this subsection. BABES focuses on preparing feasibility studies and developing the bussines plan either for the product or the service. Innovation House-EWE assists with business plan elaboration, project finance seed and venture capital.

Transylvania Business Centre does not offer any of the services regarding support for new product or service

***IPR and commercialisation.***

Very poor representation in this field. BABES and CCSTTI have tried to achieve some results, but unfortunately they were not very successful. The regional Development Agency ADR does not offer any support in this area. CAT has offered assistance regarding commercialisation of industrial research projects, but in only 7 cases.

STATE OFFICE FOR INVENTIONS AND TRADEMARKS and THE ROMANIAN OFFICE FOR AUTHOR RIGHTS also offer integrated assistance in this field. They are national institutions and currently they haven't got a regional office. The **State Office for Inventions and Trademarks** is highly concerned with the **promotion of the industrial property** and with that end in view it has developed a **system of services** by means of which it offers to the public useful information processed by highly competent specialists with a view to allowing correct economic decisions to be taken.

***Licensing.*** None of the intermediaries provide this kind of services. It is more complex than other services and they do not have special trained employees in this field.

***Support to innovative start-ups and spin-offs.*** NW RDA performs promotional activities for S&T and SMEs and support start-ups in region, newsletters. Also CAT offers support for private financial partners for start-up/spin-off creation, but it is not one of the key activities. The other intermediaries don't offer any services of this kind.

***Human capital mobility.*** Except INCERC all the intermediaries offer these services. BABES, CCSTTI and CAT are very active in the field of search for highly specialised personnel, both management and R&D. Using the universities standing behind these technology transfer centres, BABES and CCSTTI can cooperate with different companies to offer students opportunities to work during their studies, gain experience and then employ them after graduation.

ADR offer placement schemes between research and industry.

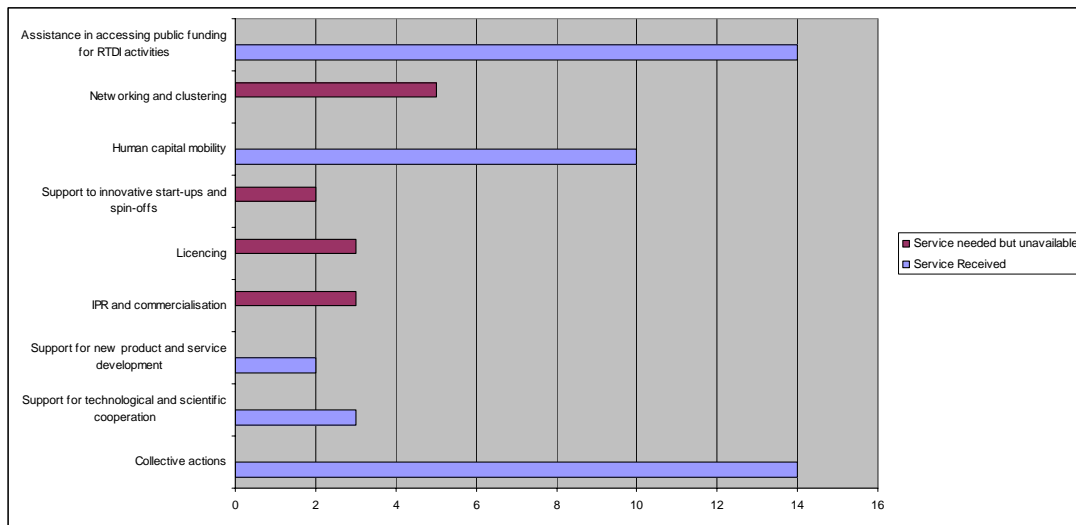
***Assistance in accessing public funding for RTDI activities.*** This is one of the most important service provided by the intermediaries. All are active in offering assistance in accessing European funds. The numbers prove that.

Search for public funding and monitoring of public tenders: approx 1000.

RDA will act as Intermediate body for EU Structural Funds Regional Programme and will offer assistance.

#### 4. Matching S&T services offer with the needs of SMEs

Exhibit 9. Services received and unavailable in the regional S&T system according to SMEs (N=14)



The services which are missing from the S&T intermediaries are licensing and with certain extend IPR and commercialisation. Moreover, there is a need for strengthening the survives for support for product and service development, support for innovative start-ups and spin-offs and networking and clustering.

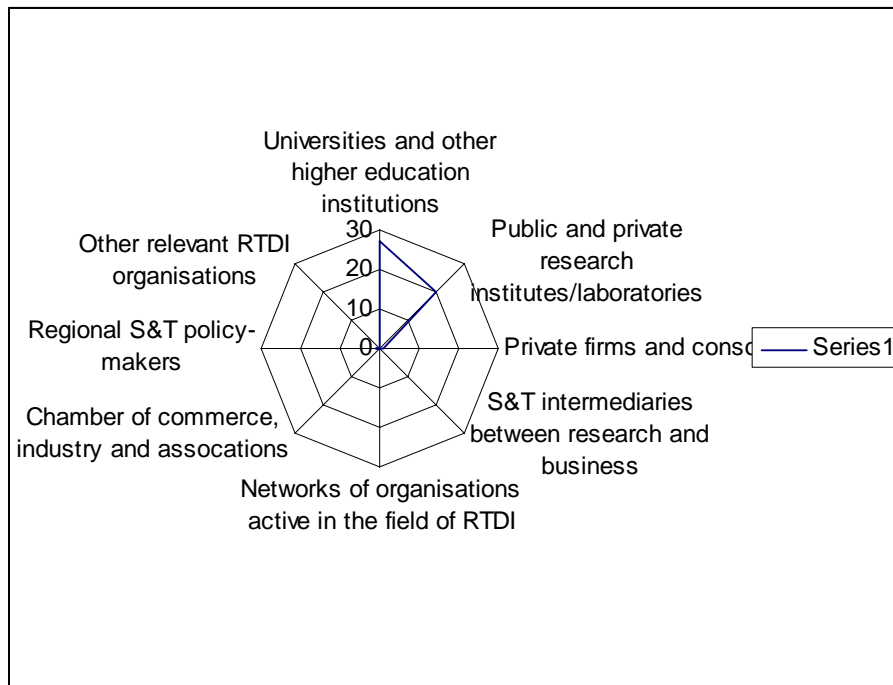
The main threat in matching the needs of SMEs with the services of intermediaries is that there is a low level of interactivity between them. The gap between firms and universities/intermediaries still exist. Moreover, as the request for the firms is low the S&T intermediaries have not developed a better offer. The few request from the SME is related to the fact that on one hand the service offering of S&T intermediaries is not well known and on the other hand that the services offer does not cover the entire needs of SMEs in terms of innovation.

## 5. Cooperation within regional S&T intermediation system

### 5.1. Main cooperation pattern

#### 5.1.1. S&T intermediaries' perspective

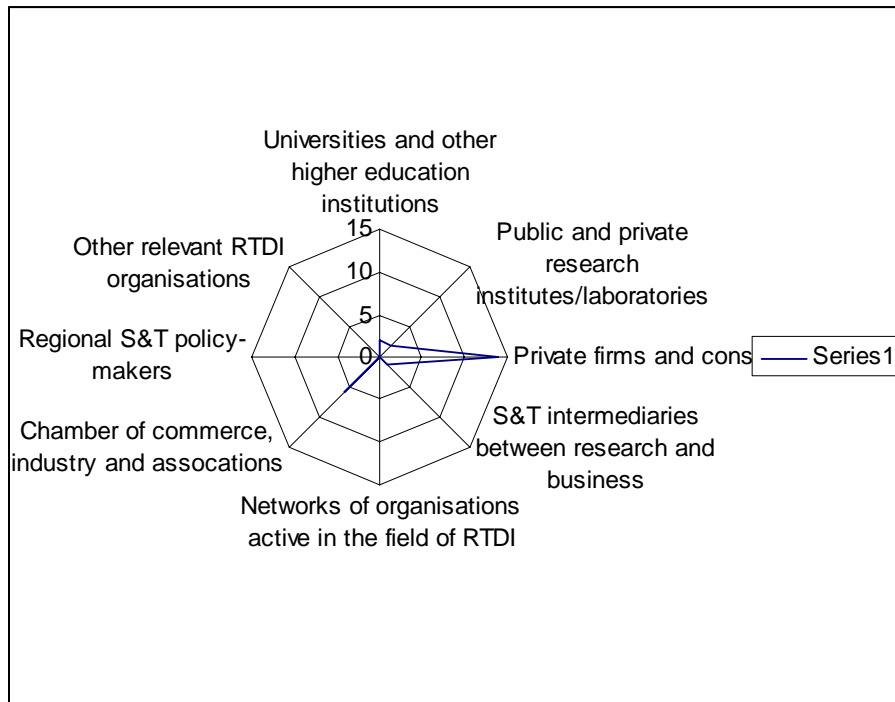
Exhibit 6. Collaboration of S&T intermediaries with other regional actors



The main collaboration of the S&T intermediaries is between research laboratories of universities. However, the collaboration between S&T intermediaries remains marginal. Therefore there is a real need to boost the cooperation between them.

### 5.1.2. SMEs' perspective

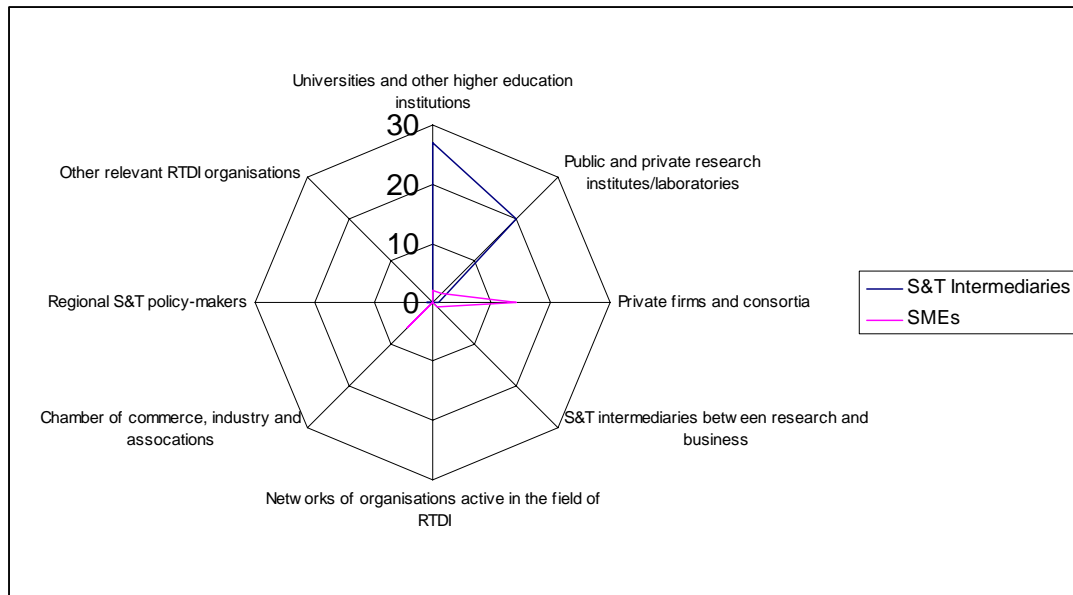
Exhibit 7. Collaboration of SMEs with other regional actors



The regional interviewed SMEs have a low degree of cooperation with intermediaries due to the fact that according to them the service offerings are not know. However, the Technical university has collaborated with German companies while regional companies have benefited in small extent

### 5.1.3. Comparing S&T intermediary and SME perspectives

Exhibit 8. Collaboration of S&T intermediaries and SMEs with other regional actors

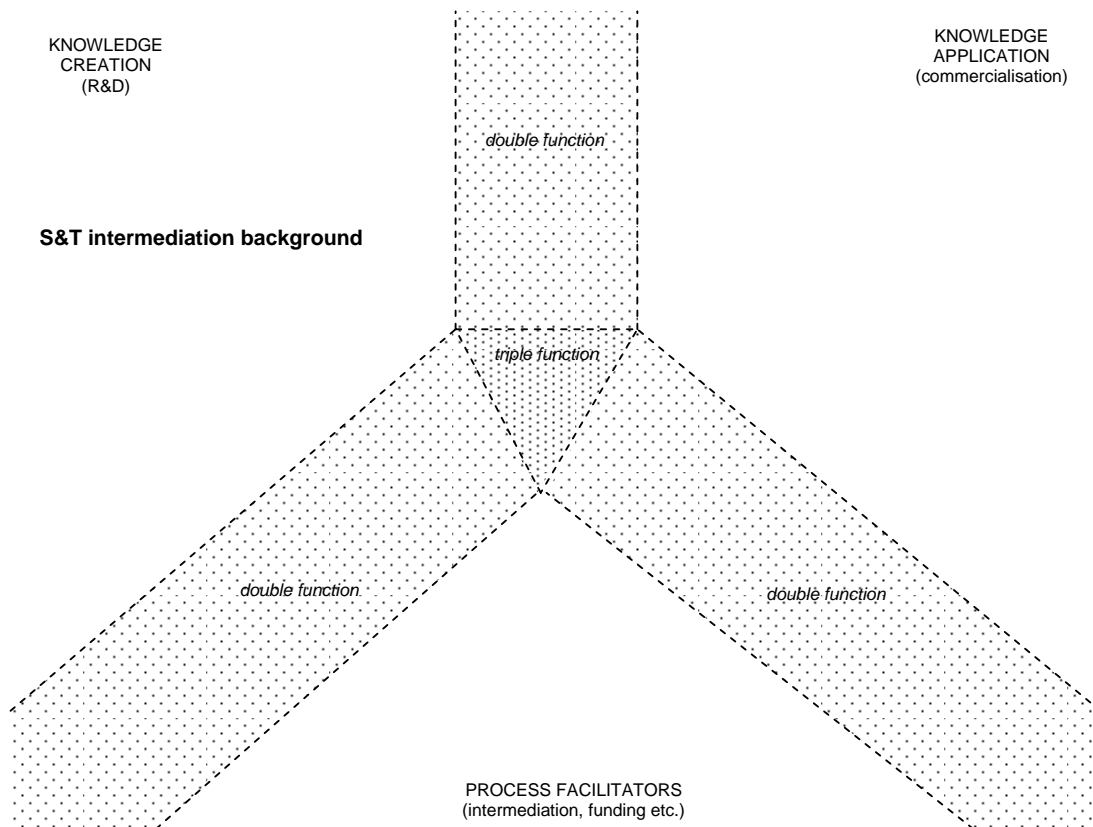


Following the interviewed and discussion with S&T intermediaries and SMEs the interaction between organisation is principally based on a long term collaboration. New joiners are few SMEs which already used services of intermediaries before.

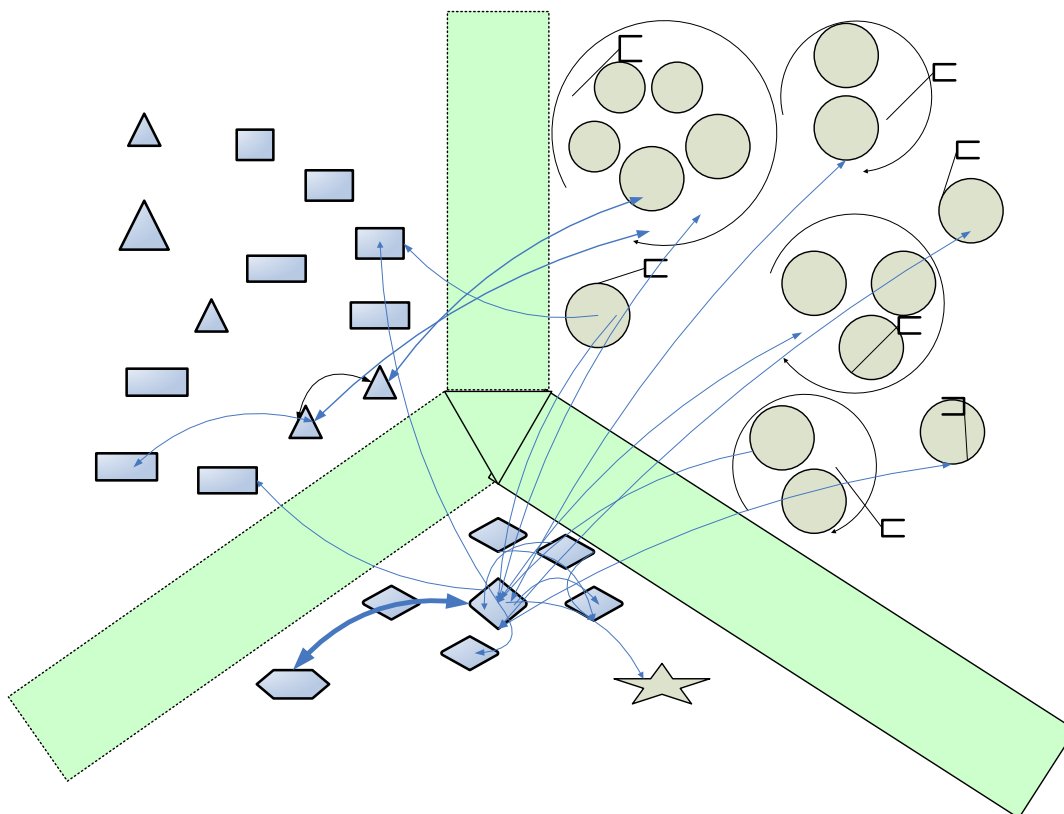
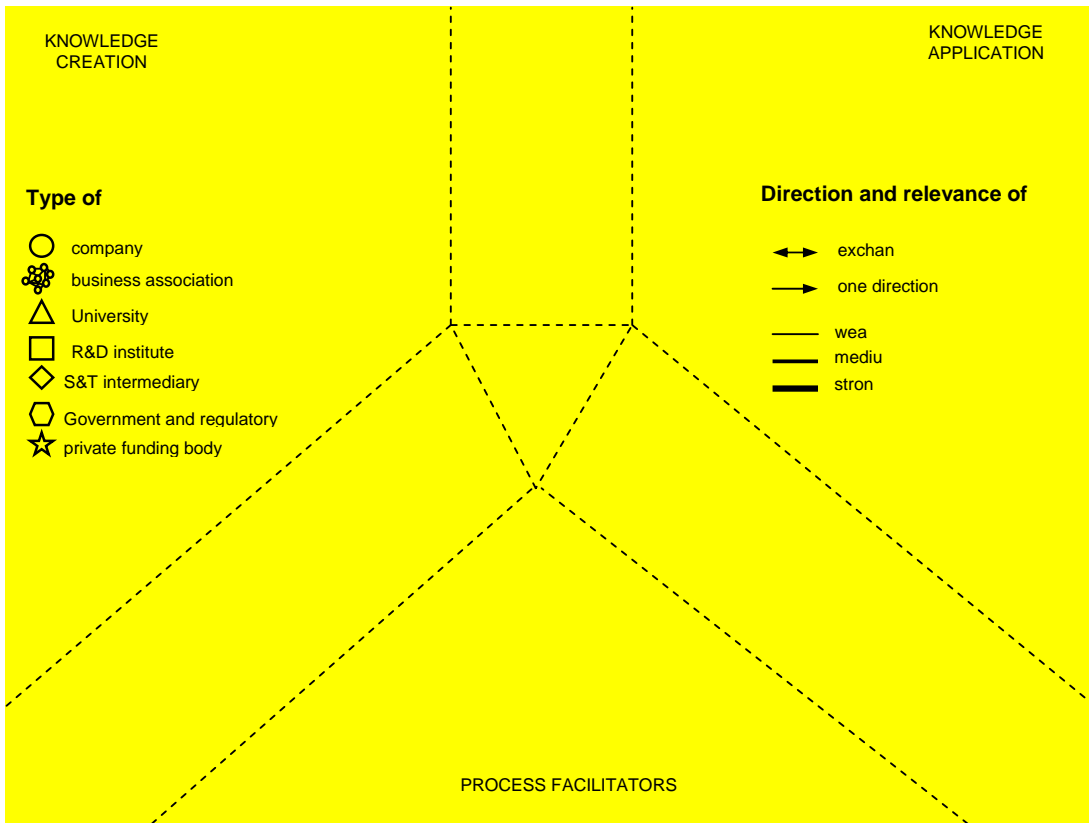
The interaction between organisations could be strengthened by organising common projects and participate in common networks. The Current Super SME project has already boosted the contacts between intermediaries. In particular, Super SME project has brought the policy-decision makers at the local level in contact with RTDI organisations.

## Mapping S&T intermediation system

- Draw and comment (1-2 paragraphs) networks of organisations of your S&T intermediation system indicating connections between them.
- Focus on one category of S&T intermediaries in one map. This should help to avoid a difficult to read all-inclusive complex drawings
- Please use as a template an example in an enclosed presentation (SUPER-SME\_mapping networks.ppt)



If we could map the intermediaries we could divide them into knowledge creation, knowledge application and process facilitators. In Cluj the most of intermediaries are knowledge creators. Commercialisation is one of the weak points of the innovation system. Moreover, there is a need to strengthen the intermediation and funding process facilitators.



There exhibit presents the current relations between S&T intermediaries, universities, research institutes and companies. It can be concluded that the cooperation between intermediaries should be strengthen. Moreover, there is a need fro diversification of intermediation services and commercialisation of inventions of Research institutes.

The creation of an IT cluster in Cluj has boosted this industry and the R&D development. he emerging Solar Energy cluster could have a substantial contribution from ITIM which are currently running research on photovoltaic systems.

## 6. General assessment of the regional S&T intermediation system

**The S&T intermediaries services covers the majority of intermediaries areas. However, IPR, Licensing and support for innovative start-ups lags behind. Among the interviewed intermediaries technological audit and awareness for public funding are the services most used by SMEs. There is a need for creating an innovation pole which could boost the cooperation between intermediaries.**

Table 3. Strong and weak points of the regional S&T intermediation system

	Strong points		Weak points	
	S&T intermediaries	SMEs	S&T intermediaries	SMEs
<i>S&amp;T intermediation organisational capabilities (budget, human resources etc.)</i>	<i>There a HR technical knowledge within intermediaries</i>	<i>There is a capacity of delivering services to SMEs</i>	<i>The public research institutes still have low salaries.</i>	<i>The budgetary constrain is a gap in better developing their services for SME.</i>
<i>Service areas and services delivered</i>	<i>Assistance in awareness of public funding is the most common service</i>	<i>Technological audit is one of the most important service delivered by S&amp;T intermediaries</i>	<i>There are still gaps in services offered such as IPR, Licensing and support to innovative start-ups.</i>	<i>There awareness fo service offering of S&amp;T intermediaries among SME is low.</i>
<i>Connections between different organisations in the system</i>	<i>There is a collaboration between the main universities in Cluj.</i>	<i>There are collaboration between companies and S&amp;T intermediaries</i>	<i>The networks between stakeholders could be improved.</i>	

## 7. Proposals of thematic focus of SUPER-SME study visits and peer reviews

There are three topics which should be further analysed:

- **Regional Policy level**
- **S&T services**

- **R&D financing ( e.g. Venture capital and seed capital, join venture, networks**

## **Regional Policy level**

The Regional Policy level lacks in a Innovation strategy. Currently, the Regional Development Agency has started to elaborate this strategy. However, a specialised support is needed. There is a need for a benchmarking of regional and national policies in France, Spain and Greece in order to better project a regional strategy.

The exception from the study visit is to receive information on strengths and weakness of the Regional Innovation Strategy and plans.

## **S&T services**

Regional S&T Services does not cover all the area analysed and when they exist does not match the standards required by SMEs. Therefore, there is a need of analysing professional services of S&T intermediaries in the Mentor regions and create links with Cluj and Hunedoara regional S&T intermediaries.

A transfer of know-how in delivering professional services to SMEs is needed.

## **R&D financing ( e.g. Venture capital and seed capital )**

One of the major problem of SMEs is R&D financing. Currently,, Romania has a small budget R&D financing through national programmes. Moreover, structural funds will finance innovative companies. However, there is a need to find either co-financing which could come from banks, venture capital funds. In particular, venture capital is slightly known and practically not used in Romania. On the other hand, there are R&D ideas which can become innovations but cannot be commercialised due to the lack of financing.

Moreover, the Romanian SMEs have not internationalised and lack in networks and joint venture with western companies.

The expectation of the study is to find out ways in attracting venture capital to finance projects in Cluj and Hunedoara. Moreover, there is a need to identify in the mentor regions networks of companies interested in collaborating with Romanian SMEs in R&D and innovation.

## Annex 1. Summary table: main functions, specialisation and partners of regional S&T intermediaries

Intermediary	Sectors/research fields	Principal functions	Research partners	Business partners	Intermediary partners
National Institute for Research & Development in Construction and Economy of Construction CLUJ-NAPOCA BRANCH ( <b>INCERC</b> )	<i>construction</i>	<i>housing planning &amp; environmental engineering structural engineering &amp; soil mechanics building materials management &amp; technological processes</i>	<i>CEPROCIM, ASA CONS ROMANIA, AGUS TECHNOLOGIES ROMANIA</i>	<i>ARACO BUCHAREST</i>	<i>ITC EUROPA</i>
<i>Transilvania Business Center Innovation Relay Centre Cluj-Napoca IRE</i>	<i>No specialisation</i>	<i>Collective actions, Support for technological and scientific cooperation, Support to innovative start-ups and spin-offs, Human capital mobility, Networking and clustering, Assistance in accessing public funding for RTDI activities</i>	<i>ICIA, MINESA, BIONA</i>	<i>BRINEL, FIBAC, ARIES</i>	<i>CENTI, IRC NETWORK</i>
Centre for Technology Transfer Babes-Bolyai University Cluj Napoca ( <b>BABES</b> )	Chemistry, biotechnology, advanced materials, informatics, robotics, optics, logistics. ICT	Collective actions, Support for technological and scientific cooperation, Support for new product and service development, IPR and commercialization, Human capital mobility, Networking and clustering, Assistance in accessing public funding for RTDI activities	CHEMISTRY INSTITUTE RALUCA RIPAN, CLUJ, ACADEMY'S RESEARCH CENTERS	SIEMENS, BRINEL, FARMEC, SINTEROM, SKODA, SCR GROUP	CHAMBER OF COMMERCE CLUJ
Centre for Science Research, Technological Transfer and Inventions Technical University Cluj-Napoca ( <b>CCSTTI</b> )	Chemistry, biotechnology, advanced materials, informatics, robotics, optics, logistics. ICT, advanced materials, energy, mechanics, transport equipment, constructionn	Collective actions, Support for technological and scientific cooperation, Support for new product and service development, IPR and commercialization, Human capital mobility, Networking and clustering, Assistance in accessing public funding for RTDI activities	CHEMISTRY INSTITUTE RALUCA RIPAN, TEHNOMAG	SIEMENS, LEONI, TENARIS, MICHELIN, SCR GROUP, BRINEL, ARMATURACOMELF	TRANSYLVANIA BUSSINES CENTER
Technology	Environment,	Research, design, technological transfer,			

Transfer Centre CENTI Cluj-Napoca	biotechnology, health, analitical instrumentation	chemical analysis			
Technology Transfer Centre CTT IPA CIFATT Cluj- Napoca	ICT, mechanics	Research, design, technological transfer, feasibility projects, turn-key delivery		HIDROELECTRICA, ARGOS, PRIMAGAZ(FRANCE), DACIA	
Innovation House- EWE	Renewble Energies, thermal instruments, horizontal issues	Collective actions, Support for technological and scientific cooperation, Support for new product and service development, IPR and commercialization, Human capital mobility, Networking and clustering, Assistance in accessing public funding for RTDI activities	Technical University National Institute for Research & Development of Isotopic and Molecular Technologies	Contherm	Cluj County Council