

Peter Maassen • Jack Spaapen • Outi Kallioinen  
Päivi Keränen • Markku Penttinen  
Roswitha Wiedenhofer • Matti Kajaste

# Evaluation of research, development and innovation activities of Finnish universities of applied sciences

A Preliminary Report



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# Preface

The Finnish higher education evaluation council (FINHEEC) decided in November 2010 to launch an evaluation of the research, development and innovation (RDI) activities of universities of applied sciences<sup>1</sup> (UASs). The evaluation was requested by the Ministry of Education and Culture and recommended by several international evaluations on the Finnish innovation system. The aim of the evaluation was to provide an accurate and realistic picture of the extent and quality of RDI activities undertaken by UASs and their impact on society. The evaluation was to adopt an international perspective.

The Ministry of Education and Culture is about to begin a major reform of the steering and core funding mechanisms of Finnish UASs. To contribute to this work, the evaluation team decided to divide its analysis in two parts. First, the team concentrated on the role of RDI activities of the UAS sector in the national RDI system. Where do the activities of the UASs fit in comparison to the RDI activities of the Finnish research universities<sup>2</sup> and non-university research institutes, of other public organizations and of private companies? In addition, the team focused on the indicators used to monitor and steer the quality and volume of RDI activities on both national and individual UAS levels. In summer and early autumn of 2011, the evaluation team gathered material on the Finnish RDI system and the RDI activities of the UASs. Furthermore, the team received institutional review reports (10 pages each) from all Finnish UASs. Interviews were undertaken with representatives of a number of stakeholder groups, including representatives of relevant ministries, student unions, funding organizations, employers, researchers, and universities, along with the RDI directors of Finnish UASs in October 2011. This preliminary report is the outcome of this first phase analysis. In the second phase, the evaluation team will concentrate further on the actual RDI activities within UASs. Another site-visit will take place in January 2012, which will allow for further interviews with the staff and

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<sup>1</sup> The English translation for the Finnish term *ammattikorkeakoulu* is a politically problematic issue in Finland owing to the fact that the institutions themselves have adopted the term University of Applied Sciences. However, the Ministry of Education and Culture uses the traditional term of Polytechnic. FINHEEC and this evaluation team use the term University of Applied Sciences (UAS) for the sake of clarity.

<sup>2</sup> In this report the term ‘research universities’ will be used to refer to the institutions that are formally part of the Finnish university sector. While using this term, we realize that not all these institutions are research intensive universities.

students responsible for conducting the RDI activities in UASs along with in-depth interviews with representatives from private and public partner organisations of UASs. The final report will be published spring 2012.

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# 1 Introduction

The Finnish UAS sector was established at the beginning of the 1990s and has developed rapidly into a large and dynamic higher education sector, which enrolls currently more first-year students than the Finnish university sector. The UAS sector was initially a 'pure' education sector, but since 2003 it is formally also expected to develop Research & Development activities, to which in 2010 an innovation function has been added by the Ministry of Education and Culture. However, the formal status of this innovation function is in many respects unclear, as can, for example, be seen at the website of the Ministry where only the R&D function of the sector is referred to. In addition, also in the interviews undertaken this unclear status was referred to.

A common strategic goal of the RDI activities of any UAS is to produce information and develop services based on applied research that serve to strengthen the competences and competitiveness of the public agencies and private business community in its region. In addition, many UASs emphasize in their goals the close link between their RDI and education activities. While on paper the resulting RDI function of the UAS sector is expected to perform an important role in connecting the basic research activities of the Finnish research universities with the innovation needs of the public and private sector agencies and companies, in practice the nature and role of RDI activities of the UASs is far less clear.

This is first and foremost the result of the lack of a steering framework for the development of these activities. The adding of RDI as a task to the education task of the UASs was not accompanied by an appropriate funding, incentive and legal support structure. In addition, a clear overall (political) vision on the role and nature of RDI in the UAS sector seems to be lacking, while also the coordination between involved Ministries about the RDI function of the UAS is apparently not as effective as one might expect. As a result the RDI activities of the UAS sector have developed bottom-up into a diverse set of institutional RDI profiles, ranging from multiple, well-connected RDI activities, including basic research, in some UASs, to a marginal set of especially education based development activities, that are weakly linked to research and innovation, at the other end of the institutional spectrum in the UAS sector.

A reform of the UAS sector is currently under preparation. A working group is set up by the Ministry of Education and Culture in order to develop

a reform proposal that will be implemented from 2014 on. In addition, since a number of years an overall structural reform of Finnish higher education is taking place, aimed at reducing the number of research universities and UASs.

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## 2 Funding of RDI in the UAS sector

A major problem concerning the further development of the RDI activities in the UAS sector is the low level and unclear status of the basic funding for these activities. This concerns first the nature of the RDI component in the basic funding mechanism for the UASs. While formally there is no RDI component in the basic funding mechanism, in practice the basic project funding component has been used by the UASs for funding RDI projects. Second, the limited success of UASs in applying for funds to traditional RDI funding agencies, such as the Academy of Finland, and TEKES. It was striking to learn how conservative these agencies are when it comes to their role in the funding of the RDI activities of the UASs. Another observation that the panel made is that these funding agencies apparently had received no or only weak 'instructions' from the Ministry of Education and Culture about their role in stimulating the development of the RDI activities of the UASs. Neither of them had developed specific instruments for funding RDI projects in the UAS sector. As a consequence, most funding of UAS sector's RDI activities comes from the overall internal budget of the UASs, or structural development funds from the EU. The apparent success of some UASs in EU funding shows the potential for RDI in the sector.

While the overall level of basic public R&D funds for the UASs can be regarded as low, the funding level is increasing in nearly all respects faster than the R&D funding level of the research universities. This concerns the total R&D funding which has increased from 2009 to 2020 with 20% for the UAS sector and 11% for the research university sector, as well as the so-called project funding, which is increased by 10% from 2009 to 2010 (research universities 4% increase). Also the funding from TEKES and the Academy of Finland has increased relatively sharply, even though the absolute amount the sector received from the latter is almost negligible. EU funds to the UAS sector increased quite dramatically (44%) from 2009 to 2010 (as explained in figure 1 below), and formed the largest R&D income source after the basic project funding.

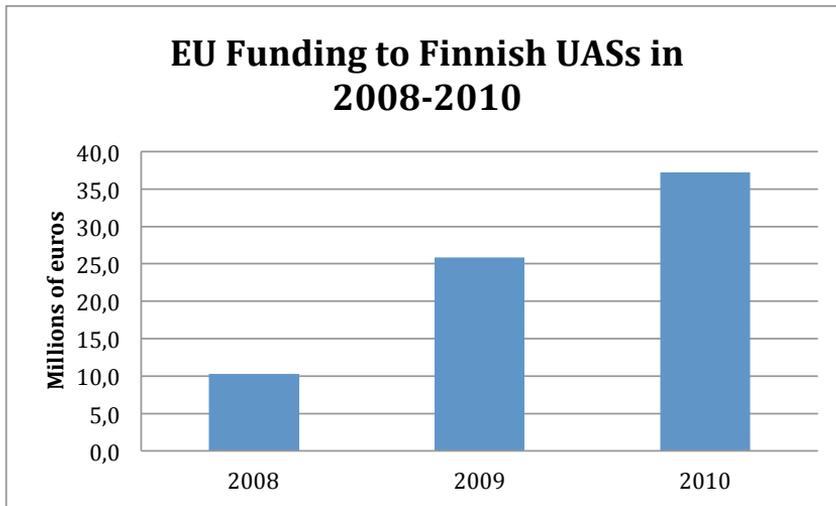


Figure 1. (Source: Statistics Finland)

An important external condition for the further development of the RDI function in the UAS sector is formed by the announced budget cuts for the UAS sector, altogether €126 million by 2015 ( approx. -13%). The student number will also be cut by 2200 student places. While these cuts concern in the first place the educational functions of the UAS sector, it is clear that there is not much financial room to manoeuvre for the government and the UASs in investing in the RDI activities of the sector. This puts the UASs in a vulnerable position. The university sector has recently undergone a major ‘modernisation’ reform, which was accompanied by new investments, which allowed for innovations in the sector, such as the establishment of Aalto University. The announced reforms in the UAS sector will clearly not be accompanied by new investments and room for innovation in the sector’s RDI function.

Finally, a specific issue in this concerns the growing focus in Europe, at the supranational as well as national level, on the so-called Grand Challenges<sup>3</sup>. Many of Europe’s grand challenges are argued to have an important public sector dimension, e.g. ageing societies, security, and public health. Although most UASs have a strong emphasis on public sector topics, e.g. health care and public services, in their educational programmes and observe also a strong need for RDI activities in those areas, there is a relative lack of funding possibilities with respect to these thematic areas, even though TEKES, as well as the structural funds of the EU provide possibilities for funding public sector research.

<sup>3</sup> See, for example, the website of the ERA: <http://www.era.gv.at/space/11442/directory/11794.html>

## Conclusions/Recommendations:

- The funding situation for the RDI activities of the UASs is fragmented and lacks transparency. In addition, it can be argued that the overall basic funding level for the RDI function of the UAS sector is too low. In order for the UAS sector to realize its full potential in its RDI function the basic funding foundation for RDI at UASs should be considerably strengthened.
- The future development potential of the RDI function of the UASs is reflected in the relatively rapid increase in competitive funding income, as well as in the success of the UASs in acquiring EU structural development funds.
- The main Finnish agencies for the public funding of RDI activities, TEKES and the Academy of Finland lack a clear frame of reference for determining their role in the funding, and therefore further development of the RDI activities of the UAS sector. As a consequence these agencies operate rather conservatively when it comes to their task with respect to the UAS sector.

### 3 Integration of students in the RDI activities

One of the missions defined for the UASs in Finnish legislation is to carry out applied research and development activities that serve UAS education, support the world of work and regional development, and take the industrial structure of the region into account (the UASs act 351/2003). This definition has had an impact on the way RDI is understood and conducted at these institutions. According to the questionnaire and the interviews made by the panel many UASs emphasize in their goals the close link between their RDI and educational activities. In practice the link is often understood and implemented as integrating the students into the RDI activities. The Ministry of Education and Culture also supports an integrated view of the RDI and education functions in the sense that the results of RDI should be applicable to education, without students being expected to take part in every RDI project.

A striking feature of the RDI practice of the UASs is the emphasis on Bachelor level students in the institutional RDI activities. This involvement of Bachelor students serves two purposes at the same time, an educational purpose in the sense of contributing to the development of RDI competences and skills of the involved students, and a knowledge transfer purpose, in the sense of satisfying the knowledge and innovation needs of the public and/or private sector project partners. This sets individual challenges for the RDI work in UASs and is a major difference compared to the research universities, where an important part of RDI activities is conducted by PhD students and postdoctoral staff.

This characteristic feature of the UAS RDI practice can to some extent be explained by the design of the initial UAS educational structure, ending with a bachelor degree and demanding of any student a compulsory period of practical experience (of at least three years) before entering a Master's programme. It seems logic from this perspective to provide already Bachelor students with necessary problem-solving skills and competences, amongst other things, with respect to innovation-oriented tasks and project based work, in order to be able to handle new and interdisciplinary knowledge in an effective manner.

Nevertheless, through the interviews the panel has gotten the strong impression that the involved students are in many cases not educated/

prepared properly for their involvement in RDI projects. During any UAS Bachelor programme, courses concerning RDI methodology, design, planning and implementation seem to be limited to 3 to 5 ECTS and offered first and foremost in relation to the students' thesis work and not their involvement in RDI projects. The nature of the involvement of students in RDI projects and the accompanying requirements led to the panel's interpretation that these activities can be characterized as "project based learning". The students, who were interviewed by the panel, expressed a clear wish that there should be a stronger RDI component in their education. It was, for example, suggested that all students should be offered RDI courses representing at least 5% of their curricular activities, aside from the thesis work.

Also the RDI directors noted that the UASs need new, innovative ways to combine education and RDI in order to integrate the major part of all students into RDI activities, not just a relatively small part of them. It should be mentioned that the intensity and volume of students' activities in RDI show major inter- and intra-institutional differences in the UAS sector. All in all there seems to be a wide-spread willingness to link RDI to education, but curriculum inflexibilities, teachers' and also students' capabilities and in some cases also willingness seem to be bottlenecks in this.

The emphasis on Bachelor level students in the institutional RDI activities and the lack of PhD students and postdocs in the UAS sector also imply that there is a considerable gap between the involvement of Bachelor level students and the (limited) involvement of the senior academic staff of UASs in these RDI activities. This point was also raised during the interviews of the panel with researchers who have studied RDI activities of UAS, leading to the conclusion that the low participation of teachers in RDI activities also hinders the transfer of new knowledge obtained in RDI activities to teaching. This is an important sign of the lack of integration between the educational programmes and the RDI projects in the UASs.

The integration could potentially be stimulated by the structured involvement of Master level students in RDI activities, but their potential is not used fully yet. The Master programmes were institutionalized in the UAS sector in 2005 and the sector currently produces around 1000 Master graduates per year. The fact that there are relatively few Master students in the UAS institutions and the specific nature of the Master programmes has in the past led to a lack of continuity in the relationship between the UAS institutions and the employers of the Master students. Initially Master students were expected to bring along their own RDI projects and their research topics were therefore tightly linked to the needs of their employer's companies. In that situation the activities of Master level students supported the RDI development in the

UASs only to a limited degree. However, this is no longer the case. In many UASs Master programmes have been developed that are more closely linked to the institutional strategic RDI profile. In these programmes all Master theses have to be related to this profile, and are expected to foster knowledge transfer and competence building in a more general way. Based on these developments it can be argued that the UAS sector should involve Master level students in more regular and structured way in their RDI projects. Given that they are mature students with relevant working experience, Master students can also in specific programmes be expected to take a more structured role in the supervision of Bachelor students in RDI projects.

### Conclusions/Recommendations:

- At the moment there is a strong emphasis on Bachelor level students and at the same time a rather low participation of senior academic staff in RDI activities of Finnish UAS. This finding leads to questions of quality assurance and thematic sustainability of RDI results.
- The potential of Master programmes in the further development of the RDI function of the UAS sector has to be analysed further. This potential can be expected to be developed with a strategic alignment of teaching (design of master programmes and their project works) and RDI at each UAS. It can be recommended to conduct a follow-up study of this evaluation into the potential, as well as problems and challenges facing the UAS Master programmes in becoming a more substantial part of the RDI activities of the UAS institutions.
- The development of basic RDI competences and skills for Bachelor level students' needs to be addressed and implemented systematically within the Bachelor programmes' curricula.

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## 4 Staff development at UAS

Among the academic staff at UASs the interest in becoming involved in RDI activities is apparently in a state of change as the RDI function has become only recently clearly emphasized in the strategic management level of the UASs. Some of the academic staff would clearly like to continue in a more traditional way of keeping the RDI separate from teaching. An important aspect in this is the academic culture in the UASs which is still mainly rooted in the educational profile of the original institutions. A change in the academic culture would entail a change in the basic understanding of their academic tasks among the senior academic staff of the UAS. In some UASs highlighting examples of good practice in RDI work and innovation training in the UAS sector is already part of the further educational programme for teaching staff. This could more generally be a way to change the academic culture in the UAS sector as a whole.

Finland is at the bottom of the OECD country rankings when it comes to the share of the senior academic staff in UAS institutions that are doctoral degree holders: the share of the staff involved in RDI activities with an academic post-graduate degree is 19% (2009). The total number of RDI staff (full- and part-time) in UASs is 4 545 (2009).

As indicated in the survey and the interviews undertaken by the panel, integrating RDI and education activities as part of the working practices of the academic staff is regarded to be the most urgent organizational development need in the UAS sector. Staff development with respect to their RDI functions is generally organized through internal or external training of the staff, annual personal career development discussions, research seminars and strategic involvement of academic staff in RDI activities. Especially in the early stages of the development of the UAS sector the academic staff was encouraged, if not required to take part in postgraduate studies. Some UASs have also organized RDI-competence surveys in order to design a more specific training plan. Especially the inadequate project management skills often seem to create bottle necks and to slow the processes in integrating RDI and education activities which has to some extent been taken into account in the recent training plans of UASs.

Nonetheless, overall it can be argued that an important part of the teaching UAS staff is in general lacking the adequate level of competence for undertaking RDI these activities at the level required. Therefore the actual integration of RDI into education resembles often practice-based

development projects without any 'real' RDI dimension. Evidently there still is no clear understanding, neither at the institutional, nor the national level, how the RDI task of the UAS sector should be interpreted and what kind of RDI aspects should be integrated in the educational practices of the UASs.

### Conclusions/Recommendations:

- A focus on the integration of the three statutory tasks (education, RDI, regional development) presupposes an important change of the academic culture in UASs.
- RDI skills and competence development should be prioritized and emphasized in staff training in the UAS sector.
- Identifying and disseminating good practices, methods, tools and processes about RDI practices in the UAS sector are of great importance for the benefit of the further UAS sector staff development in the RDI area.
- Postgraduate studies are to be encouraged and enabled for academic staff of UASs.

## 5 International dimension

The strategy for the internationalization of higher education as promoted by the Ministry of Education and Culture has a strong link also to RDI. As indicated by the Ministry, the aim of the Finnish internationalization strategy is “to create in Finland internationally strong and attractive higher education institutions and a research community that promotes society’s ability to function in an open international environment, supports the balanced development of a multicultural society and participates actively in solving global problems”<sup>4</sup>. As stated by the Research and Innovation Council the Finnish Innovation System generally suffers from weak international linkages and low attractiveness for foreign researchers and well-educated experts.

There is a clear challenge when it comes to the international dimensions of the RDI activities of the UASs. The evaluation of the Finnish National Innovation System<sup>5</sup> in 2009 concluded that the production of international research and business competences at UAS is low. In accordance with that report this evaluation panel also got the impression, that most RDI projects obviously do not have an international component, although some examples were given of the contrary. Also the RDI training of (most) UAS students seems to lack an international orientation and international connections.

Those UAS institutions, which are engaged in international cooperation with regard to their RDI activities most often accomplish this through funding from structural EU funds, e.g. the Interreg programme, the EU Life Long Learning Program, and some third-country funding schemes of the EU. Cooperation with institutions from the Baltic Sea Region, Russia and China are of high importance. The EU’s structural development funds seem to become even more important for the UAS sector’s RDI function and role in the future. From 2014 onwards there will be a strong emphasis in the structural development programmes on regional innovation and technological development especially for SME’s. This includes a special focus on so-called regional “smart specialization strategies” utilizing the possible inputs from

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<sup>4</sup> Strategy for the Internationalisation of Higher Education Institutions in Finland 2009–2015. Publications of the Ministry of Education, Finland 2009:23 (2009) <http://www.minedu.fi/export/sites/default/OPM/Julkaisut/2009/liitteet/opm23.pdf?lang=en>

<sup>5</sup> Reinhilde Ceugeliers et al.: Evaluation of the Finnish National Innovation System – Policy Report (2009) [http://www.tem.fi/files/24928/InnoEvalFi\\_POLICY\\_Report\\_28\\_Oct\\_2009.pdf](http://www.tem.fi/files/24928/InnoEvalFi_POLICY_Report_28_Oct_2009.pdf)

all actors of the regional innovation systems to improve regional economic competitiveness.

About 21% (€ 26 Mio) of the whole UAS RDI funding in 2009<sup>6</sup> came from foreign sources, predominantly from EU structural funds. These funds are allocated very heterogeneously to the single institutions, with no funds as the bottom line and a maximum of € 2.44 Mio in 2009. Only in a few cases RDI activities of UAS institutions are funded through the EU's FP7. Given the applied, research based nature of most of FP7's programmes, and the intense competition for getting FP7 funding the latter could also serve as a measure of the quality of the RDI projects of the UASs. Even though the overall success rate of any application to FP7 is relatively low (overall between 15–20% of all applications are selected for funding), it can be argued that the Finnish UASs should become more active in applying for EU's research funding in FP7 (until the end of 2013) and the new Framework Programme called Horizon 2020 (from 2014 on). The elaboration of international proposals and building of consortia is a resource intensive task. Thus to support the UASs' participation in international programmes some national support schemes for project application and proposal development should be offered. The experience of the panel suggests that such funding mechanisms do not directly impact on the success rate of funded projects, but increase the number of proposals being submitted to international programmes. It is the collection of experience and moving forward on the learning curve of actors, who have repeatedly applied for funding that improve the success rate and thus leverage effects of invested money.

The panel wants to emphasize that for the further development of the RDI function in the sector and a sound base for knowledge application it is essential that all UASs are stimulated to develop an effective international component in their RDI projects. The further development and strengthening of international collaborations is also emphasized by the RDI strategies of the UAS.

The panel sees a potentially strong role for RDI in connecting international challenges to local options for problem solution, for example, in quality of life and health care issues, lifelong learning and questions of sustainability. It is also stated as one of the issues for the further development of research at UASs in the results of the EDUPROF project of the UASNET<sup>7</sup>, that “the inclusion of international components can complement the regional

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<sup>6</sup> Polytechnics in the Innovation System of Finland, Evaluation of RDI activities at the Polytechnics, Research and Innovation Council, 2011.

<sup>7</sup> The European Network of Universities of Applied Sciences..

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tasks, since regional innovation is not solely based on regional research as such. Local engagement and international orientation may well to together and reinforce each other.<sup>8</sup>

### Conclusions/Recommendations:

- Increase the RDI cooperation at UASs with international consortia in corresponding EU and third country programmes for a further effective development of the RDI function at the individual UASs.
- Despite a strong strategic focus on the enhancement of internationalization at the national level, an effective support structure for stimulating the internationalization of the RDI activities of the UASs is lacking. Thus the evaluation panel recommends strengthening the national support and funding scheme for the development of applications for international RDI funding at UASs.
- Since European research funding programmes often emphasize societal and economic challenges requiring scientific competences on a high, internationally competitive level, participation in such programmes can be considered as an indication for research quality. Consequently, special attention should be given to increase the participation of UASs in such programmes (especially FP7 and Horizon 2020).
- EU structural funds are a very important instrument in the competitive funding of RDI activities at Finnish UASs, serving especially demands of regional innovation systems. To foster regional innovation activities and technological development especially for the benefit of SME's the enlarged RDI funding opportunities of the upcoming structural development funds should be exploited thoroughly.

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<sup>8</sup> Research at Universities of Applied Sciences in Europe – Conditions, Achievements and Perspectives, EDUPROF Report, De Weert, E., and Soo, M., Cheps, Enschede: The Netherlands, January 2009.

## 6 Linkage to economy and society

Another challenge with respect to the further development of the RDI function lies in the way in which the UASs position themselves with regard to the society and the economy. What we have learned so far is that there is mostly a rather ad hoc kind of relation between UASs and public and private sector organizations, especially SMEs. The panel wants to point here especially to the weaknesses in the relationship between the UASs and their private and public partner organizations; weaknesses that can be argued to be surmountable. For example, as discussed above, the UAS sector has apparently not yet managed to develop in their Master level programmes an adequate balance between the individual institution's interests in strengthening its RDI profile, and the interests of the individual students and employers of students enrolled in these programmes. Furthermore, there seems to be a lack of structured bridging mechanisms to narrow the socio-cultural gap between UASs and society. Of course, we heard interesting examples of the attempts of individual institutions to improve the connections, e.g. dissemination of RDI outcomes through regular newspaper columns, morning coffee meetings or brainstorming workshops together with representatives from economy. Nonetheless, overall there is not much evidence for the co-creation of knowledge, for the joint development of innovation strategies on a regional or higher level in which both UAS and industry take part, even though a number of UASs take part in regional innovation strategy work. Further the panel did not find many structured overviews of the output of RDI projects or the RDI expertise and experiences of UASs easily accessible for interested companies and organizations. It is only fair to say that there are also very few funding mechanisms incentivizing and supporting RDI contacts and setting up structured partnerships with public and private partners in relevant areas.

The panel did come across examples of more long term structured connections between individual UAS units and private and public companies and agencies, e.g. in the social and health care sectors. Nonetheless, overall the dissemination of RDI expertise and experience occurs in a rather fragmented and unstructured way. Some important reasons for this arguably are to be found in the fact that the private sector sees UASs in the first place as a source for qualified labor and not so much as a trusted research (RDI)

partner. Apparently, it is often unclear for companies what exactly the UAS expertise is and how it can benefit their company strategy. Clearly, there is a lack of knowledge on both sides of what could be common ground for joint activities and developments for the longer term. Therefore, it would make sense to invest more in bridging mechanisms that would allow for joint projects. Collaboration is something that can be learned (and needs to be learned) through mutual experience. This does not necessarily require large investments, because it does not necessarily require large levels of funding to bring people together and let them try out something (cf. innovation cheques of 5000 € as common funding mechanisms in other European countries). One could also focus on the experiences of PPPs, given that in some sectors good examples can be found of more structural cooperation between public higher education institutions and private companies.

Obviously, a lot more needs to be done to develop an integrated innovation system in which public and private parties collaborate in a fruitful way. The RDI concept needs to be further developed, the relationship of research universities and non-university research institutes with the UASs needs to be investigated, further stimulated and nurtured (both institutionally and culturally), and communication and transparency have to be developed further. But given the current financial constraints, it would already be helpful to take some small but concrete steps that will provide on the one hand a chance to create something, and on the other hand time to think about a longer term more structural approach.

### Conclusions/Recommendations:

- UASs should become more visible for their environment, in particular regarding what they have to offer for potential clients.
- More attention should be paid to attuning the agendas of a UAS and relevant partners in the environment, either through small scale bridging mechanisms or longer term collaborative practices.
- More attention should be paid to link students who do their Master degree studies at a UAS with the long-term goals of the UAS RDI strategies and profile.
- More effort should be directed towards learning how to collaborate with partners in society.

## 7 Development of RDI indicators

Finally, we want to focus on the development of new RDI indicators for the UAS sector. For purposes of performance-based financing and national-level monitoring a set of four RDI indicators was introduced also for the Finnish UASs by public authorities several years ago. These indicators are up for discussion currently since from a UAS perspective they exhibit several shortcomings. First they were created based on indicators assessing scientific research in research universities, second the nature of the indicators seems not to be suitable to measure the realization of certain policy goals, and finally the data collection is argued to be too complex. Thus recommendations for redesigned indicators, which can be expected to overcome those obstacles, have been elaborated by a working group of the UAS rectors' conference<sup>9</sup> recently and shall be included in the considerations of the Ministry of Education and Culture.

Overall it can be argued, that one has to be careful in using RDI indicators with respect to the UAS sector at this stage of development. The RDI-function has been introduced only recently, and in general indicators are only meaningful if they are based on robust datasets; consisting of data that can usually only be gathered in a mature, fully developed system. While the educational activities of the UASs can be characterized as such, currently this is not the case for their RDI activities. For RDI to thrive, it has to be embedded in a mature international community of researchers which stimulates local and regional RDI developments and functions as a benchmark for quality and impact.

Given the lack of an overall political vision on, and the lack of clarity about the role and nature of the RDI function in the sector, and also the limited staff input and insufficient overall international embeddedness, it will be a challenge to measure the actual effects of the RDI activities in a meaningful way. In such a premature situation, it is more effective to use indicators that will tell something about the developments with respect to realizing the main goals of the system, including the pitfalls and possibilities in this. The question then becomes how one can make sure that a new set of at best proxy indicators will be used for supporting the further development

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<sup>9</sup> Proposal for RDI performance indicators for universities of applied sciences, AMKtutka Working group.

of the RDI function of the system, and not for punishing (and awarding) specific institutions?

The simple answer to this question is that at this stage in the development of the UAS sector's it can be recommended that RDI function indicators should primarily be used as learning tools for all involved actors and not for accounting purposes. Indicators used this way will help to construct an evidence based concept of research quality and impact. At this stage it is questionable whether it is realistic to work with system-wide indicators. It would be preferable to develop a two-tier set of indicators in which one set consists of a small number of RDI-indicators that refer to general quality and impact measurements, for example, focusing on some output and use categories, and another of RDI targets and related indicators for each individual UAS that do justice to the varied state of development of the RDI function at each institution. This would entail a clear definition of RDI and its three components followed by realistic targets for the short, medium and long term. In developing such a system both intrinsic values for RDI and extrinsic or contextual considerations have to be taken into account. It can be expected that some innovative indicators will be created, for example, regarding 'knowledge co-creation', 'artifacts', open innovation, or connection between European Grand Challenges and local solutions. In addition, indicators with a special focus on a UAS's regional function and entrepreneurial activities will be of high potential importance from the perspective of an institutional RDI director.

As relevant projects at the European level show, the clear and targeted definition of effective indicators that are covering the applied and user-oriented nature of RDI at UASs is a difficult and complicated endeavor, as is the collection of relevant data and information in the use of the indicators. It should be mentioned that developing an effective set of indicators is still a work in progress also internationally.

However, it is also important to take the political reality into account. There is the proposal of the AMKtutka working group for four/five indicators: Application-based funding for RDI activities; Direct client funding of RDI activities; International funding of RDI activities; Number of publications; Number of credits gained by students in RDI activities. Furthermore, the Ministry of Education and Culture has just launched (15 November) the new research university funding matrix proposal for 2013. It would be unproductive to ignore these developments and come up with a completely new set of indicators. What we advise to do is to look at these two documents critically from the development perspective that we described above and use (some of) these indicators in the spirit of learning (and not accounting) to see whether they are helpful in developing the RDI function.

### Conclusions/Recommendations:

- Given the premature stage of the development of the RDI function at UASs, indicators should be used to learn and improve, not to account and punish.
- In doing so, the current proposals for indicators (AMKtutka, ministry matrix) should be taken seriously, but handled in the perspective of learning.
- It can be recommended to make use of international (European) developments regarding indicators and to not underestimate the hard work needed to develop indicators and collect robust and reliable data. This goes in particular for innovation, especially when 'hard' indicators like patents or licenses are not relevant.

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## 8 Final reflections

In this report a rather critical review of the current situation of the RDI role and task of the UAS sector is presented. In the panel's view there are a number of aspects of the overall steering, legal and funding framework of this RDI role and task that need considerable strengthening for the UAS sector to be able to perform its RDI task at its full potential.

Nonetheless, we want express here our admiration for the progress made since 2003, and the commitment and enthusiasm with which all the actors involved in the UASs in the work on the development of their RDI function. Also the environment of the UASs is positively dedicated to the further development of the UAS sector's RDI function, as is illustrated by the interest in the evaluation and the willingness of all agencies and interviewees invited to participate in this evaluation, as well as by the fact that the funds invested in RDI activities at UASs is increasing relatively rapidly.

From an international perspective the development since 2003 of the RDI function of the UAS sector has given Finland a unique advantage over many other countries where the RDI role of institutions comparable to the Finnish UASs is more controversial and at best in an earlier stage of development. The evaluation panel hopes that this report will contribute in a constructive way to next phase of this development, i.e. the planned reform of the UAS sector, and especially the strengthening of the way in which this sector can develop in a more coherent, sector-wide way its important role in the Finnish RDI landscape. If succeeded it will undoubtedly allow Finland to profit in the years to come from the contributions the UAS sector will make to the Finnish R&D, and innovation systems.

## APPENDIX: Site-visit programme

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|-------------|---|
| Wednesday   | 26th October 2011   |
| 9:00–10:00  | Meeting of the evaluation team  |
| 10:00–11:00 | Interview the UAS Rectors' Council ARENE  |
| 11:00–12:00 | Interview with the UAS students' union SAMOK  |
| 13:00–14:00 | Interview with the representatives of Ministry of Education and Culture and the Ministry of Employment and the Economy                  |
| 14:15–15:15 | Interview with representatives of companies   |
| 15:30–16:30 | Meeting of the evaluation team  |
| Thursday    | 27th October 2011   |
| 9:00–10:00  | Interview with representatives of the university sector   |
| 10:15–11:15 | Meeting of the evaluation team  |
| 11:15–12:15 | Interview with researchers on UAS RDI   |
| 13:15–14:15 | Interview with representatives of Academy of Finland, TEKES and the Häme Centre for Economic Development, Transport and the Environment |
| 14:45–16:00 | Meeting of the evaluation team  |
| Friday      | 28th October 2011   |
| 9:00–10:00  | Interview with RDI directors of UAS   |
| 10:30–12:00 | Interview with RDI directors of UAS   |
| 12:30–13:30 | Meeting of the evaluation team  |