

**Report on Needs Assessment**

**North West Romania**

**Needs Assessment: University-Business Cooperation**

**A report to ADR Nord-Vest**

**Adrian Healy**

**August 2017**

Prepared in pursuance of CONTRACT NUMBER: CCI 2016CE16BAT070

## **1. Introduction**

Despite the efforts and a significant financial support, development gaps across EU regions continue to be significant, with some regions clearly lagging behind in terms of growth and competitiveness. The European Commission has launched a specific initiative in order to help these less developed regions catch up. Its aim is to provide assistance for unlocking their growth potential through improving the way EU funds are invested, delivering better results, thus improving quality of life of the citizens. The North-West region in Romania has been selected to pilot this initiative in the course of 2016 and 2017.

The aim of the initiative in Romania is to seek, in close collaboration and on the basis of a partnership with Romanian national and regional authorities, ways of enhancing the effectiveness of cohesion policy and to unblock the untapped endogenous potential for smart growth in the regions. In North West Romania, the decision has been taken to concentrate on the ICT sector, which is most strongly developed in Cluj County (focused on the city of Cluj-Napoca) but which is also present in other parts of the region, such as Bihor County.

This report is based on the deliberations of the first meeting of the Committee for Regional Dialogue, held in Cluj-Napoca on 16<sup>th</sup> May 2017. The format for this meeting was designed by Jonathan Loeffler, one of the three experts contracted by DG Regio to support the Lagging Regions Initiative. It formed the first phase of a regional dialogue process and was designed to stimulate awareness raising and the assessment of regional needs. The dialogue was structured around three key groupings: University-business; business-regional public administrations; links with central administrations.

To complement the more wide-ranging discussion of the Committee for Regional Dialogue, individual meetings were held with 11 members of the University-Business sub-committee. These discussions explored the needs of universities and businesses in more detail.

Finally, the views of organisations located outside of Cluj-Napoca, but within the North West development region, were gathered through a questionnaire administered by the North West RDA. A total of four returns were received from this exercise, out of which three relevant for this sub-group.

This report synthesises the needs collected through these various instruments and mechanisms. It provides the basis for a discussion of the most pressing needs and a first consideration of possible means of addressing these. This discussion will be initiated in a forthcoming meeting of the University-Business sub-committee.

The report is structured as follows:

- Section 2 sets a context for the needs report, briefly summarising key features in terms of the region, the IT cluster and existing levels of co-operation. This is based solely on information provided by respondents to the study.
- Section 3 draws out the main needs identified by respondents, dividing these according to different perspectives, and seeking to consider the objectives driving the actions of certain actors.
- Section 4 considers the bottlenecks identified as constraining the ability to meet the identified needs.
- Section 5 presents a brief concluding chapter.

## **2. Context**

### ***2.1 Regional summary***

The ICT sector in the region, focused on Cluj-Napoca, is expanding rapidly. It has a strong presence in the region attracting high levels of inward investment and boosted by the start-up of local companies. The strength of the sector, particularly the rising demand for labour, has a knock-on effect on the ability of firms, and universities, to attract and to retain both labour and students.

Thriving business demand results in a high demand for labour leading to rising wages and rising costs. This draws students out of Universities prior to the completion of their studies, which is of particular concern to Universities. It also reduces demand for post-graduate studies and impacts on the availability of skilled academic staff. The disparity in earnings is exacerbated by national incentives targeted at the ICT sector (particularly personal income tax exemptions), which are available to employees of firms working in the ICT sector, but not to University staff. Rising costs are also affecting the competitiveness of firms within Cluj-Napoca, particularly in comparison with other locations, encouraging consideration of new business models and the potential role of innovation in securing long-term competitiveness.

The market itself is dominated by out-sourcing activities, where companies supply services to clients located outside of Romania. This, coupled with limited domestic markets, means that around 80% of products are exported. Business models focused on out-sourcing tend to have a low propensity to engage in research, development and innovation. Rising sector costs, and labour shortages, are leading many firms to consider the importance of innovation as a means

of increasing efficiency and moving up the value chain. There is a recognition that the region might otherwise be exposed to emerging low-cost provision located in newly-emergent markets, such as the Ukraine.

The University sector is an important factor in the success of the cluster, with relevant and well-regarded faculties in the University Babes-Bolyai (One of Romania's pre-eminent universities), the Technical University Cluj and the University of Oradea, amongst others. There is also a popular Informal IT School, which offers educational courses outside of University institutions, as well as trainings from programmers under the private initiative Academy Plus, based on a French model. In combination these serve to attract high quality students, to equip students with relevant skills, upskills existing employees and provides a research-base for the pursuit of product and process innovations.

A resource base for action in this area is identifiable. There is a strong start-up community emerging in the sector, with many successful local business-leaders. Basic infrastructures such as facilities and premises do not appear to be lacking. There is also a record of entrepreneurial initiative independent of public funding programmes, such as the Liberty Science and Technology Park.

## ***2.2 Existing cooperation***

There is a very strong consensus that good levels of cooperation currently exist between university and businesses. At present, this is most strongly focused on the educational offer. There is strong involvement of industry, or industry-employees, in the teaching of courses within universities and firms provide internships and placements to students. This helps students to have an awareness of current industry-trends and provides universities with access to additional skills and resources.

All parties acknowledge that there is a need to move beyond the educational offer to strengthen cooperation in the field of research and innovation. For firms it is the innovation offer that is most lacking. Whilst there are many examples of positive cooperation occurring (with some 1000+ project-contacts according to industry), industry representatives agree that these lack mass, resources and focus. Conversely, for the University representatives it is the research offer where more attention needs to be focused, driven by the metrics measuring academic success. It is widely reported that marrying these two interests can be a challenge.

All parties highlight the challenge of the national regulations regulating university-business collaboration. Involving Universities in a public private partnership is particularly problematic and was given as a reason for the failure of a prior effort to establish a joint research centre.

### **3. Identified needs**

Typically, needs could be considered according to the interested party or by activity. In this case the parties consist of universities, businesses and, arguably, the wider regional economy. The type of need might be divided in terms of the labour market (sub-divided by labour availability and workforce skills), innovation activity, research activity and entrepreneurial skills. Naturally, there are further sub-divisions possible (as both innovation and research activities have different labour demands for example).

For the purposes of this assessment we examine identified needs grouped by party followed by activity. In Table 3.1, end of section, we briefly summarise these findings. It should be noted that whilst reference is to institutions, findings are based on the views of individuals rather than being formal positions of any organisation.

#### **3.1 University**

For universities, their reported needs largely revolve around supporting student demand, securing teaching capacity and maintaining their research capacity. There is a recognised innovation gap although this is not at the forefront of most university thinking.

*Labour availability* – The principal need identified within the University sector is the need to attract and retain well-trained teaching staff. It is recognised that the effects of salary competition with industry tempts staff out of academia and makes it hard to fill vacant academic posts.

In addition, Universities are concerned about the effects of the labour market for retaining good students. They report that they are losing students to business before graduation, whilst attracting (and retaining) Masters students and PhD candidates is very difficult. Universities argue that there is a need to address this retention issue for their own metrics but also for the longer-term resilience of individuals in the labour market and to enable them to build research and innovation capacity.

The Universities have proved to be very able at attracting increasing numbers of (good) students. This is presenting a challenge as there is reportedly now a lack of space for educational teaching, particularly in terms of laboratory facilities and infrastructures for applied skills development. If labour demand is to be met through continuing high student numbers novel solutions to current space constraints will need to be found.

*Workforce skills* – Universities did not report significant needs regarding workforce skills (either amongst their own workforce or in the wider graduate population). It is recognised that there is a need to upgrade some courses to make them more appropriate and up-to-date. The incentive structure does not always promote this within Universities.

*Innovation activity* – Universities report that there are no institutional structures for promoting interactions or technology transfer. It appears that this is a reference to a lack of such structures within the Universities themselves as Cluj has accelerators/incubators/technology park. If this is the case then it serves to emphasise the need for more bilateral communication to identify (and exploit) opportunities. This need for stronger communication channels was heavily emphasised across the reporting exercise.

It is apparent that there are very limited connections between research and market (both in terms of people and theme), which needs to be addressed if innovation is to occur. There is very limited contract/consultancy research with firms. This, it is reported, reflects a lack of critical mass of researchers cooperating with industry (with some notable exceptions). Technical facilities at university are good (for example a modern supercomputer) but this potential is underused by industry. Industry argues that such facilities can't be used long-term, as firms need their own infrastructures. However, such arguments potentially confuse innovation processes (proving and demonstrating concepts) with eventual commercial activities. Taken together, this suggests a need to build an innovation culture in both universities and firms.

*Research activity* – Universities focus on high-quality and excellent research. This is particularly so for Babes-Bolyai which is one of Romania's leading research universities and aims to be in the Global 500. Securing high quality research activities is a key priority for the University sector and was foremost in the needs identified. At the forefront emphasised the need to secure resources for undertaking research, especially in more fundamental fields, citing the challenges of securing national funds, the limited availability of business funding for research and the limited availability of funding for student research and innovation activities. Related to this, the need to secure research capacity, through post-graduate students, was also highlighted. Universities are under pressure to secure funds from national and international

research programmes, which demand a track-record of excellent research and, increasingly, participation in international consortia. Membership of such consortia requires a reputational profile which, it is argued, is not always consistent with working with local companies.

*Entrepreneurial skills* – This was not a theme that emerged in discussion with the Universities.

### **3.2 Business**

For firms, the continuing availability of an appropriately skilled workforce remains a fundamental need. The growth of the industry is placing significant pressures on meeting burgeoning labour demands. Alongside this immediate need is a recognition that the industry needs to look to the future and develop new, more sustainable, business models that are less dependent on outsourcing.

*Labour availability* – The industry has a strong need for an expanding workforce to keep pace with its growing demands. At present this need is being met, although there is acknowledgement that companies do attract employees from universities before they have completed their studies. Some firms encourage staff to complete their studies.

*Workforce skills* – The need for appropriately skilled/experienced labour is the foremost concern of industry. Industry representatives argue that there is a need for more effective consulting and training programmes from academia to industry. They suggest that some of academic course work taught to students is out of date, a suggestion which was acknowledged by University staff. Industry argues that academia finds it difficult to keep up with rapidly changing technologies. Particular skills gaps were noted in interactive media and gaming. Others noted that whilst technical ICT skills are generally good the availability of wider skills – marketing, sales, internationalisation for example – is lacking and impairs the ability of firms to diversify markets and develop new business models.

*Innovation activity* – Several firms recognise that in the medium-term there is a need to move up value-chain and away from simple out-sourcing model. However, this is not universally recognised and the simple out-source model remains predominant. This means that innovation capacity, activity and demand is currently limited to meeting immediate needs and problem-solving.

*Research activity* – This was not a theme that emerged in discussion with firms. This may be partly due to the sectoral composition, but also relates to the limited level of innovation activity reported.



*Entrepreneurial skills* – This was not a strong theme in the discussion of business needs. There is a recognition that entrepreneurial skills are lacking amongst the ICT workforce but these are not in strong demand in the out-sourcing business model. There does appear to be a strong entrepreneurial mindset amongst the ICT cluster<sup>1</sup> in Cluj-Napoca, as evidenced by the advances made by the cluster in the past two decades. Whether this can embrace new business models rather than simply meeting immediate client needs is the forthcoming challenge.

### **3.3 Regional economy**

University and business representatives were not explicitly asked about the needs of the regional economy, that is more the role of a separate sub-committee, however, certain dimensions are apparent and worth highlighting.

*Labour availability* – The regional economy needs to continue to increase the labour force available to the ICT cluster. In the absence of doing so there will be a scarcity of labour, further increasing the upward pressure on labour costs and imperilling the future of the cluster. This need is apparent in both firms and also in Universities (which is often overlooked).

*Workforce skills* – The ICT domain is fast-changing and skills needs are continuously evolving. The region needs to support universities and firms to meet these changing skills needs in order that the workforce available to firms (and to universities) is appropriate to demand. Firms are traditionally myopic, dealing with the skills needs of today. The region has the opportunity to take a longer-term perspective and consider the skills needs for tomorrow.

*Innovation activity* – The region needs to support the transformation of the industry from a low-cost out-sourced business model to one that occupies higher positions in the global value chain. To do so will involve improving the innovation capacity of companies, building the innovation offer of supply organisations, such as the Universities, promoting the development of appropriate skills and supporting firms in developing and accessing new markets (internally and through exports).

*Research activity* – Research in Romania tends to be a national action, primarily undertaken by National Research Institutes and Universities. This may not meet the needs of the regional economy if it is overly academic with limited application, if the research does not assist regional

---

<sup>1</sup> Cluster is understood throughout this material as concentration and not as a formally constituted cluster. There are two formally constituted cluster associations, i.e. Cluj IT Cluster that is officially registered and iTech Transylvania Cluster managed by Aries Transylvania, that is to be registered as an association in the future.

economic, social or environmental development, or where the research takes place in distant locations with few spillovers to the region. To offset these risks the region needs to encourage relevant applied research to be undertaken within North West Romania and to promote linkages that promote positive spillovers to relevant industrial sectors.

*Entrepreneurial skills* - Limited levels of entrepreneurship are reported within the region as a whole but the trend is growing through initiatives such as Spherik (which organises product bootcamps/pitching sessions and other activities). The region needs to foster greater capacity for entrepreneurship, including encouraging the topic to be embedded in school activities, university curricula and other avenues. There is also a rising demand for mid-career entrepreneurship reported as individuals in employment seek to start their own business. Family units often use the pay of one family member to support this endeavour (or would-be entrepreneurs continue to work in ICT industry to support their ambitions). The region needs to find mechanisms to support this important dimension for economic transformation.

### **3.4 Actor motivation**

However, a typical needs analysis, such as the above, overlooks a key consideration – the motivation of the individual players. Phrasing this in a different way, consideration must also be given to the objectives that drive the behaviours of different parties, these equally constitute ‘needs’ and understanding these helps to understand where bottlenecks and competing objectives might negatively affect overall outcomes.

Focusing on two key parties we can identify the following key attributes:

- Individual academics are driven by teaching demands and the requirement to publish research findings in leading journals. Research illustrates that many academics typically teach what they are comfortable with, rather than introduce new materials or techniques. This is driven by University management, national research structures and the requirements of international ranking indexes. Time for applied research, innovation and industry-facing activities is limited and only loosely-rewarded.
- Individual business leaders are driven by short-term market demands, meeting the requirements of current clients and seeking new contracts. This tends to promote actions that are myopic, preferencing the continuation of current business forms rather than developing risky innovative new offers. Out-sourcing models are low-cost, highly-competitive markets often with low margins. This leaves limited resources to explore new

opportunities and management effort is spent on ensuring company turnover is maintained rather than investing for the future.

As such, the KPIs of the respective parties do not always promote collaborative working to develop the innovative activities on which the longer-term transformation of the economy depends. In academic parlance they promote path-extension activities, the continuation of what is already done, rather than path-creation.

**Table 3.1 Summary of identified needs**

	<b>University</b>	<b>Business</b>	<b>Regional economy</b>
<b>Labour availability</b>	Attract skilled staff to teach students Retain undergraduate students to graduation Attract and retain post-graduate students	Attract and retain skilled labour	Attract and train students Retain skilled labour
<b>Labour skills</b>	Develop appropriate taught skills Develop employability	Availability of suitably skilled labour Developing/updating skills of existing employees	Maintain skills base of available labour
<b>Innovation activity</b>	Weak communication Poorly developed institutional structures Limited demand and low supply Weak innovation culture	Develop a stronger innovation culture amongst a greater number of companies	Promote innovation activity as a means to stimulate economic transformation
<b>Research activity</b>	Access to research resources Reputational profile Publications in leading journals	Limited research activity	Recognise that research is a regional concern, not solely a matter for national programmes.
<b>Entrepreneurial skills</b>	Research and teaching focused rather than innovation, engagement or entrepreneurial.	Meeting immediate market needs (weak entrepreneurship) Strengthening innovation mindsets and capacity (strong entrepreneurship) Extend beyond out-sourcing	Support for entrepreneurial education and the development of a creative and entrepreneurial culture Support for mid-career entrepreneurs

Key



Primary interest

#### 4. Bottlenecks

There is a strong consensus in where many of the bottlenecks to greater University-Business collaboration lie. Some of these are the reciprocal of the needs identified by various partners, but highlight the difficulty of making change. Bottlenecks can be framed as broadly structural or attitudinal, although most exhibit varying degrees of each of these.

*Inflexible education system:* There is a consensus that the education system is inflexible and slow to change. Much of this is a structural challenge with an emphasis on national procedures. However, some academic staff continue to teach outdated content, which can be a frustration to businesses (and some academic colleagues). Businesses also referred to their interest in industrial (applied) doctorates.

*Slow and non-responsive public administration:* There is an acknowledgement that public administration (both national and local) is slow and non-responsive. The bureaucracy found in the Universities means that many firms are reluctant to engage.

*Limited entrepreneurial focus in University institutions:* It is reported that there is little or no expertise or capacity for 'technology transfer' (or the commercial exploitation of research results) within the Universities. This makes Universities dependent on the actions of individual researchers/companies. It was suggested that even though the University of Babes-Bolyai has recently opened a technology transfer centre (early 2017), this is not entrepreneurially focused.

*Limited willingness to collaborate amongst academic staff:* Reportedly, only a limited proportion of staff really want to engage in collaboration with business. Whilst this might appear to be a broadly attitudinal issue the bottleneck is also structural in that the time available to staff is limited owing to very high teaching loads (and the fact that research outputs are privileged).

*Nationally-determined research programmes:* Respondents argue that the determination of research programmes at the national level means that these do not reflect local needs or interests. They also highlighted the problems that can be caused by the uncertainty of funding from national sources. Examples were given of where successful project applications had their funding cut substantially or unexpectedly.

*University metrics:* University KPIs reportedly militate against working with business. The objective of the University of Babes-Bolyai is to be ranked in the top 500 Universities in world –

this leads to an emphasis on academic publications (which have limited economic application) and a limited orientation to applied research.

*Business priorities:* In general, firms reportedly view internships as simply being 'an extra pair of hands'. The value of internships for the longer-term development of human capital tends to be under-realised. This reflects the short-term focus of most firms.

*Risk aversion:* Managing and minimising risk is viewed as essential by all parties if university and business leaders are to be encouraged to value collaboration activities – particularly where the short-term returns may be asymmetric or not immediately apparent.

*Communication:* Both businesses and universities report that the language used by each party is not always understood by the other. Although universities and businesses typically report that different times horizons can be bottlenecks for greater collaboration this did not arise in North West Romania.

*Prevailing salaries:* As staff tend to move to those firms offering the highest wages, both innovative start-ups and universities reported that they were struggling to attract the best staff. This is partly related to national tax incentives, which tend to favour larger companies.

*The out-sourcing challenge:* Firms tend not to invest in new product development. The nature of the market is to respond to out-sourcing requests. This limits the opportunities to develop new technologies, applications and technology transfer routes.

*Bounded networks:* Whilst the baseline work demonstrates strong network connections, these tend to be restricted to within the IT sector. This reportedly results in poorer levels of cooperation in adjacent areas (economic or discipline). This limits the opportunities for cross-over and adjacent area innovation.

## **5. Conclusions**

It is noticeable that there is a strong degree of consensus between all parties as to where the needs and challenges lie. This demonstrates a shared appreciation of the challenges facing the region, but is also testament to the strong networks already present across the region in this sector.

The challenge is to find new ways of working that meet mutual needs but divergent objectives. At present there are few natural drivers favouring greater collaboration in the short-term, which means actions tend to be fragmented and limited to individual initiative.

There is agreement that businesses and universities both have a shared interest in working together. The challenge is to find mechanisms where this will provide benefits to all parties and so contribute to strategic, institutionally-embedded actions that, fundamentally, provide the basis for a sustainable and resilient economic future. This will entail the transformation of the current economic model for the IT sector in the region.

The work on which this report is based demonstrates a positive foundation on which to build. There are good relationships at a personal level, although these are often tightly bounded resulting in weaker connections outside of the IT sector.

Good examples of technological cooperation between universities and companies were offered, but this reportedly tends to be with large (foreign owned) companies with the resources (and culture) for this – eg Bosch. Cooperation between local companies and the universities is more piecemeal and notable as an exception.

In seeking to promote the value of new and improved product development, firms pointed out that developing more advanced projects in companies can attract better quality employees, as well as providing possible innovation gains. In a competitive market dominated by out-sourcing activities this differentiation can be an important ‘pull’.

There is a positive innovation culture emerging in Cluj – for example Cluj Innovation Days already take place, or the recently organized Open Innovation 2.0 conference. Not just IT focused these try to bring new ideas, products, models at the interface of different areas (eg bioinformatics, IoT, smart city solutions etc). This provides a hugely valuable base on which to build.

Finally, it is also worth noting that it appears that private investment finance is available, meaning that initiatives in this area need not be totally reliant on the availability of public funding routes. This provides an important opportunity to develop initiatives that are tailored to the needs of the region, rather than needing to meet nationally-prescribed eligibility criteria.