



European  
Commission



# Measuring the impact of university-business cooperation

*Case Studies*

***Europe Direct is a service to help you find answers  
to your questions about the European Union.***

**Freephone number (\*):  
00 800 6 7 8 9 10 11**

(\* ) The information given is free, as are most calls (though some operators, phone boxes or hotels may charge you).

More information on the European Union is available on the Internet (<http://europa.eu>).

Luxembourg: Publications Office of the European Union, 2014

Project Number: 2014.3254

Catalogue Number: NC-04-14-302-EN-N

© European Union, 2014

Reproduction is authorised provided the source is acknowledged.

# Measuring the Impact of University Business Cooperation

(EAC/23/2012)

## Case Studies

### Principal Authors

Cardiff University  
Imperial Consulting  
Newcastle University

Dr. Adrian Healy  
Dr. Markus Perkmann  
Prof. John Goddard  
Louise Kempton

### Disclaimer

This document has been prepared for the European Commission; however, it reflects the views only of the authors, and the Commission cannot be held responsible for any use which may be made of the information contained therein.

## Table of Contents

AppCampus	4
Master in Banking Management, ADEIT, University of Valencia	17
University-Business cooperations between the chemical industry and the Merseburg University of Applied Sciences in Central Germany	31
European University Enterprise Network (EUEN)	47
Education Cultural & Creative Knowledge Alliance for Tomorrow's Entrepreneurs	58
The Know-fact project case	67
Commercial communications, University of Economics, Prague	74
Qatar Carbonates and Carbon Storage Research Centre at Imperial College London	87
Hewlett-Packard and Sofia University	95
Subsea sector case study	123

---

## AppCampus

Dmitry Sharapov, Llewellyn D. W. Thomas, Erkkö Autio

Imperial College Business School.

### 1. Introduction to case

AppCampus is 3-year project aiming to attract software application developers to the Windows Phone platform. It is funded by €9 million each from Microsoft and Nokia, and managed by Aalto University in Finland, who cover operating costs of around €3 million. Launched to the public in May 2012, AppCampus offers grants and training to developers of applications (apps) for the Windows Phone platform in exchange for an exclusivity agreement requiring that the app not be released on competing smartphone platforms for at least six months after its Windows Phone launch.<sup>1</sup> The available grants range in size from €20,000 to €70,000, and submissions go through a stringent selection process with an emphasis on app novelty and quality. In particular, applications submitted to AppCampus should not have previously been released on a competing platform, and they should support key features of Windows Phone software and hardware.

This collaboration operates in the following manner: Nokia and Microsoft provide funding, connections for AppCampus to their other developer-focused initiatives, and promotional support for applications funded by AppCampus once they are released. All day-to-day operations are carried out by AppCampus staff, who are employed by Aalto University. A steering board consisting of 4 AppCampus staff, 2 staff from each business partner, an independent member, and a member of Aalto University staff meets on a monthly basis to evaluate the collaboration's performance to date and to discuss whether any changes to the collaboration are required.

In its first year of operation, AppCampus received over 2,600 app submissions from 96 countries, of which 166 were approved for funding for a total committed investment to date of €5 million (AppCampus Blog, 2013). During this period the number of staff employed by Aalto University working on the AppCampus collaboration has grown to 12 people. The first apps funded by the programme were released to the public via the Windows Phone marketplace at the end of December 2012, with 15 available on the marketplace by the start of June 2013 (AppCampus Blog, 2013). AppCampus' first year of operation also saw three AppCademy training camps during which up to 20 developer teams with accepted app submissions came to Finland for a month of intensive coaching on all aspects of Windows Phone application development, as well as on more general business and entrepreneurial skills, such as pitching to investors and marketing.

In the course of our research into this case of university-industry cooperation, we visited the AppCampus offices in Espoo, Finland on three occasions, in December

---

<sup>1</sup> The required exclusivity period was reduced to 90 days at the end of March 2013.

2012, and March and June 2013. During these visits two of the authors carried out semi-structured interviews with AppCampus staff, university staff and students, and staff working for the industry partners. Overall, 25 interviews with 10 key informants lasting between 21 and 64 minutes were carried out, recorded and transcribed. Detailed information about the interviews is provided in the appendix.

Additionally, the visiting authors spent time informally talking to AppCampus staff, developer teams receiving funding from the programme, university staff and students, and industry partner staff. While these conversations were not recorded, the authors made field notes capturing the key points of interest in these discussions. The authors also had opportunities in the course of their visits to observe AppCampus' organisational processes and interactions between AppCampus staff and other stakeholders, such as developers or industry partner staff. These observations were also recorded in the form of field notes. Finally, the authors made use of archival materials such as blog posts, internal presentations and social media feeds to triangulate the information gathered from interviews.

## **2. Reasons for this university-industry cooperation**

The AppCampus collaboration was initiated by the then head of the Aalto Centre for Entrepreneurship after the announcement in February 2011 of the partnership between Nokia and Microsoft in the smartphone market. He sent an e-mail to contacts in Microsoft Finland, who, as it turned out, had also been thinking about how to attract high quality application developers to the Windows Phone ecosystem in the face of competition from two strong incumbent ecosystems managed by Apple and Google. In the following months the idea was fleshed out and Nokia came on board, having agreed to match Microsoft's €9 million investment. In June 2011, active development of the AppCampus concept began. In October, an Entrepreneur in Residence at Aalto University, was brought on as the project champion on the Aalto side, and worked with Nokia, Microsoft and stakeholders within Aalto to further develop the concept and to negotiate the form that the agreement establishing AppCampus would take. Through this process, the idea for AppCampus became more substantive and clearly defined. It was at this time that the core aspects of the program were agreed upon, including the idea that grants would be offered and Windows Phone exclusivity asked in return (with this condition understandably not extending to Nokia platforms), that app innovativeness would be key selection criterion, the size and range of grants, and the need for a developer capability enhancement aspect.

Securing support from Aalto was not straightforward, as there were serious concerns about whether having an organisation under the university umbrella managing a significant amount of money from Microsoft and Nokia would mean a loss of independence for the university. The question of whether the investment required from the university would generate a sufficient return was also a point of discussion, as under the terms of the collaboration agreement, Aalto does not benefit financially from AppCampus but does hold the rights to the AppCampus brand. However, arguments that academic independence would not be threatened and that the programme would benefit both Aalto and the Finnish economy more generally led to

Aalto agreeing to manage the programme and to support it by covering operating costs and providing office space:

*"Preserving independence and academic freedom were the key issues in the beginning, but we quickly were able to create a framework where it was clear that all professors, staff members and students still had the absolute freedom to choose platforms right for them. Once this problem was solved, we then spent a lot of time working on the financial model. It was not difficult to find money in the budget for this given the scale of impact we felt we could have in terms of turning novel ideas from our Aalto community into commercially viable apps. For example, there are already several cases of projects coming out of Aalto departments and student ideas being funded. And beyond this, a significant amount of the funding is going into ideas generated in other parts of the Finnish innovation community. It is also important to understand the context that Microsoft and Nokia were going to create this programme with some university partner, somewhere around the world, so we thought it was important for us to compete hard to win the competition."* (Interview 6)

From the perspective of Microsoft and Nokia, AppCampus is first and foremost an investment in the creation of high-quality products and services, in the form of apps, which are complements to the Windows Phone platform and have the potential to add to the value that phone buyers get from using the phone and accessing its ecosystem. The founding of AppCampus also reflects Microsoft's and Nokia's understanding that while their brands, in-house processes, and capabilities are well-suited for attracting well-established and experienced developers, a different approach may be required in order to attract small, high-risk, potentially innovative developers to the Windows Phone ecosystem. The creation of AppCampus to perform this important role in an independent and, owing to its small size, agile manner represents one aspect of Microsoft's and Nokia's strategy for ecosystem creation. AppCampus also represents another facet of economic strategy in ecosystem creation: that of influencing the costs and benefits of Windows Phone development for a target population of developers who have been largely overlooked by competing ecosystems and whose cost/benefit calculation can be most significantly affected by the incentives offered:

*"I think Finland's reach into emerging markets was critical to Aalto's selection as the university partner to AppCampus. While the grants we are giving may be relatively small to a developer in Silicon Valley, even a €20,000 grant can be very significant to a developer from, say, Russia, Romania or Poland, covering salary equivalent of over 1 man-year. And these are proving to be among the strongest regions both in terms of deal flow and performance once in the programme."* (Interview 6).

### **3. Main objectives of this university-industry cooperation**

From the perspective of AppCampus staff employed by Aalto university, the main objectives of this cooperation are to increase the quality of apps on the Windows

---

Phone market, thus influencing phone buyer decisions regarding which ecosystem to choose, and to help developer teams funded by the programme to develop their skills in order to make money from their applications:

*"I think that one of the criteria I see is that if you have more developers on the Windows Phone ecosystem, and better quality, that's already achieving a good result, and that is regardless of whether they make money or not. [...] Even better if you go one step further. It's like you have something so cool and unique, that you rather think of buying a Windows phone because it's better than the others. [...] If I can help developers as well, or entrepreneurs as well, to succeed faster and more, and make more and bigger revenues, that's even [better] because then it means that you bring more richness and more value into the ecosystem. Therefore, there's more chance that it will grow faster and attract more [users]." (Interview 4).*

*"We want to get more of these new apps out, but we want to create new Windows Phone developers as well, who, in the future, are able to contribute and create quality Windows Phone apps themselves without going through our processes." (Interview 1).*

For Aalto University itself, the collaboration is an opportunity to have a significant social impact by facilitating the creation of new businesses and new employment in the local area, and to further develop their reputation for mentoring and acceleration of new businesses:

*"So, we want to create new businesses, new companies, employing people around Aalto. So, it was a good sort of string to pull, that, okay, with AppCampus, we attract a lot of attention here. We actually have €18 million to hand out as grants, as long as the developers and companies in this area just activate themselves, and then apply. And, well, that's what has happened now. So, initially, it was, like, one third of the applications came from Finland. Now it's been going down a little bit, because the other countries are picking up. [...] And, well, I think we've now made close to 100 grant decisions, totalling, I think, €2.5 million. So that's a good amount of money that has already been sunk into this ecosystem here. And so, this was the kind of a story I was telling, that, well, we will be seeing more and more, like, good-quality companies coming here, working with us, making the connection to the university on different levels, and then also, of course, not all are here or stay here. They may go somewhere else. But still, it does create the critical mass for the area, that we can really make some things happen here. And that's been, like, the theme all the time here. Like, with Start-up Sauna and Aalto Ventures Programme, and the spinoffs we create. It's really all about being sexy enough as an area so that you get the money coming here. You get the developers coming here, the entrepreneurs, coaches, all that. And we are still not there, but we are making good progress." (Interview 15)*



---

*So all of this, all the things we're doing around the mentoring and acceleration, I think, we may develop a core competence about that over time, in the screening, in kind of creative use of space. I think there are a lot of positives about it. (Interview 14).*

For Microsoft and Nokia, the objective of this collaboration is to bring through a number of high-quality, innovative applications first launched on the Windows Phone platform, that could act as a decisive factor in customer handset choice.

#### **4. Monitoring mechanisms and indicators used**

The progress of this collaborative effort is monitored in a number of ways. On a weekly basis, an e-mail is sent out to all AppCampus staff and steering committee members. This e-mail reports on a number of key performance indicators agreed between Aalto, Microsoft, and Nokia, including the total number of submissions to AppCampus to date, the breakdown of these submissions by investment pipeline stage (stages include application received, screen, investment board review, vetting, design, release, and post mortem), country of developer team, and app category.

More detailed monitoring and discussion of progress takes place at monthly steering board meetings. In addition to the information provided in the weekly update, steering board members monitor investment volumes, the performance of AppCampus-funded apps which have been released onto the market (the average user review score of an app determines whether or not the industry partners will actively promote it, for example by making it a featured application in the Windows Phone store), and operational efficiency indicators such as the time it takes for the AppCampus team to make a decision on an application following the receipt of a submission from the website. The number of developer teams which have gone through the AppCademy training program is also an indicator of programme performance. Impact of the collaboration on both traditional and social media outlets is tracked using the Meltwater set of tools.

There has been an ongoing discussion between the collaborating partners regarding which key performance indicators (KPIs) it makes sense to use to monitor the collaboration's performance. These discussions were particularly intense in the collaboration's design phase:

*"Initially, the KPIs Nokia-Microsoft were pushing to us were, like, nonsense. They were saying stuff that didn't add up at all. So I had to sort of have some ammunition to shoot back and say that, hey, in the app store, it looks like this, and now you are trying to put a KPI that would require us to do something like that. And it's, like, not going to happen." (Interview 15)*

The key point in this discussion was whether the programme should fund as many new apps as possible, without trying to filter out lower-quality submissions, or whether the focus should be on putting real effort into developing a high-quality screening process. The goal of the latter approach, which was the one chosen in the

course of the negotiation process, is the funding of a much smaller number of apps, but picking those apps which are more likely to succeed in terms of downloads, ratings, and revenue for their developers. At one point in the negotiation, the industry partner representatives were arguing for KPIs which pushed the program both towards quantity and quality of funded apps, but after further discussion and negotiation this was agreed to be an approach which was not realistic, given the resources dedicated to the programme.

## 5. Main results achieved

In its first month of operations, AppCampus received a far larger number of submissions than had been expected, resulting in the goal for the number of submissions received over the collaboration's 3-year lifespan being revised:

*"We got swamped by the number of submissions. We were thinking about maybe two to three thousand submissions in three years, and within a month we got 600."* (Interview 4).

In November 2012 AppCampus ran its first training camp for 13 teams, consisting of sessions on application design and development, as well as more general entrepreneurial skills such as pitching app ideas to investors, marketing and communications. As part of this broader entrepreneurial training, some of the teams participated in the pitching competition at the Slush tech, design, and start-up conference, which took place during the training camp. Two AppCampus teams made it into the round of 20 in the competition.

At the end of December 2012, the first AppCampus-funded apps were released onto the Windows Phone marketplace. The first app released, a game called 'Haunted', performed very well in terms of downloads and user reviews:

*"Already in the second week of after the launch of Haunted application, they made it into the top 50 in the US in downloads, number eight in Russia, number seven in Finland, number one in Brazil."* (Interview 13).

Another important result of this collaboration has been the participation of AppCampus staff in over 100 developer conferences and other mobile-focused events by the end of 2012. These events provide an opportunity to raise the collaboration's profile, as well as a chance to talk to developers who may be interested in creating apps for Windows Phone.

In its first year of operation, AppCampus received over 2,600 app submissions from 96 countries, of which 166 were approved for funding for a total committed investment to date of €5 million (AppCampus Blog, 2013). During this period the number of staff employed by Aalto University working on the AppCampus collaboration has grown to 12 people. The first apps funded by the program were released to the public via the Windows Phone marketplace at the end of December 2012, with 15 available on the marketplace by the start of June 2013 (AppCampus Blog, 2013).

AppCampus' first year of operation also saw three AppCademy training camps during which up to 20 developer teams with accepted app submissions came to Finland for a month of intensive coaching on all aspects of Windows Phone application development, as well as on more general business and entrepreneurial skills, such as pitching to investors and marketing.

## 6. Outcomes achieved

For Aalto University, AppCampus has been successful in raising the university's profile, with the investment from Microsoft and Nokia acting as a signal of the quality of the business environment around the university and in Finland in general. This increase in the value of the university's brand may have already begun to play a role in the decisions of large information and communication technology corporations regarding where to locate their research and development centres:

*"I believe AppCampus was a significant driver in being able to show global giants, like Huawei for instance, the commitment that large companies are making to the developer ecosystems we are building around Aalto and in Finland overall. We are also seeing growing commitment from companies like Intel, Electronic Arts, and there are strong rumours of more major ICT firms opening R&D centers soon. While Nokia's commitment has always been clear, bringing in Microsoft at this level was really a major credibility signal."* (Interview 6).

The collaboration's success to date has also proved useful for Aalto in the university's efforts to build partnerships with other universities, as in many cases it provides concrete examples of existing investment from Aalto into a developer team coming out of the target university:

*"[AppCampus] is a great calling card going into the US, but also to Russia and the UK, and there are other places that we say, hey, this is effectively foreign direct investment into the markets. [...] I was just at a university that we really want to partner with a few weeks ago, and AppCampus was, you know, really strong... They got really excited about that immediately and in particular when I told that we'd already done one grant to their teams. And that helps us and they were then eager to talk about, you know, joint degree programmes and collaborative research and stuff like that. So I think it's good. I think the value-add to Aalto is through that channel and through this kind of local ecosystem development." (Interview 14).*

For Microsoft and Nokia, it is still too early to make a judgment on the programme's overall outcomes as only a handful of AppCampus-funded applications have been released to date. However, the collaboration has succeeded in drawing developers to Windows Phone, as evidenced by the number of submissions which AppCampus has received, while the performance of some of the first batch of applications is highly encouraging. These results have led to an increase in attention to and support for the collaboration from the business partners:

*"There was a lot of, I think, scepticism in Nokia and Microsoft side, whether this will sort of fly or not. And, well, it shows in the [collaboration] agreement. They have all kinds of, let's say, pull-out clauses there, so that they can basically just give us a call and say that that's it. We stop. And, well, then we have to ramp it down on certain time frame, certain conditions. So, I don't think there were that many people who truly believed that this will fly. And now, as we've been able to show that it's actually flying high, it has now changed a lot of the attitudes in both companies." (Interview 15).*

Another outcome of this collaboration to date is the increasingly large network of organizations and accelerator programmes that AppCampus is partnering with. In the summer of 2013, AppCampus announced partnerships with Wayra, Telefonica's accelerator programme; Harvard Business Angels and the Indian government; and the World Bank's Infodev programme. These and other partnerships serve two main purposes. First, they are a way for AppCampus to receive referred submissions which are expected to be of higher quality on average than unsolicited submissions. Second, the partner organisations may also offer to match the grants provided by AppCampus with additional funding for developer teams in their target population that are successful in getting their applications through the screening process.

## **7. Impact in terms of skill development**

AppCampus' key impact in terms of skill development has been on the developer teams funded by the programme. All teams whose apps are selected for investment receive support from AppCampus screening, quality assurance, and technical staff, who all assist the developer teams with different aspects of their application and nascent business more broadly over e-mail. AppCampus staff members are highly experienced in their areas of expertise and so are undoubtedly a valuable resource for even highly experienced developer teams.

Around half of the teams selected for funding have the opportunity to attend a month-long AppCademy training camp in Finland, at AppCampus' expense. During this month the 20 or so participating teams are put through an intensive programme of both technical and non-technical training on topics covering all aspects of application development as well as broader entrepreneurial skills. In the course of the training camp all participating teams are expected to develop a prototype of their application, and have an opportunity to pitch it to business angels, venture capital investors, and various other participants of the ICT/entrepreneurial ecosystem.

The content of the training camp grew out of the experiences of several members of AppCampus staff with Start-up Sauna, a broader accelerator programme at Aalto University. The content of that accelerator programme has been altered and new modules have been added to make it suitable for application development teams in particular. The different modules are taught by different coaches, who are largely drawn from the social networks of AppCampus staff and mostly offer their services on a pro bono basis.

The majority of the camp takes place in the AppCampus office, which is large enough to provide shared working facilities for the AppCampus staff and all developer teams, has a number of different kinds of working and meeting rooms, as well as shared social spaces, and has a small lecture theatre that is often used for the lectures and coaching sessions.

While the initial expectations were that developer teams would find the technical training to be most useful, it is the non-technical modules which seem to have had the most impact on the teams:

*"A lot of the guys out here, they've been blown away by what they've learnt in the past couple of days, because they had branding and positioning, and it was like, we just never thought of that. They were introduced to [brand] personas, and they're like 'we knew it's there, but we haven't done the exercise, and now we've done the exercise, every time we're going to do this!' So it's that type of stuff; it's just general software development lifecycle outside of development. So that doesn't matter how good a developer, how experienced you are, you probably haven't even looked at that. And these are now... some of these guys, you know, they're setting to be themselves and be great. And we're just trying to get them to learn as much as possible, not so that they can do it themselves, but so that if they talk to someone or interview someone, they can do it at a more intelligent level. They won't be baffled; so they can get a gauge on how good the person is, so they can team up with a person who is as good as they can get." (Interview 12).*

Overall, the participating developer team feedback regarding these training camps has been overwhelmingly positive. In particular the teams have appreciated the training that they've received in more general business topics with application to mobile development. Additionally, the teams have also largely enjoyed and benefitted from interacting intensely with a diverse group of developers over the course of the training camp. The connections that these developer teams make with one another, with AppCampus staff, and with partners like Microsoft and Nokia appear to last beyond the training camp, as many participants are active on AppCademy alumni groups on Facebook and LinkedIn, while even more remain in contact with AppCampus via e-mail and twitter.

Beyond communication with AppCampus staff and the AppCademy there is also work in progress to make some parts of the AppCademy training package available online, both for teams funded by AppCampus, as well as for anybody else who wants to access it.

*"I want to recycle some of the things and the concept and the material developed [for AppCademy], to be percolated down. Maybe I'll make some material available via the web that you can read on your own, or a video, or I can arrange a mini-Camp that is one week in other geographical places that are a little easier to reach the team there, and so on. So developing the*

*educational aspect would be to scale it up in terms of repeating, and to scale so that we can reach more and bigger audiences with selected pieces, because we might try to do some 600 cases in three years. It's difficult to think I can bring 600 cases here in Finland with this nice weather." (Interview 4).*

## **8. Measures and approaches used to assess outcomes and impact of university-business cooperation in this case**

A number of ways in which the outcomes of this university-business collaboration are assessed have been mentioned in previous sections of this report. To summarise, for AppCampus staff members, success of this collaboration would be measured by the number of developer teams funded by the programme that go on to produce highly-rated and profitable applications for Windows Phone.

For Aalto University, the main success criterion is the amount of money invested by the fund into the Finnish economy:

*"Our message for Aalto is that we are putting a lot of this money back into our local ecosystem. [...] The average grant is around €26,000 or €27,000, so if you make that estimation €30,000, we've put about €750,000 into our local ecosystem in less than a year. So that's a very positive message for us, for the Finnish community." (Interview 14).*

For Microsoft and Nokia, whether or not this collaboration is judged to have been successful will depend on the number of AppCampus-funded applications which end up being highly popular and playing a role in driving consumer adoption decisions towards phones using the Windows Phone platform.

Overall, it appears that the performance of the collaboration to date has met or exceeded the expectations of almost all stakeholders involved. An exception may be the developer teams whose submissions were rejected. However, there have been remarkably few incidents in which rejected teams or individuals have publicly complained about their experiences. As AppCampus accepts only around 5-6% of submissions received, this lack of negative publicity from rejected parties suggests that the screening team has been successful in communicating the reasons for rejection in a timely and professional manner. From our observations of their work, it seems that they also frequently offer constructive feedback to authors of rejected submissions, which, if the concerns of the screening team are addressed, may lead to a future re-submission having a better chance of acceptance.

## **9. Additional aspects**

An important aspect underlying the success of this collaboration to date is AppCampus' ability to operate largely as an entrepreneurial venture despite being a fund within Aalto University. In practice this has meant that the AppCampus team has had a lot of room to make operational decisions without having to gain steering board

approval beforehand. It has also meant that AppCampus could hire new staff members more easily than other parts of the university, allowing them to quickly put together a high-quality team by drawing on the social networks of the initial team members. It is unclear whether this more entrepreneurial approach to operating within a university context will have much immediate impact on industry collaborations in other parts of the university, as AppCampus' success in using this approach may be down to the solid experience and social networks of the key people involved. Such skills and entrepreneurial experience are unlikely to be widely available in other parts of the university. In the medium term, however, the example set by AppCampus may well inspire other university faculties to try out innovative approaches in their industry collaboration.

Innovation, in the form of novel, high-quality, innovative applications for Windows Phone, is certainly the key objective of this particular university-business collaboration. For Aalto University, having a university fund supporting nascent entrepreneurs producing such applications would be a major boost to their image and standing in the list of universities having a strong impact on innovation and entrepreneurship. For the business partners, innovative applications are required in order to attract phone buyers to the Windows Phone platform.

## 10. Conclusion

AppCampus is an example of a university-business collaboration that appears to have been successful from the perspective of all stakeholders. This success appears to be due to a combination of factors including a high-quality, experienced team running AppCampus, the willingness of both Aalto University and the business partners to agree operating guidelines with the initial team members and then to give them the freedom to operate with as few constraints as possible within these guidelines, and due to Aalto University being well-positioned to target the developer population that is of interest to the business partners.

## References

AppCampus Blog. 2013. 'AppCampus celebrates 1<sup>st</sup> year anniversary', <http://www.appcampus.fi/blog/209-appcampus-celebrates-1st-year-anniversary>, accessed on June 27<sup>th</sup>, 2013.

## Appendix

**Table 1. Details of interviews performed.**

Interview number	Interview date	Informant role	Duration
1	13/12/2012	AppCampus Quality Assurance	55 minutes 10 seconds

2	13/12/2012	AppCampus Operations	21 minutes 24 seconds
3	13/12/2012	AppCampus Management	41 minutes 50 seconds
4	14/12/2012	AppCampus Management	1 hour 43 seconds
5	14/12/2012	AppCampus Developer Support; Aalto University student	41 minutes 9 seconds
6	14/12/2012	Aalto University employee	1 hour 4 minutes 53 seconds
7	07/03/2013	AppCampus Quality Assurance	41 minutes 14 seconds
8	07/03/2013	AppCampus Communications	28 minutes
9	07/03/2013	AppCampus Operations	23 minutes 48 seconds
10	07/03/2013	AppCampus Management	44 minutes 4 seconds
11	07/03/2013	AppCampus Developer Support; Aalto University student	22 minutes 54 seconds
12	07/03/2013	AppCampus employee	43 minutes 20 seconds
13	08/03/2013	AppCampus Management	49 minutes 32 seconds
14	08/03/2013	Aalto University employee	30 minutes 34 seconds
15	08/03/2013	Aalto University employee; AppCampus evangelist	1 hour 2 minutes 57 seconds
16	05/06/2013	AppCampus employee	51 minutes 0 seconds
17	05/06/2013	AppCampus Quality Assurance	32 minutes 0 seconds
18	05/06/2013	AppCampus Operations	29 minutes 11 seconds
19	05/06/2013	AppCampus Communications	42 minutes 37 seconds
20	05/06/2013	Aalto University employee; AppCampus evangelist	34 minutes 11 seconds
21	05/06/2013	Aalto University employee	52 minutes 38 seconds
22	06/06/2013	AppCampus Management	53 minutes 7 seconds
23	06/06/2013	AppCampus Developer Support; Aalto University	24 minutes 13 seconds



		student	
24	06/06/2013	Nokia employee	32 minutes 54 seconds
25	06/06/2013	AppCampus Management	45 minutes 02 seconds

---

## Master in Banking Management, ADEIT, University of Valencia

José-Gines Mora

Institute of Education, University of London.

### 1. Institutional context

The University of Valencia, founded over five centuries ago, is a public research university. Initially dedicated to the studies of medicine, humanities, theology and law, the past two decades had an accelerated process of transformation and growth, incomparable to earlier periods. This effort has turned the University of Valencia into a modern, global university. It has become a leader in the application of new technologies, connected to important international scientific and teaching networks.

The University of Valencia teaches all areas of knowledge: social sciences, economic and law, experimental sciences, engineering, health sciences, educational sciences and humanities. This year is offering 58 different programs of bachelor (*grado*), more than 100 academic oriented masters (*master universitario*) and more than 120 professional masters (*master propio*). Around 3,300 academic staff and 1,700 non-academic staff work in this university which attend around 46,000 undergraduate students, 8,600 postgraduate students, and 6,000 students in postgraduate professional programmes.

The University of Valencia is ranked second in Europe in receiving Erasmus students and fourth among Spanish universities in research, ranking between 201 and 300 according to Shanghai Jiao Tong University Rankings. The University of Valencia receives 2,000 students from other universities all over the world and more than 1,300 students of this university are involved every year in international mobility programmes.

The University of Valencia, as the rest of public Spanish universities, is quite regulated compared with universities in other European countries. The administrative and managerial issues in public universities are regulated by the same rules of public administration. This means that they are managed in a very bureaucratic and complicates way. On the other hand, with the exception young assistants, teachers and university leaders are civil servants and hiring people for delivering just few lectures from other universities or from the business world is very difficult or even impossible. The system lacks of the necessary flexibility for changing study programmes according to changing demands because new programmes (and changing the old ones) have to be checked and approved by the regional governments (in the case of public universities) and for the National Quality Agency (in all cases). This process can take many moth or more than one year. This is why many universities have established University Foundations for managing activities which need to be

approached in a more dynamic way. These foundations are private corporations (that is, managed by private law) but owned by the university. They do not need to follow the strict regulations of public universities and consequently they are quite more flexible for developing many activities, especially those which involve cooperation with the business sector such as continuing education courses, partnerships, work placements and so on.

The foundation of the University of Valencia is the *Fundación Universidad-Empresa-ADEIT*. It was established in 1989 (by the way, at the same time that our Master) with the objective of developing relationships with the business sector in both directions: On the one hand, companies take advantage of the capacities of the University and, and on the other hand, the Foundation serves as a channel to transmit to the University the needs of companies and the productive sectors. With this aim, ADEIT promotes the development of joint activities in all those fields that favour the exchange of know-how and, as a consequence, the enhancement of economic progress in the region.

The main activities of ADEIT are:

- Training, specialization and recycling of university students and professionals.
- Placements for students and graduates in companies and organisations.
- Advice on job search or businesses creation.
- Dissemination of the entrepreneurial culture.
- Support of innovation and transfer of knowledge.

The training activities include professional masters (as our Master in Banking Management) and other shorter courses. In 2012, around 6,000 students were enrolled in some of the 211 masters and other courses. The number of teachers involved was close to 3,000. Although some of these teachers were members of the academic staff of the University of Valencia, 65% of them were external professionals with practical expertise in different fields. This fact makes the difference with programmes developed directly by the University of Valencia. Under Spanish regulations it is not feasible the participation of so many external experts coming from the business sector. Consequently, all the study programmes in strong cooperation with business sector are managed by ADEIT instead of being developed directly by the university.

The University of Valencia as a public university receive public funds covering a great part of its budget. Fees, research funds in competitive calls and research contracts complete the financial funds of the institution. On the contrary, ADEIT do not receive any public subsidy. This means that all courses offered by ADEIT are self-financed. Consequently, all of them are courses with high demand, at least enough to cover the running costs of the programme (teachers and management costs). Another important consequence is that courses managed by ADEIT are always trying to satisfy the variable demand. The quality of these professional courses, as surveys demonstrate every year, could be considered very high and probably higher than the "regular courses" managed by the university which are not so focused in covering the social and economic needs.

## 2. The financial sector in the region

The Master in Banking Management has 25 years of history. It was created for serving the banking sector, especially at local-regional level. This sector has suffered in this quarter of century major transformations. Like most other economic sectors, the banking sector had major internal organizational changes that affected the needs of human resources training. These changes are not peculiar to the banking sector, but in this sector there were many structural changes that have dramatically changed the outlook for the sector for over 25 years, particularly at regional level and especially in the last years of financial crisis. Therefore, in this presentation of the context of the master is necessary to make a short reference to these transformations.

25 years ago the Spanish financial system was composed by a set of national and regional banks, all private institutions. In addition, there were Savings Banks and Credit Cooperatives of local character, owned by clients. They were private entities but with a clear objective of public service to the local community.

The big national banks were the Santander, Central, Hispano-Americano, Banesto, Bilbao, Vizcaya, Argentaria and Popular to whom he had to add many others with a regional character. During these years, all those banks have been merging and have been reduced to two major global banks (Santander and BBVA) and only few others with national dimension. This is a phenomenon that has happened in other countries and has nothing special. This sector represented approximately 50% of the Spanish before the recent financial crisis. These big banks, despite the financial crisis, remain quite solid thanks largely to its international diversification and to a reasonable management.

The situation is very different in the case of another group of entities (which represented roughly the other 50% of the financial system). For the one hand, savings banks, that had a character mainly local, merged to become regional entities and in some cases even attempted to become national entities. On the other hand, institutions that had a remarkable social and popular spirit became directly supervised by regional politicians who disembarked in the Councils of the Saving Banks changing the traditional "social governance" of these institutions by a "political governance". During the last decade, political interests have prevailed over good management in these entities what has led, with some few exceptions, to the financial mess in which they are now.

Credit Cooperatives (most of them under the denomination of *Cajas Rurales*) had also a local character but they came up with something similar and, except a few that remain local, most merged into larger entities with a supra regional scope.

These problems have affected particularly the area of Valencia. Its larger financial institution was Caja de Ahorros de Valencia, later merged with others from the region to become the largest in the region Bancaja and finally merged with others from other regions to form Bankia considered in certain moment the fourth bank in Spain by still with political management. This institution, Bankia, is precisely the entity that

triggered the Spanish banking sector bailout by the EU and is currently under a strong restructuration process with branch closures and dramatic staff reduction. The situation of the banking sector as a whole is not easy, but it is especially problematic in the case of former Saving Banks, which has resulted in the last year a significant reduction in support to the Master in Banking Management.

### **3. The Master in Banking Management**

#### **The origin**

The Master in Banking Management (originally with another name) started in 1988 in response to the need for specialist banking personnel expressed by the CEO of one of the leading Spanish banks at that time (*Banco Central*, which merged some years later with Bank of Santander). That person proposed this idea to several Spanish universities, but it was the rector of the University of Valencia who accepted the proposal understanding the interest of the proposal and appointing a professor who became the master director for the next 20 years. This professor of Finances, Prof. Vicente Meneu, with a small group of colleagues analysed the need of the sector to design a programme specifically for this banking sector. Once a rough version of the master was prepared, all the regional banks and local branches of national banks were invited to provide their opinions and suggestions. In 1988, thanks to the commitment of bank managers and university teaching staff, the Master of Banking Management (with another name at that time: Master in Credit Entities) was established.

This happened the same year of the creation of the ADEIT in such a way that the establishment of the Master in Banking Management was one of the pioneering activities of ADEIT and one of the first masters in the University of Valencia (until that moment Spanish universities did not offer this type of degree). This year is celebrating the 25<sup>th</sup> anniversary.

At that moment, they did not have experience in developing or in managing activities external to the university and different to the traditional courses with more academic approach. The first steps of this master were a real challenge for everybody involved (from academics to external teachers, from bank managers to ADEIT support staff). Probably the capacity of the group for being innovative and for resolving so many new problems 25 years ago explains part of the success of this master.

#### **The objectives.**

This Master in Banking Management aims to complement the knowledge gained in the academic degrees, providing recent graduates (or not so recent) with training for the management of credit institutions, covering both theoretical and practical aspects. The faculty combines university experts and renowned financial professionals in order "to guarantee scientific level and teaching quality without forgetting the real and changing circumstances of the financial sector" (opinion of a first director of the master). The master analyses in detail and explains to students the functioning of financial markets, the operational and functioning of banks with special emphasis in financial risks and in their management. With these objectives, over its 25 editions, has trained more than

600 students, many of them from major financial institutions in the region. A significant number of them currently holds positions of responsibility in those institutions.

### **The teaching staff**

In its 25 years of history, the master had more than 80 teachers in total. One of the most outstanding characteristics of this master was from the first beginning that teaching staff was composed by an equal proportion of academics and external professionals, mostly from the banking sector, but also from other financial institutions, public and private. This business-university approach of the master required to manage the programme outside of the university core, otherwise it would had being impossible that mix of teachers from different and complementary backgrounds.

On the other hand, many of these professionals were, after several editions, alumni of this master, whose first-hand experience was invaluable in updating the content of the training programme.

For instance, the next edition of the master has 27 teachers. Fourteen are part of the academic staff of the University of Valencia, two come from other universities and eleven are professionals from the banking sector (7), from other type of financial companies (3) and from the Ministry of Economy (1).

One of the ways of support from the banking sector to the master (especially in the first editions) was to provide professionals with expertise in practical field as teachers of the master by free. In recent times all teachers have a salary (quite modest, by the way) for their participation in the master.

### **The students**

More than 600 students have followed this master over its 25-year history. A requirement for entering in the master was to hold a higher education diploma (short or large cycle, that is, 3 or 5 years in the Spanish model previous to Bologna). Around two thirds of the students held a long cycle.

Most of the students had a background in economics and business administration (around three quarters), and the rest came from Law, Engineering and other fields. There was the possibility of entering in the master without a formal higher education diploma accrediting years of experience in qualified positions in a bank.

In regard to students, the most outstanding fact with a clear effect on the development of the programme along years was the composition of the student body. There were from the beginning two categories of students: bank staff wishing to improve their knowledge and skills in order to increase their job opportunities in the banking sector and recent graduates seeking to find a job in the sector. At the beginning the first category was dominant but later the situation was more balanced.

“This mix in the student body of professionals (with stronger practical background) and recent graduates (in many cases with stronger academic background) provided an special character to this master making the discussion in lectures and in the team assignments a good opportunity to combine theoretical and practical approaches and to put in contact recent graduates with the real problem of the sector. Unfortunately, due to the strong crisis in the banking sector in the last editions the number of professional has decreased dramatically” (opinion of a teacher with 25 years of experience in the master).

In the same sense, “teachers coming from the academic world have also benefit from this experience to get a deeper knowledge of the practical problems of the banking sector that have transmitted to students in more traditional courses in the university” (opinion of a teacher coming from the academic world).

### **Work placements**

An aspect that has strengthened the relationships of the master with the banking sector was the compulsory work placement included in the curriculum. The master programme includes a paid work placement period, which is a required element for all recent graduates. Each year since its inception, the credit institutions involved in the programme have provided all students with the opportunity to undertake paid work placement. Many students of this master were contracted by the companies after their period of practices. More than 40 companies have provided placements to around 300 master’s students during these 25 years.

### **Awards**

In 2006, the Master in Banking was recognised for its significant contribution to employment opportunities and professional development by the Social Council (equivalent to the Board of Trustees in other systems) of the University of Valencia.

### **The partners**

The master was originally a banking initiative accepted by the University of Valencia. The initial organizers of the university contacted the heads of the banks (local or national) with presence in the region. They fixed the principles of cooperation between the university and the local banking sector. It was established a master Coordinating Committee composed of representatives of the banking sector and the university in order to monitor the operation of the master and regulate cooperation.

Basically the deal was simple. The banking sector was committed to support two things, simple but very effective:

- First they agreed to finance the fees (which were not cheap for that time) and to facilitate attendance to employees of their banks that were accepted in the master. The consequence of this indirect support was that the master demand, especially in the early days, was very high. “Many bank employees rightly

thought that making the master was a great opportunity to improve their positions in the bank. Certainly, they had to work hard for one year (combining work with studies) but the master was free of charge” (opinion of an alumni working in a bank). This automatic support changed in 2001. After this date, employees also received support from the banks but they have to ask for this help that was not automatic anymore

- On the other hand, cooperating banks and other entities agreed to provide a paid work placement to all master students that were not banking employees when enrolling the master. That was seen by recent graduates as an excellent opportunity to get some funds to pay the cost of the master, but above all as a great opportunity to get into a qualified job in the banking sector in a moment of expansion.

These two simple agreements have been the secret of a stable and extremely effective cooperation for many years with mutual benefits for both parts: the university and the banking sector.

These agreements were signed at the beginning by all parts involved but they were not renewed basically because the master worked so smoothly that it was not necessary formalise the cooperation. This is, in opinion of people involved, a clear demonstration of how the master was seen as beneficial for all parts that, on the other hand, had a feeling of ownership on the master.

An additional support provided by banks at the beginning of the master was the cooperation of bank professional as teachers by free.

The list of partners from the banking sector is long. The most active have been historically *Bancaja* and several regional *Cajas Rurales*. The first is now integrated in *Bankia* (recently under state supervision after a EU bailout) and most of the seconds are now part of *Cajamar* (with headquarters in another region). Consequently the support of these institutions has been reduced dramatically in the last two editions. Master leaders hope that this is just a temporary circumstance due to the dramatic restructuration of the sector.

Along these years, the main support to the master came from regional Saving Banks to some extent because the big national banks developed their own internal training mechanisms. Nevertheless, in addition to regional financial institutions many others have cooperated with the master in the last 25 years such as BBVA, Deutsche Bank, BNP, Citibank, General Bank of Belgium or institutional as the local Stock Market, the Commerce Chamber or the Regional Ministry of Economy. Some companies outside of the banking sector have also provided support to the master especially providing work placements.

Among the public institution it should be mentioned The Valencian Institute of Finance (Instituto Valenciano de Finanzas, IVF). This is a public institution responsible of public financial issues at regional level (public credits, public regional bonds, supervision of regional banks). In the last years the IVF gave an award equivalent to the cost of the



tuition fee to the student with the best marks of the master. The explicit rationale of this awards is that the IVF think they "have the moral to assist in the training of highly qualified people in the banking and financial area, especially at a time like the present" (opinion of a representative of IVF and alumni of the master). In addition, many current employees in the Valencian Finance Institute were students in previous editions of the master. Unfortunately, the strong financial restrictions in the Valencia public expenditures in 2013 have impeded the IVF to deliver this award this last year. Nevertheless, as a small symbol of the interest in maintaining the cooperation with the master, the teacher from IVF renounced to his salary.

On the other hand, a recent and new external cooperation come from the Bank of Santander. In the year 2010/2011 was created the Santander Chair of International Finance at the University of Valencia. The mission is to organize training, cultural, research and extension activities for the improvement of knowledge in the field of international finance. The Chair of International Finance, Bank of Santander has worked to bring financial literacy from different points of view and through workshops, seminars and cultural activities for undergraduate and master, as well as professionals in the financial sector, some in cooperation with the master in Banking Management.

### **The curriculum**

One of the aspects that have been considered by many as a critical success factor of this master is the variety of themes approached in the syllabus covering the most practical aspects needed in banking but also providing some basic tools (as financial mathematics or computer programmes adapted to banking) which are necessary in banking. On the other hand, the syllabus has changed along these years by continuous adaptations to the needs of the banking sector that obviously has transformed along this period.

Virtually all institutions have participated in the development of the course in one way or another (teachers, students, work placements and employment). University of Valencia staff participates in the design and teaching of the course and periodically update the content in accordance with the indications of the professionals working in the field. Teaching staff from other universities and renowned business schools have taken part in seminars and conferences designed to keep students abreast of new developments. A forum has been established to allow information to be exchanged and the aforementioned seminars to be defined in accordance with demand.

As an example (not too different of previous years) the modules of the master for the next 26<sup>th</sup> edition are the following:

- Financial markets and products
- Accounting banking.
- Operational management of credit institutions.
- Financial mathematics.
- Risk management.
- Monetary policy of the ECB
- Interest rate derivatives.

- Risk analysis
- Banking marketing
- Monetary and banking economics
- International operations
- Legal issues in banking
- Human resources
- Computers programmes

### **The structure and management**

The master has a duration equivalent to 60 ECTS and is delivered from October to June. Bearing in mind the type of students, lectures are organised from 17h to 21h from Monday to Wednesday.

The cost of the master is now 3,100 €. It is important to remark that the master is totally self-financed. The only financial sources are the fees paid by students. These funds cover teachers' salaries, management (15% of overheads for ADEIT) and any other additional costs.

ADEIT is in charge of the management and administration of the master. This makes a difference compared with regular study programs developed by the university. The management is quite more flexible and it allows for instance to accumulate surplus in some years with more students that can be used in additional activities or in other years with less students.

The master is managed by three persons: the director (Prof. Francisco Climent, who is also teacher and coordinator of one module, in addition to his regular duties as professor in the University of Valencia), a technician and an assistant of ADEIT (both dedicating around 5% of their working time to this master). ADEIT also provides technical support and lecture rooms.

In addition, teachers in this master receive a fee for their participation in the master. In the case of academic staff from the university this fee is additional to their salary. This fee is not high at all but it is a positive stimulus to improve their engagement in the master.

## **4. Analysis of the case**

Most of the main questions relevant for this case study have been mentioned in the previous pages. In this second part we will summarise some of the arguments that justified that this master could be considered a good practice in university-business cooperation in the field of teaching and learning.

### **Reasons for this university-business cooperation**

The reason for creating this master in cooperation between the university and the financial sector was clear for all involved parts from the beginning: it was necessary

training personnel with specific and practical expertise in the banking sector, something that traditional programmes, more generalist and academic oriented, did not provide. The master was an initiative coming from the banking sector and adopted by the University of Valencia.

The interest was strong along the 25 years of existence of the master, although the situation is now to some extent in standby due to the financial crisis in the banking sector that has affected the area of Valencia even more than other areas.

### **Main objectives of this university-business cooperation**

The objective was clear and simple: to provide professionals able to manage the growing financial sector in the area of Valencia in close cooperation between the university and the financial sector.

From the outset, the structure of the master's programme has been decided by close collaboration between the university and the business community in order to ensure maximum mutual benefits.

Banks played an active part in the design of the programme and continue to contribute to ensure that it is up to date. Moreover, they have always supplied the master with teaching staff and students. Banks also provided to recent graduates the opportunity to undertake paid work placements in their offices, allowing most of them to meet the fees of the course.

The companies to benefit from this course are the banks and credit institutions who have taken part in the setting up and design of the course and those that offer work placements.

### **Monitoring mechanisms and indicators used**

ADEIT is not constricted by the more bureaucratic rules of the University of Valencia. They have a more flexible way of monitoring programmes. On the other hand, as ADEIT programmes are self-financed, ADEIT needs to control with detail aspects as the demand or the satisfaction of students. They make every year a follow up of each edition of courses. This includes number of applications, number of enrolled students, number of students passing the course, marks of each student, financial results of the course, final evaluation of teachers and the rest of indicators that are necessary to control a study programme.

The results of the surveys to graduates are used for renewing the curriculum in a permanent adaptation to the changing needs of the banking sector. This continuous evolution of the curriculum is probably one of the secrets of the success of this master which has been alive and in high demand for 25 years.

### **Main results achieved**

The Master in Banking Management constitutes a benchmark for banks in the region. They consider it to be both a source of complimentary specialist training for the sector and a source of new recruits with appropriate profiles.

More than 600 students have benefited from this programme. Initially, around 60% came from banks in the region, the rest being recent graduates. In recent years, however, the focus has changed, with more and more recent graduates joining the course.

Furthermore, the majority of the students find employment upon completion of the course within the sector.

All of the region's leading credit institutions have taken part in the programme by providing teaching staff, students and the opportunity to undertake work placements in their offices.

### **Outcomes achieved**

The interaction between banks and academic staff throughout these 25 years has been a constant and productive factor of improvement. Former students have always played an active role as course coordinators and teachers, adapting the programme content to the specific needs they have detected in the workplace. In response to this demand, several seminars were held each year to provide updated information. These seminars focus on continuous training for banking and credit institution employees. The number of seminars has increased in the last years (9 and 6 respectively in the last two years) with the participation of distinguished expert from banks, universities and financial entities.

As a consequence of this relationship, the University of Valencia has developed study programmes and research projects financed by the banks themselves. They have therefore been able to establish an informal network of professional and academic experts, which promotes the exchange of knowledge and experiences arising from contact with sector representatives.

Banking institutions in the region place great stock in this post-graduate course when incorporating new personnel. The advantages for the banks are clear: training for existing staff and recent graduates with suitable profiles. This example of business and academic collaboration is not only mutually beneficent for both parties, but also serves to develop the banking industry in the region.

The banking sector has witnessed a substantial increase in quality thanks to this specialist training. The 600 graduates of this master have had a remarkable impact on the expertise of current leaders of the banking sector and also in the public entities involved in financial issues.

All this has been of huge benefit to the sector, and therefore, the region as a whole. Graduates from the master have influenced the private sector but also the public

sector: almost all the people working in the Valencian Institute of Finance are alumni of this master.

The same model of this master, with certain variations, has been introduced into other regions in Spain with great success, due to the cooperation between business representatives and universities, and the satisfaction the students gain from improving their professional skills and employability.

### **Impact in terms of skills development**

The master programme is considered to be a good case given that since its inception 25 years ago it has continually adapted to meet the needs of the sector, most of its students go on to find employment in the banking sector and show high levels of satisfaction with regard to their expectations, and the fact that its management model guarantees continuity. Banks consider the master a useful filter in the incorporation of the new personnel.

The permanent cooperation between university and the banking sector guarantee that they provide the right skills needed by the sector.

### **Measures and approaches used to assess outcomes and impact of university-business cooperation in this case**

In addition to regular follow-up of the course, from time to time they carry out a survey to former graduates. The last one was carried out in 2010-11. They made questions about the relevance of the master in the career of alumni. Some interesting results are the following:

- At the moment of enrolment 68% of the students worked in the financial sector and 30% were not employed
- One year after finishing the master, 81% worked in the financial sector, 10% in other sector and 10% were not employed.
- One year after finishing the master, 44% had a position higher than at the beginning of the master.
- 89% of the graduates would recommend this master to other people and only 6% are not satisfied.

### **What is the impact of university-business cooperation on the modernisation of the universities involved?**

Teachers of the university affirm that they have learned about the necessary skills demanded by the labour market and they have translated this experience to their regular lectures in the university.

The master has been an opportunity for developing a network between university and the financial sector with a mutual beneficial influence. Many additional activities have been developed thanks to the network created around the master.

Recently, the master is taking advantage of social networks. The master uses Facebook not only for marketing the master or explaining its long history but also as a way to keep people connected with the master. The master has also established a special network in Linked-In that is a forum for discussions but also an open platform for offering and demanding jobs among the master's graduates.

## 5. Conclusions

The Master in Banking Management was created as the University's response to needs expressed by the banking sector. The strategy was to involve all partners in a very active way in order to establish an informal network of professional and academic experts.

Some of the success factors of the master are the following:

- The programme was drawn up with the consensus of all parts involved.
- The content of the course was continuously adapted to meet ever-developing needs.
- This Master's course was the first of its kind to focus on credit institutions in Spain.
- The structure of the course is flexible and gives special emphasis on continuous training in specialist subjects and skills acquisition. This is undertaken by means of seminars that do not form part of the Master's programme, but focus on areas of current interest or enable the future of the sector to be analysed. These short courses, which are recognised by the University of Valencia, are aimed at former students and professionals working in the sector.
- The course has been organised and timetabled to meet the needs of students with regard to the undertaking of tasks within the workplace and work placement periods.
- Most students working in a financial institution have received financial support from their institutions.
- Recent graduates were able to finance the course through paid work placement periods in banking institutions.
- There is a close relationship with former students by means of their participation as teachers and coordinators.
- The use of former students as teachers and coordinators.
- Continuous training in specialist areas and the acquisition of new skills by means of seminars aimed both at former students and all others working in the sector.

The political management of the Saving Banks in the region, main supporters of the master, has provoked a collapse in the regional financial system with a direct effect on the master after 25 year of successful history. Nevertheless, everybody hopes that the restructuration of the financial system will provoke hopefully an increasing demand of well-prepared people in such a way that the master will recover soon of this moment of weakness.

## **Annex - Information sources**

1. Web page of the University of Valencia. <http://www.uv.es>
2. Web page of ADEIT. <http://www.adeituv.es>
3. Web page of ADEIT for the Master in Banking Management. [http://postgrado.adeit-uv.es/es/cursos/direccion\\_y\\_gestion\\_empresarial-1/banca/datos\\_generales.htm#.Uc4MP5wIEf0](http://postgrado.adeit-uv.es/es/cursos/direccion_y_gestion_empresarial-1/banca/datos_generales.htm#.Uc4MP5wIEf0)
4. Web page of the master [http://www.uv.es/fcliment/MGB/Masteren\\_Gestion\\_Bancaria.html](http://www.uv.es/fcliment/MGB/Masteren_Gestion_Bancaria.html)
5. Web page of the 25th Anniversary of the Master in Banking Management. <http://25anysmgb.adeituv.es>
6. Presentations during the Closing Ceremony of the 25<sup>th</sup> Edition of the Master in Banking Management and Celebration Ceremony of the 25<sup>th</sup> Anniversary of the Master in Banking Management, 24 of June, 2013.

# University-Business cooperations between the chemical industry and the Merseburg University of Applied Sciences in Central Germany

Elisabeth Bublitz

## 1. Introduction to case

The chemical industry in Central Germany has a long tradition, for certain firms dating back as early as to the beginning of the 20<sup>th</sup> century. The industry has survived major structural changes, most recently moving from a centrally planned socialist economy to a market economy. Since 1990, around 100 billion euros were invested in Central Germany in infrastructure, industrial plants, logistics, as well as service, trade, and education facilities. This facilitated a new start for the chemical industry after the German reunification.

Businesses, universities, and research institutes located in this area collaborate in various ways, providing an interesting example of how actors can profit from each other by jointly addressing challenges such as skills shortages and innovation. The present case study focuses on recent projects that involve the Merseburg University of Applied Sciences (Merseburg UAS), located in Saxony-Anhalt in Central Germany. A unique characteristic of UAS, when compared to traditional German universities, is their focus on the practicability of taught knowledge. This can, for instance, be illustrated by the idea to hire professors with work experience outside the university system. Thus, university-business cooperations appear to be a natural consequence. The mission statement of the Merseburg UAS stresses that high-quality applied research is needed to ensure that professors teach up-to-date and realistic knowledge (see references). In other words, by carrying out contract research the knowledge base can be constantly updated. Newly discovered innovations are included in the curricular of students who, in return, should be able to locate better jobs because of their unique knowledge.

As an example of this process, the case study looks at projects related to plastics engineering which is a core competence of the industry and region. On the one hand, businesses need qualified workers that acquire expertise in plastics engineering. At the same time, firms conduct research for which they need the expertise of professors at the Merseburg UAS. The chemical industry in the region consists of a number of firms; several of them are located in one out of six chemical parks. Further partners are the North-East Chemical Association and the isw (Gesellschaft für wissenschaftliche Beratung und Dienstleistung, organization for scientific consulting and services). In 1992, the Merseburg UAS was founded but the campus had existed since 1954 and had previously been a technical college. In 2013, 2728 students were enrolled in the Merseburg UAS and were supervised by 111 professors (a total of 292 employees). There are four faculties which are (1) Computer Sciences and Communication Systems, (2) Engineering and Natural Sciences, (3) Social Work, Media, and Culture, and (4) Economics and Business Administration. The faculty of Engineering and



Natural Sciences offers five Bachelor and three Master study courses. The study course plastics engineering (Bachelor) was only recently established, thus, no one has yet graduated. Nonetheless, there exist already a variety of cooperations, some of which were originally established for other study courses. In what follows, different cooperations will be described and evaluated.

## **2. Reasons for this university-business cooperation**

For several years, the Martin-Luther-University Halle-Wittenberg (MLU) offered a study course with a major in plastics engineering. This regional supply of prospective employees ceased to exist after certain policy reforms. Universities were assigned different fields of specialization and, in the case of the MLU, engineering was moved to a university further away. Also, the expertise of the MLU, including laboratories and equipment, was expected to disappear as a consequence of the termination of the study course and corresponding chairs. To avoid this knowledge drain, professors and firms implemented measures to uphold their expertise in plastics engineering and to address the challenges of innovation and skills shortages.

As regards innovation, the equipment of the MLU for plastics engineering research was already located at the Merseburg UAS. The UAS thus appeared to be a natural choice when searching for ways to preserve the plastics expertise. In addition, affiliated institutes of the MLU and the Merseburg UAS were founded where professors were able to offer their services to firms.

As regard skills shortages, Germany is starting to face the consequences of demographic changes. It also remains difficult for regions like Central Germany to attract new talent from other, for instance, more agglomerated regions. Nonetheless, for the Merseburg UAS it is important to offer study courses that attract many students. Implementing a program where students can find work afterwards in the regional industry appears to be a reasonable strategy. Also, graduates from other institutions have often not directly studied plastics engineering. Firms then need to teach them additional knowledge before these new employees are ready to contribute themselves to the firm. A cooperation between business and the Merseburg UAS in form of a study course provides a solution by matching the supply and demand on the regional level. Implementing a new study course implies hiring new professors that have expertise in plastics engineering. Since the Merseburg UAS lacked sufficient financial resources, firms were approached and asked to sponsor a chair. Three firms agreed to do that.

As one interview partner from business put it: "The chemical industry in Central Germany is relatively small, local and can be clearly separated from other industries. We meet each other at workshops and conferences and first contacts and finally cooperations are established."<sup>2</sup> In combination with the long history of the industry, people are well connected and this facilitates the initiating of cooperations. It thus

---

<sup>2</sup> Quotes are taken from German interviews with stakeholders of the cooperation. The interviews were conducted and translated by the author.

should come as no surprise that several firms and organizations have organized themselves in associations, such as CeChemNet (Central European Chemical Network). The goal of CeChemNet is to facilitate communication between different actors, taking on the role of a cluster manager: "The aims of CeChemNet are identifying fields of action and promoting relevant topics." On the one hand, CeChemNet provides a platform for interaction between the members of the network, for instance, regarding the exchange of knowledge. On the other hand, the network organizes advertising campaigns for the network members. Another example of a cooperation is the Polymer Competence Centre Halle-Merseburg that is an affiliated research institute of the MLU and the Merseburg UAS. It was founded in response to the structural changes at the MLU.

### **3. Main objectives of this university-business cooperation**

The objectives of the different activities of the university-business cooperation differ by target groups (for an overview see Table 1). The target groups are high-school students, university students, professors, and business employees. In sum, the majority of activities are targeted towards university students. In most cases, the objectives of business and the Merseburg UAS are the same. This reflects the general observation that partners face negligible disagreements with regard to objectives in this university-business cooperation. Often, the activities involve more than just one firm and large firms tend to be more active than smaller ones.

The first set of activities is targeted towards high-school students and is concerned with the recruitment of students and with the reputation of the Merseburg UAS and business. The "engineering offensive" was set up as a broad program to increase the supply of engineers. It offers field trips to firms and internships. Also, student contests or student labs are designed to raise the interest of young individuals for chemistry. Apart from establishing first contacts with potential students, both the Merseburg UAS and business may establish a good reputation in the region and beyond by investing in the young generation.

Once the students started their studies at the Merseburg UAS, a variety of cooperations are in place to facilitate their studies and, later on, their job search. The "engineering offensive" focuses on dual education where students are enrolled at a University of Applied Sciences and work in a firm where they apply their knowledge. To match labor supply and demand, the study course plastics engineering was implemented. In this context, the Merseburg UAS invited firms to finance two chairs that were needed to teach the new subjects associated with the study course. These cooperations are set out for five years. In the long run, the Merseburg UAS could be able to afford these chairs with finances coming from chairs entering retirement. Also, when firms sponsor other projects, a lecture hall can be named after them. Through university fairs where firms present themselves or other get-together events, students and business representatives meet. During their studies, students then have the opportunity to do internships, run research projects, and write their Bachelor thesis in cooperation with firms. One large company even invites a group of students to join a

summer school in France. These activities have the goal of getting to know each other, achieving a good reputation, and creating knowledge. In addition, business wants to find and recruit future employees. The Merseburg UAS also uses these activities to acquire financial resources.

**Table 1: Overview of activities and objectives**

Target Group	Activities	Objectives <sup>1)</sup>
High-school students	<ul style="list-style-type: none"> <li>"Engineering Offensive"</li> <li>Student contest (e.g. Chemistry Olympics)</li> <li>Student labs (e.g. "Hands on Chemistry")</li> </ul>	<ul style="list-style-type: none"> <li>Recruitment of university students (both)</li> <li>Reputation (both)</li> </ul>
University students	<ul style="list-style-type: none"> <li>"Engineering Offensive"</li> <li>Study course</li> <li>Sponsored professor</li> <li>Internships</li> <li>Student research projects</li> <li>Bachelor/Master theses</li> <li>University fairs</li> <li>Seminars/Summer Schools</li> <li>Get-togethers</li> <li>Sponsored lecture hall</li> </ul>	<ul style="list-style-type: none"> <li>Knowledge creation (both)</li> <li>Getting to know each other (both)</li> <li>Reputation (both)</li> <li>Recruitment of employees (business)</li> <li>Finances (Merseburg UAS)</li> </ul>
Professors	<ul style="list-style-type: none"> <li>Contract research</li> <li>Sponsored professor</li> <li>Seminars</li> <li>Get-togethers</li> </ul>	<ul style="list-style-type: none"> <li>Problem solving (both)</li> <li>Knowledge base updating (both)</li> <li>Long-lasting partnerships (both)</li> <li>Reputation (Merseburg UAS)</li> <li>Finances (Merseburg UAS)</li> </ul>
Business employees	<ul style="list-style-type: none"> <li>Contract research</li> <li>Seminars</li> <li>Get-togethers</li> </ul>	<ul style="list-style-type: none"> <li>Problem solving (both)</li> <li>Knowledge base updating (both)</li> </ul>

<sup>1)</sup> The information in parentheses refers to the group who named the objective. It can either be the business sectors, the Merseburg UAS, or both.

Professors are the third target group. As mentioned above, universities of applied sciences rely on the practical relevance of the curricular they teach. One interview partner from the Merseburg UAS summarized this as follows: "The most important goal is to identify trends in industry and incorporate this knowledge in the courses. Teaching without doing research at the same time means providing education that is not needed in industry." An easy check can be to compare what is carried out in research to what is taught in class. Sponsoring a chair, as done in the study course of plastics engineering, ensures business that important and necessary knowledge is taught at the Merseburg UAS. Additionally, this knowledge can be accessed in form of contract research, for instance, through affiliated research institutes such as the Polymer Competence Centre Halle-Merseburg and the Polymer Service GmbH

Merseburg. Several professors from the Merseburg UAS are part of these research institutes that are used to conduct contract research. Other cooperation formats are seminars taught by professors at firms. Note that this is not a contractual arrangement for sponsored chairs but has so far been done on a voluntary basis by other professors. Here, both sides profit again from getting to know each other and exchanging knowledge. In general, to establish contacts, firms organize get-togethers where professors are invited to present their research. Sometimes, professors take the initiative and set up meetings with business representatives. The objectives of these cooperations are problem solving, knowledge base updating, and long-lasting partnerships. The Merseburg UAS can further raise its reputation and improve its finances by acquiring third-party funds.

The last target group is represented by the business employees in the regional chemical industry. Activities that involve their cooperation encompass contract research, seminars, and get-togethers. The main objectives are problem solving and knowledge base updating.

In many cases it is difficult to identify who initiated an activity of the cooperation. Some of this might be explained by the long history of the industry in the region. It might also reflect that the overarching challenges of skills shortages and innovation concern all involved partners. Both sides make suggestions for possible new activities. Thus, the roles of the partners are rather similar and have stayed that way in the majority of cases. One exception to the rule seems to be costly projects in education where the Merseburg UAS is more likely to approach potential sponsors. Another exception is contract research where firms are more likely to approach professors with specific problems.

#### **4. Monitoring mechanisms and indicators used**

Across all interview partners there is agreement that cooperations are successful. How people arrive at this conclusion depends on the project type. Following the distinction from before, the mechanisms or indicators will be divided in two groups, one focusing on skills shortages and the other one on innovation. An overview is provided in Table . In contract research, which addresses the challenge of innovation, clear indicators are defined. Individual projects follow the principles of project management, defining, for instance, milestones and deliverables. These are used by the involved partners to evaluate whether the contract is fulfilled. The Merseburg UAS collects information from professors on the number of cooperations, the length of cooperation, the financial volume and so on. Part of this information is made public in research reports that are used for marketing purposes of the university. Additionally, this information is made available on a regional website that collects information for Saxony-Anhalt on university-business cooperations in form of contract research (see references).

One key ingredient at the start of a successful cooperation is trust which was repeatedly mentioned by the interview partners. It can be built up through personal meetings. It is further important for individuals to be present at presentations, workshops, or other get-togethers to identify potential partners. In this context, it is

necessary that individuals state their competencies to correctly identify partners. Finally, a very basic prerequisite are resources, such as workers, equipment, and knowledge on experimental methods. Once the cooperation has started, milestones need to be implemented. Reliability, for instance, in terms of keeping deadlines is also important. Resources remain another key ingredient and everything taken together can be used to confirm own competencies. Obstacles include compulsory cost accounting as specified by the European Union. Furthermore, the bureaucratic structure of public institutions, as opposed to affiliated research institutes, makes it more difficult to start research projects between universities and industry.

Skills shortages are addressed by activities in education. The success of these activities is mostly evaluated in terms of a "gut feeling instead of a tangible measurement criterion", as described by one interview partner from business. Firms stress that implementing standard indicators or reporting systems would be costly and outweigh the benefits of the activities themselves. Furthermore, the success depends on current demand and capabilities; absolute numbers thus need to be put in context. Larger firms are, however, more likely to collect certain numbers, as, for instance, the number of hires from the Merseburg UAS, the number of inquiries from students (e.g. for internships), the number of students active in the firm (e.g. in research projects), the number of inquiries by universities, or the number of cooperation contracts. Another indicator is feedback received from students, for instance, in personal interactions at fairs or workshops. Additionally, the reputation of actors in the region can be used to measure the success of a cooperation. The Merseburg UAS further conducts an alumni survey of all students to keep track of their development. The financial support by firms, for instance, in form of sponsored chairs, is another helpful indicator.

In the field of education, a key ingredient for a successful cooperation is, in the beginning, a high-quality education. In other words, graduates have to be well educated and trained to find jobs in firms later on. Regular personal meetings involving firms, professors, and students are also very important. Meetings can be used to build up trust. As the name already suggests, in contract research a contract is mandatory but not so in education activities. It was stressed throughout the interviews that it is enough to trust each other and decide on common goals which can be easily achieved when both sides share common interests. To facilitate personal contacts it is necessary to identify contact persons and suitable forums where to present ideas. Receiving timely reactions and feedback from partners is also important. This could also be subsumed under the idea of a general "service orientation". It is further helpful to keep the workload relatively low for firms, for instance, by establishing a central coordinator who plans meetings and prepares contracts. Also, specific activities should be clearly defined so that they actually can be implemented. The process of implementation should then be monitored to ensure that day-to-day business does not get in the way. As time passes, the key ingredients change only slightly. The quality of the education needs to remain high. While personal meetings are still necessary, they can partly be replaced with telephone calls because people know and trust each other already.

Possible obstacles in this context are capacity problems, meaning that the demand by students is higher than the supply of potential supervisors in the firms. As mentioned before, day-to-day business is likely to take over in the course of time, lowering the priority of cooperation activities in the field of education. Other obstacles include the lack of key ingredients, for instance a clear contact person, flexibility, or service orientation. Another practical example is that one of the sponsored chairs has not yet been assigned, prohibiting a successful cooperation in this regard. However, this is not due to a lack of finances but driven by the fact that no professor could yet be hired.

## 5. Main results achieved

Taking a step back, the main reasons for establishing a plastics engineering focus in Merseburg were changes at another university, namely the MLU. The fear was that businesses would lose their source for future employees and their cooperation partner for research activities. At the same time, the Merseburg UAS had already the equipment for plastics engineering in place but was lacking a corresponding study course. The main result achieved is that the expertise in plastics engineering has stayed at a research and education facility in the region. From this follows that the chemical industry in the region has maintained regional access to essential resources that are needed in a competitive environment.

A variety of other outcomes follow from this achievement. Table 2 gives an overview of the results which are sorted by the following beneficiaries: students, university, and business. The colors of the frames in the results section indicate which partners collaborate to achieve a certain result.

**Table 2: Overview of results by beneficiaries**

Beneficiaries	Students	University	Business
Results <i>(the color of the frame indicates the partner in this collaboration)</i>	Internships	Students	Hires
	Research projects	Finances	Expertise of sponsored chairs
	Theses	Equipment	Knowledge of employees
	Jobs	Research projects	Reputation
		Reputation	Reputation

Naturally, the students collaborate with the university but this is explained with the nature of their relationship and not with additional activities outside of the curriculum. Results of the university-business collaboration are thus internships, research projects, and theses that are accomplished by the students in cooperation with the firms. While the majority of these are mandatory, a possible job is a result that cannot

be guaranteed to the graduates. Nonetheless, this is ultimately the goal of the cooperation.

**Table 3: Overview of indicators, key ingredients, and obstacles**

Area <sup>1)</sup>	Indicators	Key ingredients		Obstacles
		Before start of cooperation	After start of cooperation	
<b>Skill shortages: Education activities for students (e.g. study course, internships)</b>	Feeling/intuition (no standard reporting system); success depends on the current demand; number of hires from Merseburg UAS; number of inquiries for internships, etc.; number of students active in firm in research projects, etc.; number of inquiries by universities; number of contracts; feedback from students; reputation; alumni surveys; financial support for study course (e.g. sponsored chair)	Regular personal meetings between firms, professors, and students; build trust (then no or only small contract necessary); interest from both sides; contact persons; identify suitable forums	Personal meetings between firms, professors, and students but more telephone contact → people know each other already	Capacity problems (not enough supervisors at firm); day-to-day business; no clear contact person; lack of flexibility
		High-quality education; immediate feedback; service orientation; keep workload low for firms (e.g. by establishing a central coordinator for setting up meetings and preparing contracts); determine specific activities; monitoring of activities		
<b>Innovation: Contract research activities</b>	Number of cooperations; length of cooperation; number of workers on a project; research reports; financial reports	Trust; personal contacts; being visible (presentations, workshops, conferences); identification of correct partners; showing competences	Milestones in contract research; reliability; keeping deadlines; confirming competences	compulsory cost accounting (rule by European Union); structure of public institution (opposed to affiliated research institutes)
		Resources (workers, equipment, methods)		



<sup>1)</sup> The coloring refers to the main actors in this area. For skills shortages, the focus is on students (blue) and business (orange) and, for innovation, on the university (green) and business (orange). Naturally, graduates are a result of the teaching effort of the Merseburg UAS which is not explicitly indicated by the color coding.

The Merseburg UAS observes as a result that students join the study course in plastics engineering. The professors further conduct joint research projects with business. This, in turn, leads to more financial resources and improves the equipment of the Merseburg UAS. Taken together, the reputation of the Merseburg UAS is raised and it becomes more widely known as a consequence of activities that involve all actors.

The business sector profits from the collaboration by having access to the expertise of the sponsored chairs and other professors that are active in the study course. It can further be observed that the knowledge of employees is broadened when students do internships and work on research projects or theses. In addition, professors of the Merseburg UAS who hold seminars at firms teach the employees important knowledge. A direct result will eventually be that graduates of the Merseburg UAS are hired. In sum, this also results in a high reputation of the firms.

## **6. Outcomes achieved**

The results from this university-business collaboration yield further benefits for participating partners and also for the region itself. These benefits refer most of the time to a meta-level and could also be understood as a broader goal of the collaboration. Following, the benefits are presented by groups where, in addition to previously mentioned partners, a regional perspective is added.

First of all, student can increase their employability through the practical application of their knowledge while they are still studying. This is a direct consequence of internships or dual studies. Ultimately, this increases their chances to find a job in the region but also beyond. Different contacts to business are established through universities or associated research institutes. These firms serve as an application field for students' knowledge. Apart from hard facts, students acquire soft skills and get to know structures and philosophies of firms. Through this they meet different potential employers. A further benefit resulting from research cooperations of university and business is that students have the opportunity to acquire up-to-date knowledge, for instance, on methodologies and materials.

The Merseburg UAS can meet regional labor demand. In fact, it turns out that firms become also interested in graduates from other study courses. In addition, firms outside of the chemistry cluster have showed interest in the graduates of plastics engineering. The acquisition of third party funds enables the Merseburg UAS to finance additional employees. This increased man power leads in return to more possible research projects. Although the research results of cooperations are confidential, university employees learn from their experience and can improve their methods for future projects. Apart from technical knowledge, professors get to know structures and philosophies of firms as well. In addition, professors work in step with actual practice and convey their knowledge during the lectures. Finally, affiliated research institutes provide a less bureaucratic infrastructure that makes it easier for smaller firms to cooperate with university professors. In addition, these institutes can be used to involve students in research projects and to connect them with firms.

Ultimately, the Merseburg UAS becomes more attractive for firms and future students. Previous paragraphs touched already on benefits for business. Further advantages arise from a better understanding of the business world by professors and students. Contract research, understood as technical problem solving, also helps to increase the competitiveness of the industry. Of great help in this context is the access to special measuring equipment. By interacting with students during their stays at the firm, employees learn from them as well, showing that the exchange of knowledge is here a two-way-street. In combination with the interaction of professors and employees, the firm is likely to identify new fields of application. Of particular advantage are affiliated research institutes which enable the interaction between university and business due to their different structure when compared to universities. This facilitates outsourcing of research. In sum, the industry is likely to gain reputation through cooperations.

The previous arguments yield sometimes benefits for a broader audience. First, the commitment of the chemical industry and the Merseburg UAS to stay in the region helps to sustain a long-lasting tradition in the chemical industry. The cooperation strengthens the innovative capacity of the region. Also, by constantly up-dating the knowledge base, it is possible “to establish and hold the knowhow leadership in a structurally weaker area. It can be expected that this attracts other firms.” Shifting the focus to education and labor markets, the cooperation helps the region to tackle the challenges of demographic change. When industries’ and universities’ goals are aligned, then it is more likely that students from further away will come for their studies to Merseburg. This can help to counteract emigration. One interview participant from the UAS Merseburg added the following: “Since it is possible to outsource research but have it stay in the region, industries may become interested in locating their research and development departments in this area to facilitate cooperation.” This leads in return to more jobs which generate more taxes that can again be invested in the region. Finally, students from other study courses profit as well when cooperation activities spill over. In general, firms are willing to give students the opportunity to learn although their work might be less efficient and of lower quality than that of experienced workers. In addition, a knowledge exchange takes place as students from Merseburg study abroad and foreign students visit the region to gain practical experience.

## **7. Impact in terms of skills development**

The main goal of the cooperation was *skills preservation*. The first steps thus focused on keeping skills on plastics engineering in the region. Over time as the cooperation matured, *skills development* began to play a more important role. Relevant skills concern the technical knowledge gained through joined research projects. In addition, soft skills such as project management or team work are implicitly acquired. Also, process knowledge of firms and of universities helps both sides to simplify their cooperations. Naturally, there are feedback processes which ensure that in all cooperations both sides have the opportunity to extend their skill portfolio.

---

## **8. Measures and approaches used to assess outcomes and impact of university-business cooperation in this case**

Assessing the benefits of this cooperation remains a difficult task. So far, no standardized monitoring or reporting systems are implemented to track the development of benefits that go beyond the basic results. However, it might be possible to measure part of the benefits in the future as follows: Documenting the time elapsed between the end of study course and the start of the first job, length of job search, provides information on the employability of students. It is, however, necessary to collect additional information on when the student started looking for jobs, the type of job received, the location of the firm, or whether this was the job the student was looking for. Ideally, future employers would also be interviewed to learn what they were looking for, why they hired this student, or how long it took to find someone. In this context, employers could evaluate to what degree students with internship experience or dual studies at a UAS have an advantage over other students. Additionally, the number of students, who move to the region before their studies, who stay in the region after their studies, and who are hired by firms active in other industries could be of interest.

Similar procedures could apply to the evaluation of joint research activities where again both partners are interviewed separately. It is also possible to count the number of (repeated) research cooperations, the length, and the volume. However, in addition, it would be important to control for confounding factors such as the overall availability of cooperation partners. One could further document the number of new firms in the region.

It is important to stress that these are suggestions from the author and not measures or approaches implemented by the actors of the cooperation. Several interview partners mentioned that extensive documentation procedures are costly and could significantly decrease the benefits of cooperations. In addition, as the cooperation was only recently established, the time frame might be regarded as too short to identify benefits which might take longer to become visible.

## **9. Additional aspects**

### **What is the impact of university-business cooperation on the modernization of the universities involved?**

Whether the cooperation impacts the modernization of universities depends on whether it is targeted more towards innovation or education. In addition, respondents distinguish between a modernization of the equipment and of the knowledge base. This is illustrated in Table 3 in a two by two matrix. A plus sign indicates a positive relationship with modernization for a certain goal in a certain area.

In the case of contract research, basic equipment is a prerequisite. As for the Merseburg UAS, the majority of instruments were already available before the cooperation because the laboratories of the MLU were located at the Merseburg UAS.

However, contract research enables the professors to invest in more machines. Thus, cooperations that involve technical equipment for innovation are expected to show a positive relationship with modernization. As regards the goal of education, cooperation activities are not targeted towards improving the technical equipment of the Merseburg UAS. Hence, no positive (or negative) impact on modernization is expected under these conditions.

In the area of knowledge, activities targeted towards innovation and education are expected to have a positive impact on modernization. As regards innovation, activities in this area, if successful, will result in a new idea and thereby new knowledge. To identify whether an idea is new, partners need to be informed about the state-of-the-art. This can be set equal to constant knowledge base updating or modernizing. As regards education, modernization is understood as learning about the practicability of knowledge. The Merseburg UAS learns whether information taught in the study course is relevant for business, for instance, when employees give a guest lecture.

**Table 3: Impact on modernization of universities**

MODERNIZATION OF UNIVERSITIES is influenced by ...		
Area \ Goal	Equipment	Knowledge
Innovation	+	+
Education		+

**To what extent does innovation make university business cooperation necessary and to what extent can innovation be said to be the objective of university-business cooperation?**

The majority of respondents agrees that innovation does not make the cooperation necessary. However, it was also said that innovation can occur both at the university and the firm laboratories. In these cases, it is important to exchange ideas which would make cooperation necessary to maintain an up-to-date knowledge base. One interview partner from business summarized this as follows: "It is a cycle. Innovation is sometimes generated in the industry, sometimes at the University. Then knowledge is exchanged."

The primary objective of the university-business cooperation was not innovation. However, as soon as the cooperation was established, the primary objective of maintaining plastics engineering expertise in the region was achieved. It can be said that the focus then shifted and innovation can now be regarded as a goal in contract research. Applying a broader definition of innovation by defining innovation as knowledge gain would allow including education as an innovative goal. This was stated by an interview partner from business as follows: "If innovation is understood as

gaining new knowledge than innovation is the goal. This includes that existing knowledge is further developed.”

## 10. Conclusions

What appears to be one of the most important requirements for the success of a cooperation-supply meets demand-was in this case study the result from an act from necessity. The imminent loss of specialized knowledge in plastics engineering posed a challenge for business. However, actors were able to make a virtue out of this necessity. The Merseburg UAS was able to provide an infrastructure for establishing a new study course and equipment to carry out research. Business then stepped in to support the Merseburg UAS by sponsoring chairs of professors and by establishing additional study and research cooperations. This led to a cooperation where supply and demand seem to be well aligned.

The answers of the interview partners identify several key ingredients that are considered as prerequisites for a successful cooperation. Conversely, any missing ingredients present obstacles for the cooperation. For instance, the interviews have shown that objectives are clear as both sides, university and business, report the same goals. Key ingredients include regular meetings and personal contacts which are already established. Trust was also mentioned as a prerequisite. Interestingly, contracts for education activities are currently the exception, a proof of the trust between partners. Overall, the results suggest that the key ingredients mentioned by interview partners are present which also explains the small number of obstacles identified. However, it is not known how successful the cooperation in terms of the study course will be in the long run because it was only recently established. Note that in the past, most firms held various cooperations with the UAS Merseburg in other fields that fulfilled their expectations. In addition, it is important to remember that the university-business cooperation in this investigation is considered to be a very successful example by interview partners. This might be the result of a selection process in which less profitable collaborations were abandoned. In fact, one interview partner mentioned that the majority of contacts with other institutions were dead end streets. That is why collaborations are primarily carried out with the Merseburg UAS. Hence, a comparative overview of successful and failed cooperations might provide policy makers with further details on ingredients for profitable collaborations.

The large variety of activities, particularly in the context of the study course, leaves the impression that actors approach the challenges with holistic strategies. For instance, the activities are not only targeted towards students at the Merseburg UAS; instead, they also address younger generations to raise their interest in the field and the region. However, it also becomes apparent that members do not have information on all the activities. Also, contact persons in firms or at the Merseburg UAS differ with regard to the activity, as became obvious when interview partners mentioned different individuals and different cooperations. It is possible that this is the result of very few standardized reporting systems. Possibly, with few activities in the beginning, detailed documentation would have been uncalled-for because it was relatively easy to keep track of everything. As of right now, as the activities have increased, it would be very

helpful to document the development and implement indicators. In the long run, it should also be possible to examine the actual benefits in addition to the results.

**Links for further information to be found online:**

- <http://kkz-halle-merseburg.de/en/home/home.html>: Website of Polymer Competence Centre Halle-Merseburg
- <http://www.hs-merseburg.de/> (partly in English): Website of the Merseburg University of Applied Sciences with information on study course and contract research
- <http://www.polymerservice-merseburg.de/en/>: Website of Polymer Service GmbH Merseburg
- [http://www.sixel.de/cechemnet\\_en](http://www.sixel.de/cechemnet_en): Website of network CeChemNet with information on partners and competencies
- [www.forschung-sachsenanhalt.de](http://www.forschung-sachsenanhalt.de) (only in German): Website with detailed information on contract research conducted in the State of Saxony-Anhalt

---

## European University Enterprise Network (EUEN)

Laura Norris,

Cardiff University.

### 1. Introduction to EUEN Project

EUEN is a pilot project created to support the EC's development of Knowledge Alliances, which are structured partnerships that bring together business and academia with the aim of increasing Europe's innovative capacity. These alliances will be used to create new multi-disciplinary curricula that promote entrepreneurship. The EUEN project commenced in November 2011 and came to a close in July 2013, at the time of writing this case study. It has a total budget of €495,982; comprised of an EU grant of €371,987 and contributions by project partners. In this project, HP are funding their own participation.

There are 7 project partners that come from across 4 countries:

- Institute of Applied Entrepreneurship (IAE), Coventry University, UK
- Hewlett-Packard Limited (HP), UK
- Business and Innovation Development (BID), University of Turku, Finland
- University College Ghent – Centre for Entrepreneurship, Belgium
- Münster University of Applied Sciences, Germany
- National Centre for Entrepreneurship In Education (NCEE), UK
- European BIC Network (EBN), Belgium

There are 6 associated partners from across 6 countries:

- Microsoft Worldwide, Education Strategy Group, France
- Banco Santander, Spain/UK
- Acerta, Belgium
- Poznan University of Technology, Poland
- University of Cantabria, Spain
- Orion Corporation, Finland

The project builds on the established concept of University Enterprise Networks, a project led by the National Council for Graduate Entrepreneurship (NCEE) and delivered by the Institute of Applied Entrepreneurship (IAE) of Coventry University

### Aims of the project

EUEN is structured so that several instances of University-Business cooperation contribute towards a collective project which seeks to develop a portal for engaging academic – industry partners and graduates: engaging 200 students in University-Business collaboration projects, and ensuring that 50 businesses undertake pilot activity. Dissemination is regarded by partners as intrinsic to the success of the project, with a goal of establishing a European Legacy Network that will continue to enable University-Business cooperation.



The five examples of cooperation found within EUEN are treated as separate entities, within which the project partner has the ability to organise its activities as best suits their capabilities and needs. This case study will address two examples of cooperation that are found within the EUEN project and identify key features that contribute to the thinking around University-Business cooperation. The cooperation between IAE- HP and BID-Orion contribute to the objective of encouraging entrepreneurial behaviour amongst students and staff. These examples were chosen as project partners adopt different methods in achieving this, due in part to the different levels of departmental maturity and establishment of 'entrepreneurial thinking'.

IAE identified a need to encourage entrepreneurial thinking in the educators and management of Coventry University. In getting faculty members to think more frequently about entrepreneurship, IAE believe that they will be more inclined and better equipped to encourage entrepreneurial behaviour in students. The activity in this cooperation does not drive towards the redevelopment of the curriculum or informing course structure. However, there has been a long-standing cooperation between Coventry University and HP, this case study does not address previous curriculum change that may have taken place. Activity between IAE and HP consisted of three workshops that were conducted on-site at HP to expose students to HP practices.

As part of EUEN, IAE undertook other cooperative activities which included a mentored placement for an MSc student at Actemium, a regional business. This was viewed as a singular event rather than as part of the University-Business cooperation to achieve the goals of the EUEN project. The aim of this placement was to explore the possibilities for innovative new activities to be undertaken by Actemium.

BID is newly charged with the provision of entrepreneurship and business competence training for students, professionals and researchers across Turku University. BID identified a need to develop a method through which an entrepreneurial education focus could be introduced to collaborative activities. BID utilised a pre-existing cooperation between the Faculty of Medicine (FoM) and Orion, which previously focused on research, to do so. BID has worked with Orion to develop a pilot project that will act as a template for engagement with other businesses; this will contribute to the development of the entrepreneurship educational offer across all faculties. Prior to EUEN, Orion's HR expert had regular interaction with the students. Further to this, having previously worked solely for FoM and solely at Orion, a Professor now works 20% at the FoM and 80% at Orion to further cooperation and understanding between the two organisations, although it should be noted that this arrangement predates EUEN. BID also piloted an 'entrepreneurial intention survey' to assess the impact of this cooperation on student's entrepreneurial skills. Orion's primary aim for participation in the cooperation continues to be ensuring the supply of skilled graduates.

## 2. Reasons for this University-Business cooperation

Alongside the desire to stimulate innovation and entrepreneurship, the EUEN consortium recognizes that Universities are facing increased competition based on the employability of their students, students are facing increased regional and global competition in the labour market, and businesses are demanding a greater skills focus with graduates needing to be equipped with a range of 'enterprising skills'.

IAE and BID focus on enhancing the entrepreneurial potential of staff and students outside of the traditional discipline of entrepreneurship within a business department. IAE is a well-established 'Entrepreneurship Unit' that has links throughout the University, particularly viewed as a key 'sign-posting' point for the Student & Graduate Employment Coordinator for students with an entrepreneurial mind-set. In contrast to this, Turku University is in the early stages of this type of operation, where BID *"were originally part of the Business school, but we have been made stand-alone to emphasise that we span across departments. We are currently building links in the life sciences and the Faculty of Medicine before extending this throughout the University."*

Significantly, these activities have formed part of a European project, rather than being standalone as would be equally viable. Project partners were clear in their belief that alongside encouraging learning in their own institution, learning from the experiences of other institutions would be highly beneficial. Institutional participation in an EU funded project increases their ability to provide an innovative educational offer. NCEE and IAE both highlighted that *"it is clear that there is not a level playing field across Europe for entrepreneurship in education. There are significant variances in understanding, experiences and skills."* Participation in this type of cooperation can also have positive outcomes for the businesses. Orion recently took second place in the engineering and natural science category of Universum's Finnish Student Survey of student perceptions of employers in Finland. A year earlier Orion had ranked 11 places lower than this.<sup>3</sup>

Alongside this, businesses are motivated to host internships and work placements as a method of recruiting new graduates, providing a form of 'protracted interview period'. However, in what determined the reasons for participation in a University-Business cooperation on the part of the SMEs, the BID project manager was of the mind that they were more philanthropic than that of the larger companies. *"Smaller companies are not there for recruitment as such, they want to promote what they do and become known. They also recognize that there is no business education in the life sciences, so this is important to them. A lot is a very personal motivation I feel, the educational element is not always tangible."*

Furthermore, in the case of Orion which operates in a highly regulated industry, cooperation with the University creates a place for the exploration of higher risk

---

<sup>3</sup><http://www.orion.fi/en/News-and-media/Actual--page-list/Orion-ranked-second-in-student-survey-of-ideal-employers/>

projects as University researchers have greater latitude to explore areas that may not return a profit. This would hint at the transactional nature of these cooperations, where 'businesses' are also concerned with the achievement of goals that may be largely economic.

### **3. Main objectives of this university-business cooperation**

The main objective of the EUEN project is to "portray different approaches for business-academia collaboration and enhance the capacity to collaborate." This is achieved through a number of regional University-Business cooperations that contribute to the collective objectives of the project. Project partners consider the dissemination of the project results to be a crucial objective on completion of all activities. The 'repertoire' of cooperations that highlight the different approaches include course redesign; the development of a flexible curriculum model; enabling student projects; and encouraging relationships between organisations that lead to working partnerships and the creation of joint ventures. Project partners considered that the training of students and staff was integral to the achievement of these goals.

IAE focused on strengthening entrepreneurial behavior and education awareness amongst senior managers, hoping that this would lead to better support for faculty members becoming involved in operational activities promoting entrepreneurship. IAE intended to move forwards from the basic premise of collaborating with a business and give greater consideration to the educational element.

In contrast with IAE, entrepreneurship thinking at Turku University is in a nascent stage, with entrepreneurial education undeveloped. BID's objective in seeking cooperation is to encourage an entrepreneurial culture and focus on bringing entrepreneurial education in to the syllabus. As a unit that operates outside of the academic departments, BID is able to foster entrepreneurial behaviour among staff and students, but before this cooperation had little-to-no methodology through which to do so. BID used the existing cooperation between FoM and Orion to develop a 'blue print' for engagement with staff, students and other businesses.

Employability plays a significant role in the cooperation; HP and Orion are both major national employers and it was hoped that through placements and an improved educational offer students would be better equipped to join these organisations. NCEE highlighted that "*HP are concerned with long-term recruitment of talent, the focus is on employability and the placements are an opportunity for them to interview students over a longer time period*". Through engaging in this cooperation, Orion want to ensure the skills match of graduates as they are the predominant employer of bioscience graduates in Finland. "*Orion have been explicit in saying that they want to ensure that potential new employees have the correct skills, and that they possess the skills for supporting intrapreneurship*." It could be concluded that the objectives of the education providers in increasing skills and employability comes in direct answer to the demands of businesses wishing to recruit new graduates that are well equipped and suited to their needs.

#### 4. Monitoring mechanisms and indicators used

There are a number of methods of monitoring that track progress and achievement. As would be expected, much of this falls under the monitoring of the EUEN project as a whole. Outside of this standardized monitoring, it is interesting to observe that two opposing strategies are adopted by IAE and BID. IAE, who is also the lead partner of EUEN, does not undertake formal monitoring of its cooperation, with results measured against metrics outlined as part of the wider EUEN project. Conversely, BID has extensively monitored the progress of their case of cooperation, where, alongside the pilot of entrepreneurship training they piloted the creation a feedback system. This feedback system was used by BID to monitor the levels of satisfaction in the FoM in respect of the training, mini workshops and new courses that have been developed. BID has also monitored the level of satisfaction with the cooperation in general. Students have also been asked their level of satisfaction. Interestingly, BID piloted an 'entrepreneurial intention survey' to see whether this new form of education has had an effect on the students. This will continue to be developed following the end of the EUEN project.

IAE's Actemium placement was monitored through email conversations and informal, bi-weekly meetings with the placement tutor. When asked whether there were entry and exit assessments, the student explained that there was no assessment of their opinion going in to the placement, only 'testing' of whether they were suitable to be put forward and capable of the task. Exit meetings took place with unit managers that sought feedback on how the placement could have been improved. Alongside the traditional course-assessment forms, the student was asked to assess placement experience and whether any improvement could be made.

Within the research collaboration of FoM - Orion, which are not a part of the EUEN project, the Professor monitors the placements "*because I know what should be happening and what is expected*". A research plan is developed which consists of a title and an A4 page of text that outlines the activities the student will carry out and what they will learn. After the formulation of this research plan, there is an 'open door' policy but no structured form to complete or regular meetings.

*"I think this works as the students tend to be very independent as they have been cherry-picked and they know that if they do well in this placement, their careers will be fairly well secured"*. Interestingly, this would suggest a belief that due to the caliber of the students and Orion being a major employer, there was less need to monitor the activities of the cooperation as vested interests would ensure that the student performed well. Consideration did not, however, seem to be given to ensuring that Orion performed their duties. This may be due to Orion's principle motivation being the recruitment of aptly skilled graduates.

- *"How do you measure impact? We have no answer as of yet, how do you honestly attribute the actions of a project like EUEN to an*

---

*activity/event that takes place some months or even years later? How often do you monitor?"*

These were all questions raised by NCEE on how to assess the impacts of the IAE-HP cooperation as part of the EUEN project. This raises important lines of enquiry of how best to present the outcomes and benefits of a project; at what juncture should systems be in place to do this; and whether it is important to continue to monitor once the project or cooperation has ended. Furthermore, should the business and student be monitored to ensure that they are fulfilling their commitments?

## **5. Main results achieved**

The results achieved meet the initial objectives, although it can be observed that BID has more tangible results with the development of a framework. IAE's objective was the achievement of intangible developments, focusing largely on changes in attitudes. The Student & Graduate Employment Coordinator and VC of Student Engagement noted how recent activities undertaken by IAE had influenced their thinking around entrepreneurship. However, it seems likely that HP's objectives of recruiting well qualified graduates with prior knowledge of the company has dominated this cooperation, with the structure of 'cooperative' activities focusing on three workshops. Workshop 1 identified suitable students to participate in the workshops, Workshop 2 was an on-site visit that focused on the sharing of commercial insight from HP's experiences, and Workshop 3 reflected on staff/student's experiences and how this could be improved. It would seem as though IAE has achieved its objectives by drawing out elements of the cooperation and matching this with the entrepreneurial education skills it already possessed.

Conversely, BID entered their cooperation with little experience in entrepreneurial education, building upon Orion's cooperation with FoM to create 2 pilot projects, particularly introducing an educational focus. As a result, *"the FoM have received training in entrepreneurship, with bi-monthly mini-workshops to keep the ideas fresh and develop them further. We have 2 new course specifications complete with learning objectives and methods of delivery that can be rolled out to other departments"*. This is a good example of how cooperation enabled by a project can not only increase University-business cooperation, but also collaboration within the University itself. As a result, a training package was developed, meaning that current and future projects will be more applied and BID can continue to integrate entrepreneurship in as many departments as possible, rather than solely the FoM.

*"The FoM seemed very appreciative of the inputs of the project as they tend not to think about the education element as much. At the moment I'm making decisions for them, guiding them, pushing the agenda through. I hope that next year they will be able to take on more. The starting level of interest was very low, but now that we have proven interest it should help the cause."*

This suggests that enthusiasm and an understanding of what is required can be instrumental in the uptake of this type of activity, both in the context of engaging in a cooperation and including an entrepreneurial focus to the syllabus.

BID has also developed a stakeholder strategy for engagement, which is currently being applied to cooperations with 10 small businesses. These instances of cooperation were encouraged following a realisation that much of the cooperation with Orion focused on research rather than education. As a result of a developed methodology, future cooperation will have a stronger focus on entrepreneurship education and will feed in to the development of curricula both within the FoM and across other departments within Turku University.

Orion and BID consider that those students that have come in to contact with the cooperation are better equipped to leave Turku University with a more entrepreneurial outlook and are in a better position to compete in the labour market. BID piloted an 'Entrepreneurial Intention Survey' to monitor whether students had become more entrepreneurial following engagement with this education. BID highlighted that the learning accomplished as part of this cooperation cannot be trained as part of the regular curricula.

Project partners were able to identify the key ingredients of successful cooperation, with a high degree of consensus that a past history of partners working together successfully was likely to lead to the new project's success. A clear progression of ideas and objectives that are tracked against milestones were considered important for project management. However, the high-costs of connecting project partners and stakeholders to support the transnational element of the project was highlighted; this can create limitations on what can be achieved within the time scale and budget of a project. Furthermore, ensuring the motivation of the organisation with which you are cooperating, and connecting with the right individual within a large organisation were considered instrumental. Project partners believe that EUEN is a success, identifying the ease of communication between partners as an internal sign of this. Externally, the re-design of courses, the interest expressed by other parties and the greater maturity displayed by students returning from placement were all considered positive signs.

## **6. Outcomes achieved**

IAE wished to achieve a number of outcomes through the cooperation with HP; these included the entrepreneurial education of senior management and staff, ensuring that faculty members are involved in delivering entrepreneurial education that develops the skills of students. It would appear that alongside the project metrics being met, there has been greater engagement in this type of working. In discussing the activities of IAE, the ProVC for Student Engagement was keen to share experiences, as was the Student & Graduate Employment Co-ordinator. Interestingly, the EUEN project was not recognised as a distinct entity, but both interviewees were very enthusiastic about the work that IAE does in enabling cooperation and an entrepreneurial outlook. This

was a theme running through the interviews; whilst participants did not recognise EUEN as such, they were aware that recent work and engagement with IAE had influenced how they were thinking about entrepreneurship. This perhaps is an indication of the success of a cooperation and promotes the outcomes that can be achieved through not defining the activity as a distinct project-related occurrence. An area of consideration is whether this contributes toward the continuation of relationships passed the end of a project, particularly as there is no awareness that an 'end' has been reached.

Significantly, BID praised the time and space that EUEN allowed to focus on enabling cooperation: facilitating planning of the approach to entrepreneurship within the institution and allowing them to form a consistent approach. The project resources and cooperation enabled has also allowed staff to undertake training in entrepreneurship education and for BID to have regular communication with educators. This can be considered a universal outcome of cooperating within the context of a project as time is 'purchased' to complete the collaboration, rather than it being viewed as something over and above a job role.

The most significant outcome of the EUEN project is the production of an e-book that forms a 'how-to' guide for increasing entrepreneurial education. The e-book features the cooperative activities that have been undertaken by the project partners, highlighting the 'stories' of each University-business cooperation such as IAE-HP and BID-Orion. This e-book was not a planned objective at the outset of the project and in some part responds to the need to re-introduce the transnational project element of the individual cooperations that took place. The e-book also came in response to the project evidence that the entrepreneurial-readiness of institutions varied greatly and case studies were considered by the Lead partner as the most comprehensive way of contributing to the discussion on different approaches to business-academia collaborations.

IAE commented that the Case Studies were used to monitor and present the *"intangible elements of the activities that cannot be presented in metrics, both in the realms of the project partners and the students. We had originally thought of a questionnaire that would have around 90 questions, but we soon realized this wouldn't work"*. IAE were keen to highlight that *"due to the changing ideas and the realization that not one structure fits all a range of Case studies have been formulated that show the details, we thought the project would be richer in content if there was open sharing between partners."*

*"We know that this will be a useful document, from experience with our Polish partners we know that there are Universities and businesses that need help with this kind of thinking. The question is how do we get people to read it, become aware of it and give us feedback on anything they would like changed or to see more of."*

In this way, the project overcame some of the difficulties it faced in measuring and promoting its outcomes; the e-book is seen as an effective way of measuring the outcomes of the project and extending its impact. This highlights some of the

difficulties encountered in disseminating a project: can there be too much or too little information? Which is the most effective medium? How do you ensure that it is widely read and those that are in need of this guidance are aware of it?

EUEN highlights that the successful cooperation between large organisations can come about in two ways: an enthusiastic individual who encourages the cooperation, or, when a corporate cooperation is agreed upon, finding the “right” individual with whom to engage and this individual staying in their post. The sharing of objectives, time and enthusiasm are key. An example of this is Orion’s HR specialist who was greatly involved in collaborating with FoM before EUEN, as a result of BID strengthening this relationship they have become involved in both the planning and execution of the new study modules included in the curriculum.

Alongside this, BID feel a positive outcome has been initiating relationships with 10 new partners whose *“contribution we will limit to education for now, but look to develop this further in the future.”* This raises an interesting point in the need for a maturity of relationship between institutions related to the type of cooperation that can take place. BID considered that a high level of trust was needed between partners before pilot and innovative 'experiments' could take place.

Orion view their collaboration as a good way of recruiting students as they are a major regional employer and the main employers in biosciences in Finland. Further to this, commercial outcomes include opportunities for patenting and licensing, particularly as Universities are in a position to consider more experimental and risky projects. The high bureaucratic costs were considered and inhibitor to innovation *“sometimes it is just easier and quicker to go to India no matter how much I would like to develop this with a University.”*

## **7. Impact in terms of skills development**

Skills development has occurred both for academic staff and students alike; however, there is little evidence of this on the part of the businesses that are involved in the regional cooperation. The HEIs have been able to improve project management skills; renew the curriculum and provide entrepreneurship education for staff and students. In the case of BID, they have begun to learn how to cooperate with businesses and to develop relationships that will improve entrepreneurship education.

As a result of the cooperation, students have been exposed to the 'real world', gaining an insight into entrepreneurial and business outlooks. They also have had the opportunity to develop valuable workplace skills and enhance their independent working. NCEE felt that placements were the best form of 'entrepreneurial education' as the students *“gain business experience and an insight to how things work. EUEN aims to dispel some of the naivety, for lack of a better word, that students have about the world of work and/or business being easy. This also gives them the opportunity to try out a potential career path”.* This was further echoed by the Student & Graduate Employment Co-ordinator who noticed a marked increase in maturity and academic



application in students once they have completed a placement. In this sense, the recruitment of talent which is considered the main objective for HP aligns well as *"placements are an opportunity for them to interview students over a longer time period."*

However, this does somewhat limit the impact in terms of skills development for the entire student cohort; unless a HEI has the capacity to enable a cooperative placement for all of its students, placements are a particularly singular cooperation. As part of the EUEN project, IAE facilitated a work placement for an MSc student in a regional organisation, Actemium, which raises some interesting subjects. It is clear that this student learnt a great deal from the experience and was very enthusiastic in talking about his time with the company. However, it became obvious that this was a 'mature' MSc student that had previous experience in industry. Further to this, the student was 'hand-picked' to conduct this MSc thesis due to their skills and attributes. This would indicate that if Turku's 'entrepreneurial intention' criteria were applied, he would be pre-disposed to innovative or entrepreneurial behaviour. The student also voiced that they imagined they were picked as an 'ambassador' for Coventry University. The Orion Professor also highlighted that many of the students are 'cherry-picked', and for those who do not gain a placement, "nothing much" happens. When IAE's MSc student was asked what happened for students who had no placement, the answer was similar. This raises questions about the purpose of the cooperation, and whether they should be used as development opportunities for students who are already 'entrepreneurial' or whether their focus should be to encourage entrepreneurial thinking across the board.

## 8. Conclusions

EUEN has highlighted that the type of cooperation that can be achieved is dependent on the maturity of entrepreneurship within an institution and the strength of the existing relationship between University and Business. IAE and BID started from different points of entrepreneurial education attainment, but had the same reasons for participating in a cooperation: the improvement of the entrepreneurial education offer in their institution. IAE approached this from a senior management perspective, with the aim that practices would 'trickle down' to staff and students. BID built upon an existing cooperation to encourage entrepreneurial thinking, and to pilot course design and a monitoring framework.

It is clear that partners took alternative routes to achieving their similar objectives, the successes and difficulties encountered by partners in conducting their cooperation has led to the development of an e-book. The e-book contains case studies of all the EUEN cooperations, and is a useful tool to disseminate the project. This highlights the value of these cooperations being enabled as part of a wider project as it provides a positive learning outcome for partners and other HEIs that wish to enable cooperation in the future. However, the benefit of a Europe-wide partnership over several cooperations within one country did not become apparent, other than considerations for 'cultural differences'.

BID praised the 'thinking space' provided by EUEN through the allocation of working hours to undertake this cooperation, allowing time to focus efforts on achieving the best results. However, it was noted that a project is unable to purchase the time of the business that engages in this cooperation, so activities and expectations may sometimes be mismatched.

Monitoring strategies have differed significantly between IAE and BID, with IAE utilising the overall project monitoring and contributing to the collective metrics. BID used this opportunity to develop a framework that could be used in future cooperations to assess levels of satisfaction and provide training opportunities.

IAE and NCEE believed that the objectives of increasing senior management awareness of entrepreneurial education had been achieved; however, how this has impacted the skills of the students remains unclear. In speaking with the MSc student who completed a placement with Actemium, caution must be raised as to the extent to which the activities are focused on entrepreneurship or whether they relate more generally to the skills required to be effective in the workplace. Orion also highlighted that often students were 'cherry-picked' to participate in placements. These elements caution that whilst skills development occurred, it is not necessarily across the student cohort but rather for those that have an 'entrepreneurial' tendency.

BID felt that in order to encourage an educational focus to the cooperation, it was important to ensure that experts came in to the University, in great contrast with IAE-HP's on site workshops. This perhaps suggests an interesting area of future research to establish whether entrepreneurial education learning is location-specific, and whether to encourage entrepreneurial behaviour to the entire student cohort the knowledge-exchange must take place within the confines of the University. Conversely, to encourage 'a' particularly entrepreneurial student is the learning process more beneficial if it takes place at the site of the business?

Finally, whilst the purpose of EUEN was to improve innovation, these cooperations can be considered to focus primarily on education. The FoM-Orion cooperation is focused on innovation and risk-minimisation rather than education; in highlighting the high costs, it could be considered that should this become insurmountable for Orion, the company would simply take its cooperation elsewhere.

# Education Cultural & Creative Knowledge Alliance for Tomorrow's Entrepreneurs

Laura Norris,

Cardiff University

## 1. Introduction

'Education Cultural & Creative Knowledge Alliance for Tomorrow's Entrepreneurs' (EDUCCKATE) is a pan-European pilot project that enables an entrepreneurship mentoring scheme which targets the cultural and creative (CC) sectors. The EDUCCKATE project has a total budget of €515,366; this comprises a requested EU grant of €386,524 and contributions from project partners.

EDUCCKATE has partners in 7 countries, with a partner leading a work package each.

1. The Centre for Applied Archaeology (CAA), UCL
2. The Hub Kings Cross Ltd – UK
3. Quality Program sas di Nicola Martulli &c. – Italy
4. Bildung und Projekt Netzwerk GmbH, BUPNET – Germany
5. CATRO Vezetői Tanácsadó Kft., Hungary
6. OLN Learning, Greece
7. CATTID – La Sapienza
8. Università di Roma – Italy
9. FH JOANNEUM Gesellschaft mbH. – Austria
10. Die Berater – Austria
11. RNDO Limited, Cyprus (CY)
12. Center for European and International Affairs University of Nicosia – Cyprus (CY)

The project employs approximately 7 FTEs. The project is funded for 18 months and commenced in February 2013. The writing of this case study coincides with the inaugural months of the project, at the time that the cooperation to develop a Key Competence framework is drawing to a close and the internship mentoring phase is commencing. This leads to the caveat that commentary made throughout the case study is based on the partner's aspirations and plans, rather than what has or will be implemented.

## 2. Aims of the project

The project has two principle aims: the creation of a key competence framework for CC sector students and the supervision of 105 mentored internships. Whilst there are 11 work packages, these activities and cooperations all contribute to these larger aims. The development of the key competence framework is a cooperation between

the lead partner, UCL-CAA, Bupnet and OLN. This cooperation will develop a system to effectively monitor mentored internships ensuring that targeted learning objectives are achieved, and that the required skills can be gained by both students and mentors. UCL-CAA will contribute knowledge gained from interviews, surveys and contact with entrepreneurs to establish the skills and learning processes that are required to support and encourage entrepreneurial thinking. OLN will use this information to develop a training package that will be delivered to students, staff and entrepreneurs, ensuring that all participants are equipped with appropriate information and the ability to engage in the process. BUPNET will take their well-developed Level 5 monitoring system which will evaluate the internships and mentoring that take place. BUPNET will refine Level 5's competences, developing indicator and reference systems, and generating a tailor made evaluation package that will assess competence development. OLN is a core partner in a DG Enterprise & Industry project that forms part of the European Network of Mentors for Women Entrepreneurs, undertaking training for mentors and mentees in the key competences in mentoring for entrepreneurship. The mentoring scheme that has been developed through this project, amongst others, will be utilized in EDUCCKATE following adaptations that will be guided by the activities of WP 1. A train-the-trainer course will also be developed so that academics and entrepreneurs will be guided in their activities.

The 105 mentored internships will come as a result of the contribution of all partners to the recruitment, training and oversight of collaboration with entrepreneurial mentors. A smaller-scale inter-departmental exchange takes place between UCL-CAA and UCL Advances. Advances will fund the mentored internships so that the students do not work 'for free' and CAA will provide access to the key competence framework that is developed. The need for the internships to be paid is very significant to all commentators, who time-and-again re-iterated that it provides the required gravitas to ensure that the internship is a serious cooperative undertaking by all parties. It is felt that this will make it a level playing field between student and entrepreneur. The 'cooperative activity' is a student completing a three month mentored internship within the entrepreneur's business; providing the opportunity to develop collaborative business projects. The internships will be facilitated by the HEIs that are a part of the EDUCCKATE project and mentored through the key competence framework that is being developed. This activity is currently in the planning stages and is dependent on the completion of the key competence framework. In many cases, an internship would not be considered a collaboration, but the internships that are planned for this cooperation focus strongly on both the student and entrepreneur gaining skills and engaging in the business project. The one entrepreneur and potential mentor interviewed for the case study placed heavy emphasis on mutual benefit stemming from the relationship, suggesting an interactive and collaborative base.

### **3. Actions foreseen by the project**

- Development of tool box for mentoring and CC entrepreneurship including a key competence framework and entrepreneurship validation system (Level 5);

- Training package development addressing the training needs of academic staff, mentors and students; delivery to 105 entrepreneurs and 105 students.
- Project database for innovative business projects;
- Online Network connecting universities, entrepreneurs and students;
- Development of business projects between CC students and entrepreneurs.

#### **4. Reasons for this university-business cooperation**

The Cultural and Creative (CC) sector has seen significant changes since the recession, where recent reductions in public funding have led to job losses and loss of expertise in CC sector SMEs. As a result, graduate employment schemes are over-subscribed and many students are now leaving university and working on a consultancy basis, where previously employed positions were available. This makes entrepreneurial attributes crucial to a graduate's success in the market place. The EDUCCKATE project team identified that many students were not having the opportunity to receive this education or to work on a project collaboratively with the 'business' community; or, if they were, it was haphazard and needed guidance. This latter element is particularly pertinent to UCL-Advances, *"what Advances is looking to gain from the collaboration is that whilst a great deal of mentoring takes place under its auspices, there is no formal process of monitoring and/or guiding the process. Therefore, in return for offering to ring-fence enough money to make the internships paid, Advances will be able to use the model."*

The cooperation undertaken as part of EDUCCKATE will meet two CC University education needs: to ensure that the CC graduates leave University with the skills required to be successful in the CC industry, and the development of a framework by which the process can be guided. This will provide many benefits for the University, Business, Students and the CC sector alike.

The framework in particular will be of benefit to other University departments, improving the effectiveness of internships and mentoring. *"Until now the way in which Advances has conducted its internship schemes has been a little haphazard. It has set up internships, but not necessarily followed up their success. Now that it knows it can set up internships and get the interest of businesses, Advances is looking at its role as a broker. It'll be a positive step to be able to quantify the experience to show its worth to potential backers, funders and so on."* In this sense, the activities undertaken by EDUCCKATE to formalise cooperations will enable more University-Business cooperation.

In the same way that the project partners have identified a change in the CC sector, so too have the entrepreneurs who often work as lone consultants or as part of a small partnership. Since the recession there has been a drop in their 'commissioning' by Government bodies. These businesses have a vested interest in the growth of the CC sector and in the increasing availability of well trained, entrepreneurial graduates; providing a strong motivation for their involvement in this cooperation. As with the

---

Universities and students, through increased connections between key actors these entrepreneurs will be able to amass new knowledge and find potential future collaborators. *"It'll help us build contacts in the industry as these students will be out there talking about 'us' and potentially becoming the next big thing."*

## 5. Main objectives of this university-business cooperation

The objectives of the EDUCCKATE cooperations come from the education partners who wish to improve the HE offer in a number of areas. The principle objective is to develop a framework that can be used to guide and measure the skills that are gained by students during an internship. This will be achieved through the development of the key competence framework and is unique in that it specifically addresses the CC industries, rather than taking place in a business school environment, as is traditionally the context. The development of the framework will also create the opportunity to update the curriculum as the skills students need in the workplace will be highlighted by an 'entrepreneurial attributes' survey and research that was completed in the inaugural months of the project. Further to this, as part of the monitoring of the internships that will take place, entrepreneurs are able to directly feed back to the Universities on any skill-gaps, thereby opening opportunities to update the curriculum which is another significant objective.

As a result of this monitoring system, entrepreneurs will be able to fulfil the objective of developing their HR skills and improve their ability to recruit graduates. The project will also provide the opportunity for the entrepreneurs to come in to contact with innovative ideas. Whilst an objective of encouraging dialogue between HE and business is not explicitly referenced, the internships will allow students to gain real world experience whilst entrepreneurs gain access to new knowledge and ideas, potentially inspiring innovative outcomes. The HEIs will also hold events that are designed to help the entrepreneurs find new business and collaboration opportunities in a European network.

Educators and entrepreneurs acknowledge that there is currently a strong focus on the academic element of CC fields in HEIs, but it is clear that entrepreneurial thinking comes as a result of business competences that are developed through non-academic mediums, such as internships. In enabling face-to-face interaction and contact with practitioners over a substantial time period, the internship will allow students to acquire the skills that they need and increase their employability. This will meet the objective of increasing student employability, which is strongly recognized by both the educators and businesses. UCL-CAA highlighted that *"we must think about where the students go after they have received their education. This pilot project is an attempt to systemise the process and approach; it will be a small but hopefully constructive contribution to the field."* Educators and mentors are eager to encourage self-reflection in students, and educational webinars will be developed to encourage this, the Level 5 method of monitoring will also lead students to recognize their newly gained abilities.

## 6. Monitoring mechanisms and indicators used

This case study has explored two instances of cooperation that have been enabled by the EDUCCKATE project. This section will discuss the ways in which these cooperations will be monitored, highlighting the range of methods that will be used to capture the impacts that are not always clearly or easily defined. This includes elements such as a change in student mindset, increased employability, improving mentoring skills for CC business leaders and enabling academic staff to implement mentored internship schemes.

As highlighted previously in this case study, the development of the key competence framework is a project activity that allows the implementation of the mentored internships. In a fashion similar to many other projects of this nature, the progress of the key competence framework will be guided by Gant Charts and date-deadlines for activities to be completed. In the context of the EDUCCKATE project, this activity spans several work packages with different project partners leading activities. The EDUCCKATE project monitoring is ordered by an excel spreadsheet that collects all relevant information; it is focused on a quality management strategy that highlights the key areas to control to ensure the flow of project actions until the end results. This method focuses on the completion of work packages rather than the achievement of objectives, which often span many work packages. The partners collect the information in the process of completing their WP and the monitoring system shows if they are on schedule and how they are progressing. This data will be monitored every 2 months.

Monitoring of the internships is led by Bupnet, who are experienced in validating competencies in both formal and informal education systems, *"students learn a lot during placements that can't be assessed with a grade or test. Skills such as flexibility, autonomy, team-working, these are all learnt through activities."* The Level 5 system has been used in around 60 EU projects to date, meaning that it is well tested. However, the package will be adapted to this cooperation through the integration of an Entrepreneurship survey that was utilized in the development of the key competence framework. The project considers that a significant amount of the learning that will be undertaken by students will lead to the development of soft skills such as flexibility, autonomy and problem solving. The Level 5 system will be used to assess the students' and entrepreneurs' contribution to the cooperation through a dual system of mutual-assessment. The software is used to input all data and at the end it creates 'certificates'; these are pictographic representations that show the development that has taken place throughout the internship. Development is measured in the areas of "brain, hands and heart" and a cube is used to visually depict these changes. The assessments are completed at the beginning and end of the internship.

Further to this monitoring of skills development, the key competence framework contains a toolbox that will enable the HEIs to monitor the progress of the internship against a set timetable; an action plan for development and implementation of

business project; instructions highlighting responsibilities and record keeping required, and project evaluation and implementation

These methods do, however, focus primarily on the impact in the context of the singular student – entrepreneur cooperation. Due to the early stages of the project and that the mentored internships have not yet commenced, UCL-CAA is unclear how the impact of the cooperation will be measured outside of these methods and if there is indeed any need to do so.

## **7. Main results achieved**

Whilst the project is in its inaugural months and it is not possible to provide examples of what has been achieved, it is quite possible to predict that the mentored internships are likely to have a number of positive results for the entrepreneurs. Whilst the objectives of the project focus primarily on the students, entrepreneurs will come in to contact with new ideas and knowledge. This may result in them changing their way of operating, or taking on new projects in conjunction with their intern. *"If they can identify a project that is of interest to them and would also benefit me, then I am happy to look at continuing the relationship past the end of the project."* This entrepreneur has employed a previous placement student who had a project that could contribute to the company's success. *"We're now in a scenario where he is my business partner; for one project I'm his boss and for the other he's mine! There has to be a mutually beneficial end result."*

In this sense, the internships can provide the opportunity to develop new ideas and act as a 'test-bed'. Students can see if their ideas are likely to be viable and entrepreneurs are presented opportunities to think in new innovative ways. These elements represent good commercialization opportunities that address the interviewed entrepreneurs' reference to needing an *"economic benefit of sorts for me also"* as a result of dedicating time to hosting an internship.

## **8. Outcomes achieved**

The early stage of the project within which the case study was conducted means that the mentored internships have not yet commenced; however, it is possible to understand outcomes that will arise as a result of the cooperation. Increased skills and employability are clear objectives of the cooperation, alongside a strong focus on self-reflection. This would suggest that an outcome for the students will be that they have increased confidence in their capabilities, possibly leading them to pursue a career path that they had not previously considered. As highlighted in the introduction, the changing nature of the CC industry means that students are increasingly expected to work on an independent consultant basis on graduating, the internships will allow the opportunity to make mistakes under guidance and gain the skills needed. The internships will allow students to gain real world practical experience and learn hard to teach skills that will be instrumental in their working life.



A number of commentators highlighted that students may not currently have the necessary skills to participate in an internship, particularly as the skills-gap will be identified during the course of the EDUCCKATE project. A successful outcome will be the identification of the 'right level' student that can participate in an internship and a renewal of the curriculum to enable students to participate at an earlier stage in their academic career.

It is important to consider that this project is Europe-wide, with the objective of opening up European opportunities for collaboration between HEIs and private institutions. This will be enabled by networking events. However, the desired outcomes and benefits of this cross-border working are not clear, particularly as internships are being matched and carried out on a regional basis. Innovation is referred to on a number of occasions, but in the context of providing innovative internships. However, it is an inevitable outcome that these internships will connect regional institutions and entrepreneurs who are likely to collaborate on future projects.

## **9. Impact in terms of skills development**

Of the two instances of University-Business cooperation explored in this case study, the mentored internships can be considered to have the most significant direct impact in terms of skills development. The skills development on the part of student and entrepreneur can be seen as one of the key elements that distinguishes the internships as a cooperation: students gain entrepreneurial capabilities and the entrepreneurs gain mentoring capabilities.

As a part of these entrepreneurial capabilities, students will understand the key competencies required by entrepreneurs and the mindset that is needed to support this. Students will also gain the opportunity to experience first-hand business functions and operations, meaning that if they do graduate and become self-employed they will have this experience as a comparative guiding-point. Business skills are a readily transferable skill gained through the internship alongside communication skills, creative thinking, decision making, problem solving and risk analysis

The Level 5 method of internship monitoring adds to the development of student's skills, as it encourages self-reflection at both the outset and end of the internship. This will encourage students to evaluate and recognize that they have gained soft skills such as building rapport, managing relationships, trouble-shooting and recognising achievement. Alongside the Level 5 system that encourages self-reflection, webinars will also take place. These webinars will encourage students to reflect on how they have developed throughout the experience.

The entrepreneur interviewed for this case study noted that *"soft skills training can be difficult to come by for students, particularly if they do no other work outside of being a student. It's important to realise as a mentor that you're not trying to create a 'mini-me' but rather to inspire the students, engrain a feeling of self worth in them and give them the right attitudes to go out in to the world of work. They'll also have increased employability as a result of all this."*

However, the entrepreneur went on to highlight that students will need to have a skill level that is ready to engage in the mentoring process, and that a concern will be the need for too much guidance. This resounded with the interviewed student and UCL-CAA who believe that this type of internship would be appropriate at an MSc or PhD level. In this area the pilot nature of the project must be remembered, with an outcome being the ability to assess what stage of academic career would be appropriate.

The entrepreneurs that engage with the project will also acquire skills, particularly in the realm of 'people management' and encouraging personal development. This is particularly useful not only in the context of an internship, but also that of developing new employees. The skills required include active listening; understanding boundaries and confidentiality; action planning and goal setting; and identifying mentees' strengths, helping them to develop and use them in new contexts

As a result of the development of the key competences framework, HE staff will also gain skills in the management of internships which will be translated into a training package for future staff. Further to this, and most significantly, they will gain insight into what entrepreneurship and working life in the CC sector entails. This can then be utilised to renew the curriculum, further consolidating the skill of bringing 'real life' into the classroom. The framework has the objective of being "*easily translatable for other educational institutions to implement. Educationally this will lead to the embedding of positive attitudes and ideas that can spread throughout Europe in the CC sector amongst others.*" This contributes to the wider impacts of the project in the development of entrepreneurship, innovation and business growth within the CC sector throughout Europe.

## **10. Conclusions**

Two key elements of this case study is that the EDUCCKATE project is in its inaugural months and is drawing together the expertise of institutions across Europe to pilot a new way of conducting internships. What is striking about the partnership is their enthusiasm and seemingly very clear, shared objectives. Above all else, the academic and business partners alike state that their primary objective is to develop skills in the students that will increase their employability and benefit them throughout life. In speaking with the project team and a student that will complete an internship, it is clear that collaboration in the CC industry can be difficult, particularly with many people in the industry now working in a consultancy capacity. It is apparent that the key competence framework and mentored internships are providing answers to a need felt by all partners, so it is a driving force behind all activities.

Concerns have been expressed by all parties about how to give students an opportunity to experience entrepreneurial work, without encumbering the entrepreneurs who were most likely facing a difficult time following the recession. It is hoped that a well-developed mentoring framework will give entrepreneurs new skills and enhance their own personal development as a 'business owner.' These new skills

will enable entrepreneurs “to get the most out of staff and potential future employees.”

Monitoring of the internships will be extensive, with a strong focus on encouraging students and entrepreneurs to reflect on the large number of soft skills that they have developed. These skills can only be gained in a ‘real-life’ environment. However, there is concern that the students may not have the appropriate skills to enter into such an internship. In this area the pilot nature of the project was re-emphasised, with an outcome being the ability to assess and encourage the skill level that would be appropriate for engaging in this type of activity.

Whilst the objective of the project is to deliver innovative internships, innovation itself is not an objective for this cooperation. It may come as a result of collaboration between students and entrepreneurs in creating a business project as part of a paid internship, but is not something specifically outlined in project plans. Finally, concern for the future funding of this type of internship has been raised, and is a particularly topical agenda. The funding of internships is something that the project team will explore further during the course of the EDUCCKATE project, the Erasmus entrepreneur scheme has been identified as a potential source of funding.

## The Know-fact project case

D. Serpanos,

Dept. of ECE, University of Patras, Greece

### 1. Introduction to case

The KNOW-FACT project is a European-funded project that targets the development and exploitation of the Teaching Factory paradigm in manufacturing education. The goal of the project is to enable academic, research and industrial organizations to benefit, achieving industrial training and education for university students, while transferring research results and providing high-level training to industrial personnel.

The KNOW-FACT project emerged from collaboration of the partners through the MANUFUTURE technological platform, specifically in the Manufacturing Education workgroup. The partners of KNOW-FACT include European academic organizations, specifically the University of Patras (GR) (project leader), the Technical University of Darmstadt (DE), Politecnico di Milano (IT) and industry, specifically TECNALIA (SP), VOLVO (SE), FESTO (DE) and CASP (GR). As a result, KNOW-FACT constitutes a project in an important direction for European manufacturing and a good case study for the evaluation of the collaboration of academia and industry in Europe.

For the analysis of the case of KNOW-FACT, we contacted all partners of the project in order to conduct interviews. Despite our efforts for interviews and to collect filled questionnaires in the cases we were not able to conduct interviews, we received feedback from 3 partners only. Specifically, we conducted interviews with one member of TECNALIA, two members of the Technical University of Darmstadt and we received a questionnaire from the Project Leader. It should be noted, that the filled questionnaire of the Project Leader indicates that it is filled on behalf of the consortium. The records of the interviews and the filled questionnaire are not attached to this report, but they will be available for approximately a year at the files of the coordinator of this case analysis (Prof. D. Serpanos, University of Patras, Greece).

## **2. Reasons for the KNOW-FACT university-business cooperation**

Manufacturing is one of the fundamental activities for economic growth in the developed world, because of its products and its ability to generate jobs. Its importance has been identified and commonly accepted by European leaders who have set excellence in manufacturing as a strategic goal in the emerging unified Europe.

Considering that education is an important factor in achieving excellence in several activities and fields, it is clear that manufacturing education constitutes an important component of excellence in manufacturing. Industry has long identified the need for more educated people in manufacturing, while academia has identified its limitations in delivering effective and ready-to-produce graduates in the increasingly complex manufacturing sector; i.e., academia has identified the need for more practical experience of students in manufacturing. The Teaching Factory paradigm constitutes a promising education paradigm that has not been exploited up to date. KNOW-FACT targeted the elaboration and validation of this paradigm at a European level through a European partnership that would bring new people in the manufacturing process in order to provide new ideas, new solutions and a fresh approach. The assembled consortium implemented University-Business cooperation exploiting the Knowledge Alliance instrument.

The project was initiated by the Department of Mechanical Engineering and Aeronautics of the University of Patras, which coordinated the project. VOLVO and FESTO, as the industrial partners, were involved mainly in concept definition and the pilot cases, while the Universities (Politecnico di Milano and Technical University of Darmstadt) and TECNALIA (the research branch of the company) were involved in concept definition, content specification, development and delivery. CASP was involved mostly in the specification and layout of the infrastructure.

Importantly, through the life of the project the role of each partner was clarified, increased to more activities, especially in the pilot cases, as the project progressed and there were no significant changes in the role of the partners through the project.

## **3. Main objectives of the KNOW-FACT university-business cooperation**

The main objective of all the partners was to evaluate the Teaching Factory paradigm for effectiveness in their activities. For this purpose, each partner brought its expertise and knowledge to the development of the concept.

Industrial partners brought practices from their factories to the classroom, through interactive sessions and enabled student projects based on actual problems. Academic organizations brought new knowledge/results to industry through sessions. Interestingly, new, fresh solutions to real problems were developed through these case studies, indicating successful employment of the concept.

In addition to the above benefits identified by the partners, some of the partners (TU Darmstadt in this case) identified as an objective and a benefit at the end the broad European collaboration, which, for some partners, appears as a significant objective in their activities.

#### **4. Monitoring mechanisms and indicators used**

The success of the project depends on the successful management of the project itself and the evaluation of its results.

Based on the interviews and the short conversations with some of the partners who did not provide interviews or questionnaires, project management was successful and enabled the partners to participate to the best of their ability in the activities that were planned and executed.

In regard to the results of the project, the project consortium developed an evaluation and assessment methodology, mainly led by TECNALIA, which was used to evaluate the effectiveness of the project's results. The methodology included the use of questionnaires and a set of key indicators that enabled the evaluation of the effectiveness of the concept on all involved "clients", i.e. students and academic staff as well as engineers in industry.

According to the project leader, the measured attributes are:

1. Reaction: participants' personal reactions to the learning experience.
2. Infrastructure use: quality and effectiveness of the enabling technology, the IT tools and the manufacturing facilities
3. Learning: measurement knowledge increase
4. Behavior: the degree of adoption of the content in tackling new or old problems
5. Results: the effect of one's training on one's "environment"

#### **5. Main results from university business cooperation**

The main goal of the KNOW-FACT project has been the development and dissemination of the Teaching Factory paradigm in both academic and industrial sectors. The efforts of the project included:

1. Feasibility study for the implementation of the paradigm
2. Three (3) pilot cases for the validation of the concepts and technologies adopted
3. An Extended Partnership of academic and industrial organizations

Based on the project outputs and deliverables, the project provided benefits to both academia and industry.

Industrial partners benefited from (i) the provision of new ideas and solutions to existing problems (new people, new solutions), (ii) the interaction with competent

students of manufacturing who are interested in participation in real, practical environments, and (ii) the ability to offer training to their employees in an effective way, in their well understood environment on new ideas, concepts and procedures.

Academic partners benefited from (i) the new experience of realistic problems in an operational, practical environment, (ii) the ability to provide hands-on training to students on real problems, (ii) a path for technology transfer of research results to a practical environment.

The successful result of KNOW-FACT, in the view of some partners, indicate the effectiveness of the basic training concept and expect its adoption in other fields as well, such as medicine.

## **6. Effective outcomes of university-business co-operation**

The effective outcomes of the university-business cooperation in the KNOW-FACT case can be summarized as follows:

1. Closer collaboration in training with benefits for students (exposure to real environments and problems), researchers (better understanding of the restrictions of practical problems) and industrial members (training in modern technologies and processes)
2. Preparation of students for faster integration in the manufacturing sector
3. Attraction of students to manufacturing

The involvement of students in the training sessions and the case studies with real problems of industry, in one case, at least, led to innovative solutions that can be adopted in practice and were achieved by students.

Importantly, one important outcome for some academic partners is the exploitation and promotion of their research and laboratory training infrastructure for training in the industrial sector.

## **7. What existing measures and approaches are used to assess outcomes and impact of university-business cooperation?**

KNOW-FACT did not use any specific methodologies to measure the outcome and impact as University-Business cooperation. Their work and evaluation focused on the effectiveness of the approach developed using the Teaching Factory paradigm. However, the consortium plans future collaboration through activities such as funding proposals for European projects, indicating that all partners consider the KNOW-FACT collaboration promising in several directions.

Importantly, some partners, e.g. TECNALIA, are exploring the possibility of exploiting the results and the concepts of the KNOW-FACT project in other directions, such as

the improvement of manufacturing processes at a local level (Basque country area) due to the priorities their local government has.

## **8. What is the impact of university-business cooperation in terms of skills development?**

The Teaching Factory paradigm enables the direct interaction and collaboration of academic members (students and researchers) with industrial members. The students are exposed to real problems of manufacturing and to the process of solving them under real life conditions, i.e. with specific deadlines and with measured practical results. As the Project coordinator identifies, the two-way knowledge network helped students also develop their presentation, communication and teamwork skills. Researchers also benefit from the above, because they are exposed to all significant parameters of a manufacturing problem in a real environment, developing skills that can enable them to produce more useful results for industry. Industrial members also get exposed to new results that apply to their work activities and benefit them.

## **9. Additional aspects**

### **What is the impact of university-business cooperation on the modernization of the universities involved**

According to the Modernization Agenda for Universities (Commission Communication 2006), there are nine (9) goals that need to be achieved overall. Among these goals, KNOW-FACT has contributed towards four (4) of them. Specifically, the contributions are in the following directions:

- Break down of the barriers around universities in Europe
- Provision of the right mix of skills and competencies for the labor market
- Reduction of the funding gap and making funding work more effectively in Education and Research
- Activation of Knowledge through interaction with society

Although there is no apparent continuation of training activities that originate from KNOW-FACT, the partners plan to exploit their results through future projects. The success of these efforts and the potential future training activities may lead to contribution to to additional directions:

- Provision of incentives for structured partnerships with the business community
- Making the European Higher Education Area and the European Research Area more visible and attractive in the world

### **To what extent does innovation make university business cooperation necessary**

Innovation is a significant factor in KNOW-FACT in two directions, both of which have been necessary for the consortium formation and the successful execution of the project. The first direction is innovation in training and education. The Teaching



Factory paradigm enables University students and researchers as well as industrial employees to improve their knowledge and transfer ideas in both directions (academia and industry). The second direction is the transfer of innovative results from academic (University and research) environments to industry, enabling more efficient and more effective improvement of processes in the field.

### **To what extent can innovation be said to be the objective of university-business cooperation**

Innovation is a sufficient requirement for industry, especially manufacturing, to engage in activities with universities. As the KNOW-FACT project has had significant training and education activities, it mainly addresses a major weakness in manufacturing education, specifically the preparation of graduates that are familiar with real manufacturing environments and processes and thus, ready for employment in advanced manufacturing. The provision of highly skilled personnel is a major issue in the manufacturing sector today.

## **10. Conclusions**

The KNOW-FACT project is an interesting example of university-industry collaboration. It pursued the exploitation of an education/training paradigm, the Teaching Factory paradigm, addressing the needs of a high-priority sector, specifically manufacturing.

The project was motivated by the interest of both academic and industrial organizations. Academic institutions were motivated to provide applied and hands-on experience to students as well as a venue for transfer of innovative research results to industry. Industrial organizations were mainly motivated by their interest to attract students and prepare future employees, while providing training to current employees and exposure to new research and innovative results of academia.

The project was executed with a clear direction and with clear roles for all participants, who pursued their main interests and, thus, worked well towards the common goals in a successfully collaborative environment.

The project delivered the promised results successfully. Project partners are pursuing exploitation of the results in their areas of interest through local actions, wherever these exist or are in development as in the case of TECNALIA, who are pursuing exploitation of the results in emerging activities of the Basque Country. Furthermore, the project partners are working on a follow-on activity to be submitted for funding. However, there is no information about continuation of the training/education activities of the partners, which were considered successful and effective in the course of the project.

Partners feel that they should pursue the concept of Teaching Factory further, considering that they achieved the best results possible in the time frame of the project and with the available resources.

The achieved university-industry collaboration has contributed strongly to University modernization, in the direction of the related European strategy, and has provided innovative results in the area of education and training. The follow-up activities of the partners as well as the wider adoption of the concept in the educational programs of the Universities and/or the training programs of industrial organizations will enable the evaluation of the impact of the project's innovative results in both directions (academia and industry).

---

## Commercial communications, University of Economics, Prague

Milan Damborsky, Tatana Hornychova, Jana Kourilova

Centre for Regional and Administrative Sciences, University of Economics, Prague.

### 1. Introduction to case

This case study presents an example of cooperation between a university and business in the Czech Republic. University of economics in Prague cooperates with Association of communication agencies (ACA). "The ACA is the trade body for leading agencies in the Czech advertising, media and marketing communications industry accounting for 85% of the 20 billion CZK media market and similar amount in marketing services. 78 member agencies cover the Creative, Media, Sales Promotion Direct Marketing and Digital sectors. AKA membership is organized into 5 councils: Full service, Media, iBTL, CRM/DM and Digital. The principal mission is to promote effective advertising, high professional standards and awareness of the contribution of the commercial communications in a free market economy. AKA was one of the founders of the Advertising Council (Standard Authority) and initiated the adoption of the Ethical Codex, respect for which from all member agencies is the basis for self-regulation of commercial communications in the Czech Republic." (AKA, 2013)

„The University of Economics, Prague (VŠE) is the biggest public economics university in the Czech Republic. The university celebrates its 60<sup>th</sup> anniversary in 2013. VŠE has six faculties offering to applicants a broad spectrum of study fields and branches in bachelor's, master's and doctoral degree study programs. Five faculties are located in the center of Prague – the Faculty of Finance and Accounting, the Faculty of International Relations, the Faculty of Business Administration, the Faculty of Informatics and Statistics and the Faculty of Economics. The Faculty of Management is located in the town of Jindřichův Hradec. Studies at VŠE meet the requirements of the European Credit Transfer and Accumulation System (ECTS).“ (VSE, 2013a)

The University of Economics in Prague, similarly to other universities in the Czech Republic supports collaboration with private and public sector as well. The main reasons include interconnection of education and practice in order to fulfill the requirements of labor market. That way students are ready for the real conditions of labor market and their future career. The university is member of international organizations, which promote interconnection of education and practice (CEMS, PIM).

It is important to say that thanks to the way how competencies are set, the different faculties themselves are responsible for the cooperation with business in the Czech Republic. Faculties are independent when creating study programs and therefore it

depends on the initiative of faculty members if and to what extent they develop and promote a collaboration with professionals from business (for example creation of the whole study programs, teaching in courses, preparation of textbooks or handouts, excursions and internships in companies etc.).

ACA participates in carrying out a whole minor field of study or minor specialization called Commercial Communications (CC) in the Department of Retailing and Commercial Communications.

CC is designated to students who want to obtain information on how to communicate with consumers in the world mass media and new information technologies. All the courses within CC (5 altogether) are taught by experts in their fields and come from international communication agencies, research organizations, industrial and trade companies, media and the departments of Retailing and Commercial Communications and Law. The minor specialization is formed in accordance with instructions from Edcom (European foundation for teaching commercial communications), that is part of European Association of Communication Agencies located in Brussels. CC is organized with close cooperation with Association of communication agencies CZ and Association of Public Relations agencies CZ.

Students obtain advanced knowledge of modern commercial communications, which facilitates fast and easy engagement in practice. The best graduates receive prestigious certificate Edcom signed by members of Faculty of International Relations and ACA. This means, the students, who have received A in the final exam and A for their diploma thesis in the field of commercial communications, are awarded with the certificate. As some of the courses are held in English (taught by foreign representatives from e.g. McCann-Erickson, OMD, Johnson & Johnson, TESCO), students are required to have a very good level of this foreign language. 27 students are admitted each term (semester). (VSE, 2013b)

## **2. Reasons for this university-business cooperation**

This part is dedicated to reasons of university-business cooperation and the beginning of the whole project. It also includes several facts about the people participating and their activities, roles and budget.

Basically, the reasons were the necessity and lack of properly educated and skilled employees in the field of CC, PR and marketing. These reasons reflect objectives of both parties and are described further on. Some information on this topic can be also gathered from the history of this cooperation.

## **3. History of the cooperation**

The cooperation began in 1994. When Association of advertising agencies (AAA), now ACA, participated in teaching the optional course *Advertisement* that was held at the university. The whole course was provided by Jiri Mikes, the director of AAA at that time. The cooperation grew stronger since 1999 and it was being carried out on regular basis; however there was no real concept set. This situation led to

disagreements and business representatives were complaining about it. Turning point was 2001 conference in Spain Navarro, where a concept *how to harmonize content and teaching of CC with international standards* was created. The department of Retailing and Commercial Communications begins to cooperate with Association of Public Relations Agencies later in 2001. They organized a five-week course called PR Academy which involves one week of theoretical preparation and then four weeks of internship in one of the PR agencies. The dept. then created whole minor specialization program Commercial Communications in 2002. The courses are untypical as they come in a specific order and are all taught in an intensive way just in one semester.

### **Activities, roles and budget of participants.**

Activities that are included in the cooperation are following. University staff basically serves as providers of this program to students. They are sponsors (guarantors) and set the general framework for the studies. Administrative tasks are also carried out by the university staff. These include the usual: Selecting students to the program, arranging premises, testing, consultation and other necessary administrative tasks. The department has one secretary, but other staff is involved such as IT technicians, students' supervisors and so on, nevertheless these people cooperate with all departments. More than 60 teachers from business create syllabus and most importantly handouts and other materials for their students. They also provide/buy textbooks from abroad. They teach, share their experience and bring case study problems from their companies for students to work on. Students have the possibility to meet their potential future employers and companies have the possibility to choose and get to know their future employees. We could describe this program as prolonged assessment center. As this cooperation is prestigious for both sides, business people are motivated to take part. The motivation factor surely is not finance, as the budget covers only standard cost for university education in the Czech Republic. At the university, teachers from business earn about 1/6 of the salary they would normally get in the private sector. On the contrary, companies grant university, once in a while, some gifts such as overhead projector. They also organize and pay for excursions. The roles of each party are more or less invariable, however a few business representatives accepted full-time job at the university.

Number of people involved: 27 students each semester, 62 people from business, 3 sponsors (guarantors) of CC and several administrative staff.

## **4. Main objectives of this university-business cooperation**

In this part, main objectives of university-business cooperation are identified and described. These objectives can be divided into three areas according to the three groups of participants.

Firstly, several objectives of the university were detected. They are: to improve students' skills in the field of commercial communications, to increase the attraction of students for future employers and to develop their entrepreneurial skills, to improve the employability of graduates and to widen the offer of courses. University

representatives were and are aware of the fact that if they want to offer good quality and up-to-date study material and teachers, they need to persuade top professionals and experts directly from business to take part in the education. The process of finding these teachers includes two different approaches. University staff either contacts somebody who they find suitable or since this program has gained a lot of prestige, the business people contact CC themselves. However they are not accepted straight away, they go through a selection process, which includes presentation of what they would like to cover in their lessons. As the content is accepted and the teachers are granted a course, they are carefully assessed and monitored, whether they really meet the university expectations. Main objective was and is to improve the students' skills and knowledge. This program began shortly after the revolution when communism fell. At that time the Czech Republic did not have anybody properly educated in this field, nor did good schools exist. People from business felt and suffered from this lack of skilled employees and started the initiative with one optional course, which later developed into the whole minor specialization. This explains why the business representatives were so eager to participate in the cooperation.

Business representatives claimed that most importantly the objectives are well-educated graduates, who would be able to work fully right away (who would not need any major further training). As mentioned before, our national labor market lacked employees with these skills profoundly. Later on an objective of improving company image through prestigious activity was added. Briefly, companies save considerable amount of money by employing highly skilled graduates and in many cases they also save money on recruitment as they get to know and pre-select candidates during the courses at the university.

Students prefer this minor specialization over others because they feel they receive good quality education where they will be able to develop their skills in the commercial communications area and their entrepreneurial skills as well. The graduates are more attractive to future employer therefore it will facilitate finding a job.

Both parties have never had any disagreements concerning objectives, however several disagreements about the concept and organization of courses appeared. They were resolved and lead to greater improvements in the whole minor specialization program and to the form as it is in today.

## **5. Monitoring mechanisms and indicators used**

There are several ways how the satisfaction with the minor study Commercial Communications is monitored.

Teachers in the minor study CC can have their courses evaluated using integrated study information system of the University of Economics. There students anonymously evaluate the quality of teaching by means of survey questions related to teachers' professional skills and helpfulness to students. Another set of questions focuses on the overall quality of the course (of interest to students, the difficulty of the course, the

overall workload for the successful completion of the course). Students have five possible answers – they can agree without hesitation, they agree, they agree with some reservations, they do not agree and they totally disagree. In addition, students can complete their evaluation with some detail on what they liked and disliked about the course and also give recommendations on possible changes. The system automatically evaluates the answers.

The results of this evaluation may not always match reality, as the poll on the web is anonymous and is not mandatory, it does not usually have answers from all the students.

For these reasons, the Department of Retailing and Commercial Communication carries out its own assessment concerning the minor CC as a whole. All graduates are given the following questionnaire, of which we could analyze several samples.

#### *Questionnaire - evaluation*

1) *Where did you find out about a minor study Commercial Communication (CC)?*

*Students from our survey answered that they got the information from overview of minor studies offered at university. (This overview is accessible on the university website and it is sorted by faculties.) Other students got the information from graduates from this minor and also from Students' papers (monthly newspaper of the university students, which has printed and on-line version).*

2) *Based on what did you choose the minor CC?*

*Students had a selection of reasons for the choice of CC and the answers were most often connected to the fact that they want to work in the field of CC in the future, also the fact that the whole study is done in one semester, the courses have highly interesting content that is closely connected to practice.*

3) *To what extend minor study CC fulfilled your expectations?*

*Respondents agreed that the minor study of CC not only fulfilled their expectations but in some cases even exceeded them.*

4) *How would you assess the difficulty of this minor study?*

*Respondents assessed this minor study as demanding from the point of view of requirements to complete CC successfully.*

5) *How would you evaluate the content of the minor study CC?*

*Students describe the content of CC either as excellent or very good.*

6) *Do you feel you have learnt anything new in this minor study CC?*

*Respondents all agree that the minor study CC was beneficial and that students gained huge amount of knowledge in this field that will be useful not only for following studies but also for future employment.*

*7) To what extent did the minor study CC made you ready for your future career?*

*Respondents believed that the minor study CC made them ready for their future career nevertheless admitted the fact that they are not able to fully judge this at the moment.*

*8) Would you recommend the minor study CC to your friends and other students?*

*All respondents agreed that they would not hesitate to recommend this minor study to their friends or anybody else.*

*9) How would you rate different courses of minor study CC?*

*To answer this question, student were given scale from 1 to 4 (1 – excellent, 2 – very good, 3 – good, 4 dissatisfying). Best rated were the courses "Commercial Communication and its effectiveness" and „Branding and Account Management", which were rated by all students to be excellent. The course "Media a media strategy" then followed with its rating excellent – very good. Lower rating was given to the course "Consumer behavior and market psychology" – final rating was very good. Last place in the total evaluation was given to the course "Law and Ethics in Commercial Communication and PR". Students rated this course with very good and good.*

*10) Name three teachers who you consider the best in the minor study CC?*

*The fact is that altogether 62 teachers including 2 guest teachers from the USA and the UK teach in the different courses of CC. This is extremely high number and makes it really difficult to choose just the three. The students we interviewed could not agree on just three of them. We have experienced similar problem with the following question too. 11) Who do you consider to be the best of all teachers in CC? Students were either unable to choose just one teacher or there was no match. This question is of course very general and some students were choosing according to professional knowledge and skills others according to whether they found the teacher charismatic and nice.*

*12) How would you evaluate the organizational arrangements of the minor study CC?*

*All respondents agreed that organizational arrangements of CC were perfect.*

*13) What sort of register process would you recommend in order to get into the minor study CC?*

*This question was included due to a huge interest in the minor study. It will be probably necessary to change and regulate the criteria of acceptance to the minor*



*study CC in the future. Students proposed for example interview with a professional from CC business or interview with a board composed of representatives of CC business and the university. Other proposals included school results criterion (average results from bachelor studies) or motivation letter written by applicants.*

This survey, in contrast to the above described assessment (using an integrated study information system), focuses on the overall concept of the minor, and not on the evaluation of individual courses. If the students answer all the questions, this survey can be a valuable source of information and suggestions for improvement and further development of the minor study.

Students evaluate the benefits both in terms of developing their expertise and applicability of the acquired knowledge and skills in practice. Out of about 60 teachers from practice involved in this minor, students choose those whose teaching was most beneficial for them. Evaluation of teachers from business has a particular importance because it may occur that an excellent expert in his or her field is unable to pass his or her experience to students in an appropriate form. Then the involvement of this expert in teaching should be reconsidered.

In terms of basic idea of the overall evaluation of the minor Commercial Communications, the questionnaire can be considered as a good tool, but in terms of evaluation of individual courses, the aggregate evaluation is somewhat simplistic. When the students are not satisfied with the course, the reasons are not clear. The problem might be in the content or scope of the curriculum or in the personality of the teacher who fails to present students interesting findings in a suitable way. Nevertheless evaluation from the integrated study information system can be used to some extent.

Students in the minor specialization Commercial Communications have the opportunity to get a prestigious certificate Edcom. However it is not possible to find out from the questionnaire whether this possibility somehow affects students in the selection of this minor, nor their opinion on the conditions for obtaining this certificate. Therefore, it would be appropriate to extend the questionnaire in order to determine what motivational role this certificate plays in the students' decision making process.

## **6. Main results achieved**

Unlike the businesses, the university offers better data concerning results achieved so far. We were able to get statistics for the period from 2002 to 2013, which is altogether 11 years and 21 semesters. During this period 566 students graduated from Commercial Communications minor study in total. Out of those 566 students, 306 wrote successfully diploma theses on CC topic. Diploma thesis is an obligatory component of the university studies in order to receive a master's degree. Students can choose a topic of their diploma thesis relatively freely, as long as it is somehow connected to either their major or minor studies. Out of the 306 students who chose the CC topic, 265 students received an Association of communication agencies (ACA)

certificate. Students are awarded this certificate under certain conditions. They have diploma thesis on a CC topic and high scores in tests and exams (all As).

Students are also encouraged to take part in supplemental courses and competitions. Throughout this period 7 students graduated at Roger Harchuel Lions Academy in Cannes. The Roger Hatchuel Academy is a high profile one week course held during the Cannes Lions International Festival of Creativity. It is attended by international students studying advertising, marketing or related fields. The program is made up of seminars, screenings and workshops. It is anchored by some of the leading lights in international advertising. Participants are able to network with their peers from other countries. At the end of the program, they receive a certificate during a graduation ceremony that is of international value. Five times in a row (2008-2012) student's team (winner of the national round) has been winning the world finale of L'Oreal competition in Paris. L'Oreal Brandstorm is an international game organized by L'Oreal SA. The aim of the Game is to offer the students a pedagogical and professional experience and the opportunity to take the role of an International Marketing Hub Director within the beauty products industry. This project is a part of the L'Oreal International Human Resources Communication strategy and aims to enhance students' creativity and perception of the L'Oreal business. Finally 15 student's teams took part in international competition AD VENTURE (EDCOM as part of EACA). AD VENTURE proclaims that is the first pan-European competition which gives participants the chance to experience what it is like to work in an advertising agency. This international competition is open to students from the edcom academic members' establishments and from other establishments that teach commercial communications.

Businesses seem to be more reluctant to collect quantitative data, for example about the number of new employees that graduated from CC or whether and how much have skills of their new employees/CC graduates improved over the time. Even though business representatives all assure us that they prefer to employ CC graduates because they do not need any supplemental training, we feel that collecting more precise data would be of a great use.

Nor the university has any specific data concerning the number of graduates who were offered a job in the companies cooperating in the CC minor study. Nevertheless this is not such a big issue since the students can be offered a job in any company and university representatives are in touch with their graduates and would be aware of any difficulties in this area. In addition, the university itself issues regular questionnaires to their graduates to find out about how successful its students are in general and what is the overall rate of unemployed graduates. This concerns all the graduates, not only CC students.

## **7. Outcomes achieved**

Outcomes that were achieved can be divided into several areas. They are: outcomes or benefits for the university, business, students and the society. In this part the detected outcomes are described.

First area is the area of outcomes for the university. The university representatives confirmed the existence of outcomes that we anticipated and they include better image of the university, gaining prestige, improvements of the quality of the study program, suitably educated graduates, better equipment, wider choice of courses, ambitious and self-confident students. First two components mentioned (image and prestige) are very difficult to measure and are not measured for CC minor study. Nevertheless, there are two elements that prove them. First of all, the number of students applying each semester for this study program is gradually increasing and is now three times higher than the capacity. In addition, we did a quick survey and similar one is done by the CC representatives on regular basis, which proves the fact that this minor study is highly valued and considered as prestigious among students. Both of these aspects are interconnected and support each other. The study program has undergone several changes and improvements (see History of the cooperation). As the program developed, the university could offer wider choice of courses. Thanks to this high profile study, the graduates are suitably educated and, what is equally important in our conditions, they are ambitious and self-confident. Not only students learn directly from people who are professionals in the area, they improve their skills working on real business projects, they present their ideas to the higher management of the respective companies but they also take part in international contests, where there is really tough competition. All this combined gives students the self-confidence they need to succeed in their future career. Last but not least is better equipment. Representatives offer some presents once in a while in form of books or for example overhead projectors.

Second area where outcomes can be identified is the business. Representatives of different companies (namely McCann-Erickson, Factum Invenio, CMS Czech Marketing Society) mentioned following outcomes: prestigious activity, well prepared job candidates/future employees, well-structured and adapted pre-selection process, no further training for newcomers needed. Business representatives who take part in teaching in the CC minor study expressed the feeling of being honored to be able to pass their knowledge and experience to the younger generation. Teaching gives them sense of satisfaction and they do it not because of the money (as it was mentioned before the salary for teaching is very low, it is only a small fraction of what they would get in their respective companies), but because they consider it a prestigious activity. Another aspect is the fact that by teaching at university, they are able, to a certain extent, to provide training to their future employees according to their company needs. They have the chance to meet and to get to know their future job candidates, thus saving a lot of money on the selection process and further training.

Another area are outcomes concerning students, who feel they have improved their skills and knowledge, met the representatives of different companies, got to know the corporate culture of these companies, practiced presenting in real life conditions (in front of higher management) and had a possibility to be offer a job in the future. Students do not just earn their degree and receive good quality education; they also have the opportunity to get to know different companies, so they can choose their future employer more easily (or they are offered a job straight away). They are provided with the contact to the representatives of different companies and to their

possible future colleagues or even competitors. Last but not least, students gain work experience through presenting their work on real life topics to a board of managers (more about this in the following chapter).

Final area includes outcomes for the society. The fact that PR and marketing was basically non-existing when the program started was already mentioned. After the revolution in 1989 the country went through a phase called transformation, when our national economy shifted from centrally planned to market economy in the 90s. At that time we had hardly anybody educated in the commercial communication techniques despite being integral part of successful and profitable companies' strategy. Bearing this in mind, minor study CC was highly beneficial to the society.

## **8. Impact in terms of skills development**

The CC minor study has an immense impact on students in terms of skills development, thanks to the more effective method of teaching compared to prevalent method. Typically the teaching at Czech universities is based on memorizing facts and theories from textbooks. Teamwork projects and essays are more or less scarce or rather for appearance's sake. The CC on the other hand introduces modern approach, where students are forced to think, be creative and come up with their own ideas - aspects that are crucial in their field. They are given real time problems that emerge from real companies and then they are guided to find creative and viable solution. This way students learn a lot more, develop their abilities in the CC, their knowledge and skills are more durable and their position on the labor market is stronger.

Feedback is also considered as inseparable part of successful learning and development. Final exam is held by a board of representatives from the university and business. As mentioned before it is in form of a case study – real time challenge brought directly from the companies participating in the CC. (These companies have a chance to have students to find solution to their problems.) Students present their ideas and solutions to the board as they would to a company management (if they were employed) and afterwards business representatives provide students with a complete feedback. They basically assess the students from different aspects – quality and viability of their ideas and solutions and level of their presentation skills and persuasiveness.

### **Prestigious pins**

The CC representatives believe that in order for something to be successful and valued, it needs to be prestigious as well. Not only is the study program well prepared, but students who want to study CC go through selection procedure, which ensures that only highly motivated and good students will be accepted. The final exams are not easy, but if students succeed, they are issued a prestigious pin with CC acronym, which they wear proudly. These pins are also proudly worn by the university and business representatives. We were told that CC has already gained so much prestige, that if you come to a company (doing business in the area of CC) and you are wearing the pin, they instantly recognize that you have undergone highly respected CC training.

---

## 9. Measures and approaches used to assess outcomes and impact of university-business cooperation in this case

Two approaches can be identified to assess the outcomes of university-business cooperation. Rather quantitative approach is represented by the statistics that are available from the university information system. It provides data concerning number of students who applied to the CC minor study, the number of students who were accepted, their grades, absences and so on. Winning international commercial communications contests can be also included, because it offers objective information about whether the study program is successful in the environment of harsh international competition. Second approach is rather qualitative and includes questionnaires and discussion with students. Questionnaires are formal part of the study program and provide both partners with general information about students' satisfaction. Discussion with students is a very similar tool, that is more informal and therefore students are likely to express their ideas and concerns more freely.

### Best teacher contest

This contest is another supplemental approach to measure students' satisfaction and, at least symbolically, award hard-working teachers as well. Each year students vote to choose the best teacher. This teacher is then awarded with a tie or a scarf (if it is a woman) in CC colors.

We think that all these tools are very useful to get confirmation of well-prepared and organized study program. It may also identify possible minor defects such as unsuitable new teacher. All this works out because the program is already good quality, which was achieved by huge experience and hard work of the key people in this cooperation. These tools are suitable for maintenance and small improvements in the students' satisfaction but would not be sufficient in case of newly created or severely malfunctioning cooperation that would need a great deal of conceptual and organizational changes. More sophisticated tools would be needed to be put in practice.

Both the university and the business representatives named several factors of successful cooperation. They are: good quality concept, regular progressive improvements, communication with the other party and prestige.

## 10. Additional aspects

University members also expressed some concerns and regrets about strict educational environment in the Czech Republic. The main obstacle is the rigid form of organization of academic year and courses. Both parties feel that students' internship in companies could be the next step in the line of improvements. It would definitely help the students significantly to fully grasp what it means to work in the field of commercial communications. Internships would be possible and definitely beneficial. However, university requires them to be accessible to all students and to be regular, ideally one hour and a half per week during the whole semester, but companies cannot guarantee these conditions; they are able to offer internships only

intermittently. Nevertheless, the concept of this program is flexible to a certain extent. It is carried out in form of blocks of lessons. But still semester periods need to be kept. Another inconvenience are mothers of young children, they would be great teachers but cannot teach whole day (whole block of lessons). Despite the fact that greater improvements would demand more flexibility, key people are skillfully able to find suitable compromises.

We do not see any significant impact of university-business cooperation on the modernization of the university involved. However, innovation in the field of commercial communications makes university business cooperation necessary. The university needs to be in close touch with businesses in order to be able to continue to provide useful and up-to-date material to the students. However, students are not considered as primary source of innovation in this case study of university-business cooperation.

## **11. Conclusions**

This case study describes an example of cooperation between a university and business in the Czech Republic. University of economics in Prague cooperates with Association of communication agencies (ACA). ACA participates in the organization and realization of a minor specialization called Commercial Communications in the Department of Retailing and Commercial Communications. Main focus is on how to communicate with consumers in the world mass media and new information technologies. All the courses are taught by experts in their fields that come from international communication agencies, research organizations, industrial and trade companies, media and the departments of Retailing and Commercial Communications and Law.

Main objective was and is to improve the students' skills and knowledge. When this program started, people from business felt a great need of skilled employees, due to the preceding Communist era. Other objectives include increasing the attraction of students, improving the employability of graduates, widening the offer of courses and developing entrepreneurial skills.

From 2002 to 2013, 566 students graduated in total. 306 completed successfully diploma theses on a CC topic and 265 students received an ACA certificate. Throughout this period 7 students graduated at Roger Harchuel Lions Academy in Cannes. Five times in a row (2008-2012) student's team won the world finale of L'Oreal competition in Paris. 15 students' teams took part in international competition AD VENTURE. The university representatives name following outcomes: better image of the university, gaining prestige, improvements of the quality of the study program, suitably educated graduates, better equipment, wider choice of courses, ambitious and self-confident students. Representatives from business mentioned following outcomes: prestigious activity, well prepared job candidates/future employees, well-structured and adapted pre-selection process, no further training for newcomers needed. Finally students had the chance to improve their skills and knowledge, meet the

representatives of different companies, get to know the corporate culture of these companies, practice presenting in real life conditions (in front of higher management) and to be offered a job in the future.

Outcomes mentioned above are monitored and assessed using several techniques. They are statistics, winning a contest, questionnaire and discussions with students. These tools are suitable for inquiring about students' overall satisfaction but were found to be insufficient to identify greater problems or possible directions for changing the whole concept. Both the university and the business representatives named several factors of successful cooperation. They are: good quality concept, regular progressive improvements, communication with the other party and prestige.

Despite the immense success of the minor specialization CC, we were able to detect obstacles that prevent the program from further development. The CC would be able to improve and develop even more if it was granted more flexibility. The main obstacle is the strict form of organization of academic year and courses in the Czech Republic, which does not allow internships in companies due to their intermittent nature. As this barrier is too complex to be overcome in short run, both parties could focus on other issues such as better selection procedure to be admitted to the CC or a financial support program for the students to be able to take part in complementary courses or training (for example Edcom - [www.eacaeducation.eu/](http://www.eacaeducation.eu/)).

## References

AKA (2013): <http://www.aka.cz/home.php> [cit.09.06.13]

VSE (2013a): <http://www.vse.cz/english/introduction.php> [cit.09.06.13]

VSE (2013b): <http://kopkk.vse.cz/komercni-komunikace/profil/> [cit.09.06.13]

---

## **Qatar Carbonates and Carbon Storage Research Centre at Imperial College London**

Elisa Villani, Markus Perkmann

Imperial College London

### **1. Introduction to case**

“To build an effective, long-term university-industry collaboration (...), you put on the table three challenges: education, science and technology development”  
(G. Maitland, QCCSRC Director)

The Qatar Carbonates and Carbon Storage Centre (QCCSRC) was established to investigate key challenges in gas and oil production in Qatar and build local capacity in this area of expertise. The Centre operates at Imperial College London, and is funded by Qatar Petroleum, Royal Dutch Shell plc, and the Qatar Science and Technology Park (QSTP).

Imperial College London is a research-based university specializing in natural sciences, engineering, medicine and business. Founded in 1907, Imperial has about 14,000 full-time students and 3000 academic staff of which 1000 are permanent faculty who teach 242 courses. The College has a turnover of approx. £800, and was ranked 8<sup>th</sup> in the Times Higher Education World University Rankings 2013.

Qatar Petroleum was created in 1974 with the overall objective to maximize the national wealth of the State of Qatar through the exploitation of Qatar's hydrocarbon reserves. Specifically, Qatar Petroleum seeks to provide the nation with a reliable cash flow of maximum value from diversified business interests connected to hydrocarbons; to build an organization with internationally competitive business and technical expertise; to maximize the employment of capable Qatari nationals, and develop their skills to a level comparable to the leading international oil companies; and to meet national oil and gas demand in a cost-effective way.

Royal Dutch Shell is a major international energy corporation. Having invested over \$20 billion in Qatar since 2005, it is the country's largest foreign investor, and works closely with Qatar Petroleum in extracting Qatar's hydrocarbon reserves. Shell has sought to strengthen its commitment to this location by promoting employment for Qatari nationals and engaging with local universities.

Qatar Science & Technology Park (QSTP) is Qatar's national agency charged with executing applied research and delivering commercialized technologies in four areas:



energy, environment, health sciences, and information and communication technologies, and has a remit to promote economic and human capital development in Qatar. Royal Dutch Shell is an anchor tenant in the Park. QSTP comprises 45,000 square meters of multi-user buildings, fitted with offices, laboratories and business facilities, on 120 hectares of designated land.

The 10-year QCCSRC research centre was established in 2008. The QCCSRC's major objectives are to conduct novel geoscience applied to Qatar's geological specificities, to support new methods of carbon capture, and develop local talent in Qatar in the wider field of geosciences and engineering. The centre involves over 40 academic staff, postdoctoral researchers and PhD students, drawn mostly from two Imperial departments, the department of Earth Science and Engineering, and the department of Chemical Engineering. Its work programme is structured into five streams. The first stream addresses fundamental research into the geology of oil reservoirs, while the second stream focuses more on the chemistry and physics of the interaction between the rock reservoirs and the fluids they contained. The third stream seeks to integrate the preceding two streams into a mathematical simulation of the behaviour of fluids in various reservoir conditions. The fourth stream takes the data from the simulator and validates it in field experiments, leading to the fifth and final work stream, which involves the creation of a demonstration project in an oil field incorporating the findings from the previous streams of work.

The centre is led by a Director and overseen by a Management Committee which is chaired by a QP representative and including representatives from Imperial and Shell. The Management Committee is responsible for the overall governance of the centre including finance and budgetary approval, as well as the approval of outline work plans. In addition, the centre has a Technical Committee, which is again chaired by a QP representative, with other members drawn from the university and Shell. The technical committee is charged with the creation of the work plans, the definition of project plans and staffing, and with the technical oversight of on-going research. Alongside the director, a programme manager is employed to co-ordinate activities including the compilation of a quarterly management report detailing the work of the Centre, progress against targets and detailed financial metrics.

We conducted seven interviews with key informants involved in the QCCSRC, representing both the industrial and academic context, and including PhD students. Each interview lasted between 20 to 60 minutes. Along with face-to-face interviews we analyzed a series of secondary materials (such as web sites) with the aim to triangulate different sources of data. We also used a body of transcripts of 20 interviews that one of the case study authors had conducted in 2011 with the objective to learn about the nature of the collaboration, its success factors and outcomes, and the benefits and challenges experienced by the various stakeholders.

## **2. Reasons for this university-business cooperation**

The centre emerged within the context of a previous collaboration between Imperial and Shell, the "Shell Imperial Grand Challenge in Clean Fossil Fuels". The Programme

ran for five years, and was funded by Shell. The Grand Challenge's purpose was to explore novel technologies for reducing the carbon impact of fossil fuel production. In the course of this collaboration, it emerged that Qatar Petroleum was interested in carrying out a similar research programme but applied to Qatar's specific geological conditions (reservoirs in carbonate rock formations).

### **Industrial partners' reasons**

The most important driver for this collaboration was Shell's close relationship with Qatar Petroleum in Qatar, where Shell was contracted to construct and operate large scale gas-to-liquid facilities. For Shell and Qatar Petroleum, the engagement with Imperial was driven by the intention to access current scientific expertise in order to support their ongoing R&D activities. The topic of carbon capture is relatively novel, and hence represented an emerging area of activity for Shell and QP. Accessing university expertise was seen as an effective way of building critical R&D mass in this area of expertise.

For QP specifically, company-specific and national capacity building was a further crucial reason for seeking collaboration with Imperial. The intention was to deploy the centre as a training ground for highly qualified Qatari personnel who would work in the country's oil and gas sector, and thereby contribute to developing its indigenous skill base.

### **Imperial College's reasons**

For Imperial College London, the Qatar centre represents a significant investment from industry. In the view of the academic participants, funding from industry is attractive because it offers the opportunity to conduct application-driven research that complements that more basic publicly funded research portfolio, and hence allows university investigators to enhance the breadth and impact of their research agendas.

The centre also offers benefits in the educational realm by exposing PhD students and postdoctoral research to 'real world' R&D activities in world-class corporations. Hence participation in the Qatar centre enables Imperial to attract PhD candidates and early career researchers with a specific interest in industry-relevant research, thereby broadening the spectrum of candidates for these junior positions. It also allows the university to build collaborative, interactive doctoral programmes in collaboration with the partner firms. The centre hence seeks to synergetically combine R&D-related and educational benefits from university-industry collaboration. See table 2 for a summary of the reasons for participation by type of stakeholder.

- Table 2.** Reasons for participation in QCCSRC, by type of stakeholder

Imperial College	Shell and Qatar Petroleum
Reasons	
Producing high-quality publications via access to industry-relevant problems and data	Building local (Qatari) capacity and training local students
Attracting funds for research, offering complementarity to public funds	Developing education policies and institutions in Qatar for country development and welfare
Attracting industry-interested doctoral candidates, and improving the quality of doctoral education	Access to highly qualified working force
Enhancing employability perspectives of PhD Candidates	Access to cutting-edge research
Improving the reputation of Imperial College	

### 3. Main objectives of this university-business cooperation

The prime objectives of the centre can be divided into two main categories: first, research, and second, education and training. As regards research, the main

objectives of the centre are twofold, (a) to conduct novel geo-science research towards a better understanding of carbonate reservoirs in Qatar and exploit this to enhance oil and gas production, and (b) to support the deployment of carbon capture and sequestration in carbonates by improving the underlying science and engineering. As regards education and training, the main objective of the centre is to develop local talent in Qatar through higher education and research training in geo-sciences and engineering, and the establishment of an R&D facility in Qatar.

The latter objective is linked to a broader objective pursued by QP and Shell, "Qatarization". This refers to the attempt to identify and develop Qatari personnel for assuming permanent positions in Qatar's oil and gas industry which is the country's principal economic sector. In particular, via the collaboration with Imperial College London, the intention was to select suitable Qatari candidates for being enrolled in a PhD programme within the context of the research activities pursued by the centre. Imperial offers expertise in geosciences and associated academic disciplines, and was hence seen as a suitable training ground for highly-qualified technical and scientific personnel destined for the Qatari oil and gas sector. In addition to being employed in the oil industry, QP and Qatari policy-makers also intended this project to contribute to the development of human capital for the emerging Qatari academic research capability in this area.

Research objectives and education and training objectives were tightly linked. The centre pursues a portfolio of projects on specific scientific or technical aspects of carbon oil or gas reservoirs whereby each project is led by a principal investigator drawn from two departments at Imperial. Each project is co-supervised by an R&D scientist drawn from one of the industrial partners. PhD students may be allocated to any of the projects, and pursue their academic training by accessing the data, materials and expertise generated from them. In this way, the PhD students contribute to the success of the projects, and simultaneously receive research training in specific subjects highly relevant to their country. Accordingly, the centre combines the generation of research outputs with the creation of human capital.

#### 4. Monitoring mechanisms and indicators used

Centre participants used both quantitative and qualitative methods for monitoring the ongoing collaboration in general and the outcomes produced more specifically (see Table 3).

**Table 3.** Monitoring mechanisms

Monitoring approaches	
Qualitative	Quantitative

Soliciting informal feedback from the participants	Number of PhD candidates graduated
Quality of publications	Number of publications
Quality of conference presentations	Number of patent applications
Collaboration climate	Number of conference participations
	Number of databases created
	Equipment installed

The qualitative indicators included rough estimates of the quality of publications generated through the work in the centre. In addition, they encompassed participants 'gut feeling' as to how the collaboration was performing. Informants stressed that the monitoring of activities was often based on a tacit sensing of people's behaviour and approach: "Sometimes the ability to perceive the mood of the other party gives much more information than any other formal indicator". The qualitative measures were complemented by a series of quantitative measures that included, for instance, the number of PhD students that graduated from within the centre.

There were differences in emphasis amongst the participants regarding what measures were seen as primary. Whereas Imperial academics valued indicators linked to the quality of research and the quality of PhD graduates, the industry representatives were more focused on measures that may have a deep impact on R&D results and economic performance.

The monitoring and assessment of the centre's performance was performed largely as part of quarterly review meetings where participants appraised what had been achieved in the previous period and took action, where necessary, to remedy undesirable developments. The centre had put in place a reporting structure whereby participants are required to report on their progress with respect to certain milestones on a quarterly basis, in conjunction with more frequent meetings amongst the research teams.

## 5. Outcomes achieved

It is too early to comment on measurable, tangible outcomes particularly in the educational realm due to the long-term nature of human resource development. However, an important outcome that was anticipated by the centre participants was

the nurturing of doctoral graduates who – compared to PhD graduates not exposed to industrial partners – had a better understanding of the industrial world and applied research, and were hence employable in industry. This was seen as particularly relevant for those students who were of Qatari origin. By completing their PhD training within the context of the collaboration, they were expected to vicariously learn about the practices pertaining to corporate R&D laboratories and business more generally. This may include acquiring awareness of the whole process ‘from ideas to markets’ and the practicalities of ‘doing business’. It is worth highlighting that the development of skills was expected to benefit not only PhD candidates but also more senior academic staff. We report below a summary table (Table 4), showing not only what the collaboration had already achieved in terms of skills development according to interviewees but also some of the gaps that informants thought needed to be addressed over the life course of the centre.

A further outcome of the centre activities was seen to consist in the creation of high quality material suitable for being integrated into Imperial College’s teaching programmes. In particular, because the work in the centre was connected closely with industrial application, the academic participants were hopeful that the resulting teaching programmes could be rendered more relevant and practice-oriented. This in turn would improve the quality and attractiveness of Imperial’s teaching offerings, and hence benefit a core activity of the university. These outcomes were expected to range from engaging students in project work, integrating case studies and practical examples into lecture material, offering practical lectures as part of the courses, and participation in various events organized jointly with industrial partners.

Being potential employers of doctoral graduates, Shell and QP insisted that the PhD students and the postdoctoral researchers in the Centre be exposed to activities that augmented their employability via the acquisition of specific skills and expertise. For example, during the collaboration an innovative laboratory had been installed where researchers used medical imaging technologies for analysing the behaviour of carbon dioxide in subterranean conditions. PhD students worked closely with R&D scientists in Shell and respect strict deadlines for report presentation and data generation. Moreover, they were asked to periodically present their work to Shell managers and area directors in order to practice their ability to communicate with industry audiences. These kinds of activities were aimed at preparing them to play the double role of researchers and managers within an industrial environment, able to starting new research projects, managing teams, apply for funding or attract other companies to work in a research project.

## **6. Measures and approaches used to assess outcome and impact of collaboration**

The preferred measure of impact used by the sponsors was linked to the contribution of the centre to developing local R&D capacity in Qatar. Two ‘metrics’ were used. First, the collaboration would be deemed successful if it concluded with the establishment of with a sustainable laboratory in Doha. Secondly, a further success indicator consisted

in whether the collaboration would be renewed, in a different form, after the termination of the programme.

## **7. Conclusion**

The QCCSRC case demonstrates how, within a university-business collaboration, R&D activities and educational/training activities can be synergetically integrated. While in many partnerships, the industrial partners are foremost interested in accessing R&D output, in this collaboration, a state-of-the-art R&D programme was integrated with a mandate to develop human capital with the ultimate objectives to help 'upskill' the R&D infrastructure of Qatar.

---

## Hewlett-Packard and Sofia University

Svetlana Avramova.

### 1. Introduction

The interaction of the leading IT providers with the universities is a "mandatory field" of their activities. Besides Hewlett-Packard, initiatives with educational institutions in Bulgaria are also implemented by other IT companies such as Cisco, Intel, Microsoft, SAP Labs Bulgaria and other.

The business university cooperation between HP and Sofia University is carried out by Hewlett-Packard Global Delivery Centre Bulgaria (HP GDC) and The Faculty of Mathematics and Informatics (FMI SU). Hewlett-Packard - Bulgaria (since 1997) and Hewlett-Packard Global Delivery Centre Bulgaria (2005) are two different HP legal entities which are founded at different time, differ in size, activity, and territorial scope of services provided. (HP-Bulgaria has about 120 employees, and HP-Centre - over 3 000 employees).

HP GDC was set up in 2005. Its sole owner is Hewlett-Packard Central and Eastern Europe Holding. The Bulgarian unit provides IT infrastructure outsourcing services.<sup>4</sup> The purpose of the Centre is to provide clients and partners of the company from the region of Europe, Middle East and Africa (EMEA) with high-value and cost effective IT and business remote services.

The choice for opening the Global Delivery centre in Sofia lies on a profound research of the economic conditions and the human resources of Bulgaria. The corporation took into account several advantages of the Bulgarian market, among others: well-developed ICT infrastructure; high technical competences available on the market;<sup>5</sup>.HP considers the global centre a long-term commitment. The corporation started professional development programs in cooperation with local Universities in order to prepare students to match HP needs.<sup>6</sup>

HP is the largest employer of the Bulgarian outsourcing sector - 80% of the employees are highly educated and skilled professionals, 30% of them hold managerial positions, 41% are female, and the average age of employees is 30 years. In 2008 and 2011, HP received the "Investor of the year" award by the Bulgarian government.<sup>7</sup>

---

<sup>4</sup>[http://www.securities.com/Public/company-profile/BG/Hewlett-Packard\\_Global\\_Delivery\\_Center\\_Bulgaria\\_%D0%A5%D1%8E%D0%BB%D0%B5%D1%82-%D0%9F%D0%B0%D0%BA%D0%B0%D1%80%D0%B4\\_%D0%93%D0%BB%D0%BE%D1%83%D0%B1%D1%8A%D0%BB\\_%D0%94%D0%B5%D0%BB%D0%B8%D0%B2%D1%8A%D1%80%D0%B8\\_%D0%91%D1%8A%D0%BB%D0%B3%D0%B0%D1%80%D0%B8%D1%8F\\_%D0%A1%D0%B5%D0%BD%D1%82%D1%8A%D1%80\\_en\\_3263591.html](http://www.securities.com/Public/company-profile/BG/Hewlett-Packard_Global_Delivery_Center_Bulgaria_%D0%A5%D1%8E%D0%BB%D0%B5%D1%82-%D0%9F%D0%B0%D0%BA%D0%B0%D1%80%D0%B4_%D0%93%D0%BB%D0%BE%D1%83%D0%B1%D1%8A%D0%BB_%D0%94%D0%B5%D0%BB%D0%B8%D0%B2%D1%8A%D1%80%D0%B8_%D0%91%D1%8A%D0%BB%D0%B3%D0%B0%D1%80%D0%B8%D1%8F_%D0%A1%D0%B5%D0%BD%D1%82%D1%8A%D1%80_en_3263591.html)

<sup>5</sup> <http://best-bulgarian-ict.com/best-practices/crm/HP-Global-Delivery-Center-Bulgaria/>

<sup>6</sup> <http://best-bulgarian-ict.com/best-practices/crm/HP-Global-Delivery-Center-Bulgaria/>

<sup>7</sup> <http://www.investbg.government.bg/bg/sectors/successful-examples-20-59.html>



The predecessor of the Faculty of Mathematics and Informatics (FMI) was established in the autumn of 1889 as a Physics and Mathematics Section of the first Higher School in Bulgaria, now Sofia University. During the last three decades Informatics became an important part of the curriculum. The degree program in Informatics was launched in 1986 and the faculty got its present name. Currently the FMI offers the following programmes: Bachelor's, and PhD Degree; Postgraduate Qualification and Distance Education. Approximately 2 000 students enrol in the Bachelor's programmes, around 600 - in the Master's and 30 - in the Doctoral programmes.

The cooperation with HP is mainly focused on students of Master's Programs Informatics and Bachelor's Programs Informatics, Computer Science, Software Engineering.

## **2. Reasons for cooperation between Hewlett-Packard and Sofia University**

### **Reasons for starting cooperation**

HP university program in Bulgaria started in 2006 after the opening of the Hewlett-Packard Global Delivery Centre - Bulgaria (HP GDC).

The situation in the ICT sector is characterized by a deficit of qualified IT specialists and growing competition between the companies operating in the Bulgarian market.

In this market environment HP GDC has to grow. At the start the company has relied on graduates with good education while the lack of experience has been offset by additional practical training. At the same time the management's strategy was to build relationships with universities, offering support for the modernization of education, particularly in one of the fastest growing areas - information and communication technologies (ICT).

In October 2010 the General Manager of Hewlett-Packard Bulgaria Iravan Hira declared:

*I believe that IT education in the country has a good foundation and potential for development and a key role here has to be played by the business: the international and Bulgarian companies have to continuously invest in joint educational projects with Bulgarian high schools.*

In March 2011 Sasha Bezuhanova, the HP Managing Director of Public Administration for Central and Eastern Europe also pointed to the potential of the IT specialists and the good reputation of the IT qualification which the country universities give, but at the same time heeded the attention to the fact that many of the young people were leaving the country, and the most talented of them were choosing the better universities around the world.

*The truth is that the education is lagging behind the best standards of Europe and the world.*

In an interview for the present study, a representative of HP GDC clarifies that they follow the global HP politics of being a socially responsible company. The overall attitude towards the education is the strategy of the company which is a way to build a positive image.

The interviews with members of the university management, the lecturers, the faculty staff, the students, and the HP GDCB employees show that the main pragmatic reason

is the HP desire to have access to the students in the educational process, allowing for the recruitment of suitable staff for the business.

*In practice we are able to find people to start working for us, mostly based on the activity we develop (Respondent #3/ HP)*

Both partner organizations have reported in the interviews that their cooperation has become more intense in 2010 – 2011 because of the expansion of the HP GDC itself.

For the university, the cooperation with IT companies is important to offer to its students an education which is closer to the needs of the business.

The FMI works in a competitive environment with other technical universities from all over the country and the world. Talented young graduates from prestigious universities abroad often get hired by the big companies there or in Bulgaria.

The faculty is experiencing shortages of professors who are familiar with the business practices and the dynamics of technology. The majority of the professors have a typical academic profile.

*The problem of the university funding is very complex. Companies want us to train 20 times more students but we simply do not have the resources to do that - we can't find so many lecturers. From 1/2 to 3/4 of the university funding worldwide comes from outside. Moreover, even if we had the capacity, in order for the education to be updated continuously we would need more people involved not only with teaching activities. (Respondent #4/ FMI)*

### **Stakeholders**

- The Sofia university management
- The Faculty of Mathematics and Informatics
- Had of FMI's IT Department and some individual staff members of other departments
- Career Centre of SU
- Career Centre of FMI
- Businesses department of HP GDC
- HR department of HP GDC
- HP-Bulgaria

Initially an agreement for cooperation was signed between SU and HP-Bulgaria on the occasion of the donation made by HP-Bulgaria to the University. Eventually the cooperation between SU and HP GDC focused primarily on the educational activities.

Involved with the actual collaboration are leading professors from the IT Department of FMI, and managers and lectures from the "business unit" of HP GDC.

The cooperation takes place primarily along two parallel lines.

- One is related to the teaching process, which is run by managers and lectures from both organizations. From the interviews they appear to be really interested in the cooperation with a certain positive attitude towards joint projects and actions.
- The other line is related to the provision of information and career services to the students. These activities are performed by the Career Centre (CC) at the FMI (run by the Dean) and by the HP GDC Human Resource Department. The

staff of both units interviewed expressed a mutual disappointment with their interactions.

The participants' awareness and commitment to the cooperation, as well as their memories of the cooperation history, and attitudes differ. (cf. p. 7 and p. 17)

Other organizations and local authorities are not involved in the cooperation in question. SU has a long-lasting collaboration with the Technical University in Sofia (TU). HP has signed a memorandum for cooperation with the TU as well but there are no common initiatives of the three institutions. All the agreements of the SU with its business partners and of HP with different universities are bilateral arrangements.

*No other interested parties take part in the HP/SU cooperation. They are invited and attend meetings and other events but they can't be called stakeholders. (Respondent#3/HP)*

### **3. The main forms of FMI/ HPGDC cooperation**

- ✓ design of course material
- ✓ supporting of courses through teaching
- ✓ donation of equipment
- ✓ provision of placement opportunities

The joint HP/ FMI delivery of courses is considered as the most important cooperation activity by the HP managers, the professors and the students having attended those courses.

Other intermittent activities are also mentioned: training of lecturers and assistants; participation in "Career days", Graduates Program.

#### **The role and activities of HP in the collaboration**

The Bulgarian HP managers are among the most active promoters of the policy on more practical orientation of the education which in turn speeds up and improves the prospects for realization of the young professionals. (*Desk research*)

HP has taught academics to upgrade the content of teaching material and teaching methods. Moreover, young HP specialists are assigned with the task to assist professors in other faculty courses in view of using them later as teachers in their own company. (*According to HP managers and FMI professors*)

The first joint course was carried out from September 2006 through March 2007.

By 2010 HP-Bulgaria has donated computer equipment for a University laboratory, provided the students with presentation of the opportunities and the working conditions in the company, as well as hired FMI students right from the university.

According to the HP managers, the basis of the cooperation is the design of new courses (predominantly for the master's program although users of these courses are also bachelors). For him the initial donation from HP-Bulgaria to Sofia University was "just a donation contract and nothing more", the HP GDC courses for the Faculty IT students are the true core of the cooperation.

*Our lecturers take part in IT maintenance worldwide. They transfer real practical experience (Enlists the names of the technologies). These are all corporations, which provide support for contracts of hundreds of millions euro and the students are provided with the opportunities to touch those technologies. (Respondent #1/HP)*

According to interviewed insiders of the project the meaningful start of the business cooperation was the 2010-2011 academic year with the introduction of new technology courses (platforms, storage systems, and databases) designed under HP methodology and customized for the FMI students.

HP IT managers coordinate and organize the transfer of know-how about the operation with new technologies. Experts from different teams and fields of the Business Department teach, train, examine during the joint courses, and contact the professors and the students. There is a rare position in HP – an employee is responsible for the strategic recruitment and the relations with the universities.

### **The role and activities of FMI in the collaboration**

With limited resources available, the university is a favourable hosting environment for the energetic business proposals which appeal to the students a lot. As was stated by one of the interviewed students, “companies only give and want almost nothing in return from the faculty.” According to the Head of the IT Department at FMI, their collaboration with HP has emerged around the Master's Program "Distributed Systems and Mobile Technologies" chaired by him since 2004 - even before the opening of the HP GDC.

*This program provoked HP's interest with the offered quality of learning. It completely met the company needs. (#4/ FMI)*

In 2007-2008 HP GDC hired faculty graduates (some of them even before receiving their diplomas). Those were precisely the people who started and drove further the cooperation with the IT department. They have also taken part in the design of educational courses, as well as in their implementation. While running the courses they were obstructed by the limited computer capacity of the FMI. So they have requested and secured modern computers and other laboratory equipment.

Nowadays the assistant professor continues to introduce and to instruct new HP lecturers concerning their teaching at the FMI.

The organization of the courses is entirely held by the Faculty.

As described by the Faculty's Dean, the procedure for the introduction of new courses includes a discussion of the curriculum by the Faculty's Council. The actualization of the program with new technology courses is made annually through an annex to the decision of the Academic Council.

The courses are managed by the FMI. The partners fill an application form with the content of the proposed course. The document is assessed by the FMI together with an evaluation of the partner's capacity. A member of the FMI staff is appointed to be in charge (the “head” of the cours.

### **Audience/beneficiaries**

- students from the MS program of the FMI
- students from the Bachelor program of the FMI
- HP employees trained at the FMI
- professors from the FMI trained by HP lecturers
- HP employees assisting FMI professors and instructed by them

The joint courses with the participation of HP lecturers are freely eligible. Some of the courses are dedicated, due to their more complicated character, exclusively to students from the MS program. Other courses are recommended for the MS program but they are open to students from the Bachelor program as well.

According to a student (#14) from the Master program, the freely eligible technology courses could be attended by students from a wide range of specialties. The interest to them depends more from the personal motivation than from the student's field.

Among the students of the program there are a lot of holders of a Bachelor or a Master degree from other universities (#11, 12). Some of them have graduated from a similar field but wish to refresh their knowledge. Some desire to keep their job while others clearly attend the program with the intention to move eventually to a better position (#5).

Part of the students in those courses (as in any program) is from the state funded quota where they are admitted according to their entry exams' notes. The other part (including those for whom this is a second Master (#12) pays their tuition.

The cooperation partners have agreed that HP employees can attend the courses in order to update their qualification.

### **Members of staff involved in managing/delivering the collaboration**

The number of FMI's staff members involved has not been changed significantly over the years. These are 5-6 persons - Head of IT Department, 2 professors from the same and from another department of the faculty, 2 assistants and an expert at the Data Centre. They are in charge of the organization and of the conducting of programs and courses with the participation of lectures from HP.

According to the HP GDC coordinator of the cooperation, there are 3 managers involved in the company. Over the past three years the HP lecturers have come up to about 8-10.

According to the HR staffing advisor the team for selection of students is about 5 people. The number varies and at different times involves managers, professionals, and administrative staff – in total about 20 people.

### **Responsible units for the collaboration**

In the HP GDC, the participation involves managers and professionals from the two types of units. One part of them is from the "business unit" (the so called functional units there). The other is the recruitment and selection department.

In the University formally responsible for the cooperation are two separate career centres - at SU and at FMI (which are not subordinated).

In practice, responsible are only the individual lecturers, predominantly from the IT department (#1, 2, 4, 5)

### **Misunderstandings**

The representatives of the administration (#7, 8, 9.) and many students (#14, 15. and others in FMI before filtering) have a different version: for them the cooperation on the part the university is run by the Career Centres of FMI. This is probably so because of the analogy implied by the fact that CC is entirely running the faculty relationships with multiple IT firms focused on internships. The faculty fails to provide enough practices for the students in real learning environment and it looks like it is trying to offset these needs through practices in the companies. In other words, the very sensitive issue here is whether the partner company offers internships or not. They have standard contract forms which they provide for numerous IT firms and are then negotiated and signed.

*We squeezed the cooperation agreements to just internship programs. It has only one provision and it says that they can be included in some of the courses. Some do it... (#7/ FMI)*

According to (#7/ FMI) the state has become the real "initiator" of the cooperation agreements. The pressure for formalizing the process comes from the state and from the students as without a signed contract between the university and the firm the internship shall not be authorized.

For the first time HP has signed such a contract in April 2013<sup>8</sup>

According to the interviews with CC staff, FMI Dean's office, SU Deputy Rector and some students, the cooperation with HP is not significant. FMI is carrying out courses with other partner firms and get donations and funding also.

In the well maintained site of the FMI Career centre HP is almost absent during the last 2 years. A few job ads from HP GDC are posted in 2010 and 2011. HP is not present at the 30 presentations and seminars organized by the Career centre during the 2012-2013 academic year. Among the 200 positions for interns advertised since 2010 there are not proposals from HP.

So far the FMI students haven't had internships at HP because HP doesn't have an internship program. This explains the lack of relevant internship advertisement on the CC site. Instead, from the very beginning of the cooperation, the HP program offers recruitments for the FMI graduates.

HP didn't demonstrate any intention to change this situation. However in the new contract it is stated..." HP GDC is a company that offers opportunities for internships in order to acquire significant practical, vocational and social skills by students and alumni." The commitments of both parties are described in the agreement (see Attachment No 1)

#### **4. Main objectives of HP/SU cooperation**

- desire to improve the skills of graduates
- to ensure high quality employability of the graduates
- to widen the teaching offer
- to improve the performance of the regional economy
- to deliver firm specific benefits

#### **The Initiators**

The initiators of the HP/SU cooperation are professors of IT department. At the beginning an assistant professor has asked HP for support about trivial teaching problems. He has shown them the teaching materials utilized in IT education. According to FMI's Head of IT department, his contribution consists in managing to convince some of the HP experts, and they in turn to convince their bosses of the benefits of the training carried out under the Distributed Systems & Mobile Technologies MSc Program (DSMT) for their company. Later on HP started to promote the cooperation with SU as part of their University Program.

The cooperation emerged informally and with lots of enthusiasm. Then the decisions became dependent rather on whether FMI achieved their goals and whether the

---

<sup>8</sup> When I interviewed the manager of the Career Centre, they did not have a copy of this agreement and HP was missing from the list of their 43 partners. The interview incited them to ask the contract from the SU Career centre and to include HP as number 44 in the list.

results were satisfactory for the company. (But according the HP organizers the results depend mainly on the people in the program)

The aim of the DSMT MSc Program (which is the centre of the cooperation) is "students' acquisition of knowledge ... in the e-business and in particular - e-commerce; gaining practical experience in the development and use of ICT to solve business problems; capacity to define problems, analyse alternatives, and create new approaches, methods, and software tools for the development, implementation, and maintenance of information systems for the business."

### **The Main objectives**

The spontaneous answers of the interviewed from SU and from HP concerning the objectives of the cooperation are identical - HP is looking for FMI students to be hired by the company.

- Recruitment of young people is the main goal of HP which acceptable for SU.
- The main goal of FMI, is to ensure high quality employability of the graduates
- The shared goal of both parties in the cooperation is to improve the technological skills of the graduates. With this goal they have started and are continuing the cooperation.

In terms of deficit in "ready" professionals, HP GDC and FMI decide HP lecturers to get directly involved in the education. Unlike other companies which at best, can only articulate and declare their needs to the educational institutions, HP aims at seeking a closer relationship with the faculty (even with a specific program) and is managing to find a way to agree with the university the means for its implementation.

The general opinion is that the students acquire solid basic knowledge in the first 2-3 years of their studies at FMI. It is important for HP GDC to step up, add and upgrade what has already been achieved with the latest knowledge of the emerging technologies and skills for the students to work with them.

The cooperation with the IT Department allows the company to take advantage of the interactive contacts during the courses for the sake of observing and selecting the most appropriate students to work for the company.

Another specific benefit for HP GDC is the possibility to train HP employees in the FMI.

For both institutions it is important that their joint ventures work for the benefit of their good image among the young people.

*It is hard to believe that all these things have been done solely for the purposes of the publicity - ...we are surrounded by so many advertisements that they can't impress us much anymore. We are only guided by the good name, which the company either has or doesn't have. (#15 - third grade student in the FMI Bachelor program)*

Some students logically assume that with the donated high quality computer configuration, HP is hooking users among them via hardware and other products of the brand. But it could only be a peripheral target (given their share of the Bulgarian market), compared to the discovery of reliable skilled workers for their companies.

The objective of the faculty is at least part of its graduates to get chances not just to improve their employability, but also to get recruited directly by big companies, such as HP (and not only) with prospects for career advancement. The majority of the courses with HP GDC involvement actually teach universal, widely applied technology knowledge. Regardless of the long traditions established at the state university, SU (following argumentation on the part FMI's IT Department) has accepted to let "the merchants in the temple."

In terms of limited academic capacity it is essential for FMI's IT Department to be supported by a company of high profile like HP, through which to offer its students a wide range of modern technologies. The practical work with them will enable the students to acquire skills, which is a prerequisite for their rapid professionalization. Among the objectives of the faculty is to attract resources - material (including access to licensed products of the partner) and human (real business experience). The relationship with the business is an opportunity for the university to expand and upgrade both the themes and the methods of training as well as the facilities.

Through the cooperation, Faculty Career Centre is aiming to provide the students with more "first hand" information for their career guidance.

Unlike other schools, FMI is not aiming at attracting more students. Despite the criteria according to which, the state subsidy depends on the number of students, and despite the competitive environment (there are 52 universities in Bulgaria), as per the recent Faculty Dean, even in the future they won't be able to meet all the needs of ICT sector for experts. One of the reasons is that even with the support of HP and other companies, their capacity to accept and train more students in Informatics will be insufficient.

### **Changes over time**

As one of the most important trend outlined by the HP GDC program managers is the positive change in the mutual trust between the partners, especially among the people of the team involved in the program. They are all talking about each other with frank admiration.

In the beginning they were aiming to increase the number of the students under IT specialty due to a great need for such experts, but over time has reached the ceiling of their capacity for accepting students.

With the emergence of new version technology, the courses' number and themes have also been changed. More and more HP GDC lecturers have got involved in the courses.

With the opening of new departments, the requirements for the job applicants are also changing, and in turn the courses have to comply with these requirements - additional technological skills but also business skills, language skills, etc., for which now, FMI is not providing training. (HP GDC is providing services in multiple languages.)

*We do not have cooperation with other University Faculties but have attended events, and we have represented the company, and have taken part in the workshops. We are also interested in Philology Faculties and are looking for staff from them. (#3/ HP)*

### **Disagreements between partners regarding the process of cooperation**

According to the respondents, for the time being, there are no disagreements regarding the main HP objective of the cooperation. Whether they approve or disapprove this goal is a different question. Attitudes differ for various reasons, but mostly depending on the degree to which someone is involved in activities providing the training.

The FMI participants in the process Interviewed are aware of the HP goal and accept it - the opportunity for their lecturers to "enter" there, and teach the students provides them with a direct contact with the students - irreplaceable possibility for selection.

*On their part, HP would prefer that their lecturers had a better monitoring system of the students in view of better qualitative selection. This is actually their main goal and method. With the standard forms and with the Career*



*Centres it is quite uncertain – one never knows what kind of a person and with what kind of qualities might happen to get there. (#4/ FMI)*

*The company lecturers don't even get their lecturers fees. They only care about how to select 4-5 students for their theme course. (#8/ SU, Vice Rector)*

HP GDC managers understand that it is not easy for the university to accept business people to get involved in their education programs.

Some of the first course participants remember the initial scepticism on the part of the university professors in the HP lecturers with their new and different type of lectures and style of teaching. The University managers have even initially carried out checks on the spot to see how and whether the method worked. Management SU representatives interviewed have shared their concerns that not everyone could teach – brilliant experts but unable to transfer knowledge, to explain, etc. A Master's Program student has observed that some of the young HP lecturers seemed to be lacking pedagogical technique.

From the implications of some of the interviews it becomes clear that FMI continues to have concerns about the controversial issue of the “dose” of the students’ practical skills by the end of their university education. Explicit positions and arguments have been expressed largely in favour of the profound theoretical knowledge (of mathematics for example which is teaching thinking patterns) and vice versa - as much as possible practical orientation for the sake of real practical skills. This dispute has been reproduced among the students with opposing arguments and clichés of their professors.

*Initially on the part of the companies it was shared that our students are good because they are able to think. But for the last 5-6 years, the level of students is falling much more noticeably. Right now the appeal is for us - "teach them to think and we will teach them technology." In this respect the situation has been changed drastically. (#8/ SU, Vice Rector)*

The logic of the university professors is that the university can't teach students the latest technologies because they are constantly changing; thus, the university has to teach the students how to learn, to acquire the basis in order to understand and utilize any new industry technology when it emerges, etc.

The official creed of the faculty expressed by the former dean is that the academic education should retain its concepts, even though they might seem archaic and useless to many of the students.<sup>9</sup> The pressure for practical relevance is causing fears that the students might become “coders” and people making their livings on IT.

Among most students and business people the focus is put on the practical suitability of the academic knowledge. A Head of IT Department clarifies: recommendations in favour of the profound theoretical knowledge are only expressed by two branch organizations, which are not representative of the prevailing expectations of the business. Most students and HP managers are definitely holding the opinion of the need for more specialization, workshops, new technologies and only basic theoretical knowledge that “will come in operation.”

One reasonable solution could be optional course for the Master's Program students but for the Bachelor's program students - only after their first two years education. In other words, the courses are appropriate for students with business orientation, once they have mastered sufficient basic theoretical knowledge.

---

9

[http://computerworld.bg/22808\\_biznesat\\_universitetite\\_da\\_marketirat\\_ikt\\_programe\\_si](http://computerworld.bg/22808_biznesat_universitetite_da_marketirat_ikt_programe_si)

*We have discussed this problem at the faculty. It all depends on whom they listen to, and how they listen and understand what the companies are saying. Obviously they need both. This is the principle -- the Bachelor's Program is fundamental, while the Master's is more practically oriented, and there the need for direct relations with the business is mandatory. In the companies people are trained and retrained every 3-4 years. (#4/ FMI)*

## **5. Monitoring mechanisms and indicators used**

There is no written overall monitoring mechanism for the collaboration. The process of joint trainings and their results however are monitored. Instruments such as student's feedback questionnaires regarding the courses and assessments tests about the training outcome are also regularly used. The feedback indicators included in the questionnaires are defined by the university professors participating in the courses, while the assessment tests are especially prepared by HP GDC.

### **HP GDC monitoring and indicators**

HP GDC managers are oriented entirely to the results of the cooperation.

They monitor the whole list of courses, elaborate on strategies for the academic year, discuss and design courses for each following semester, take into consideration the students' feedback regarding the quality of the courses and their preferences. The individual progress of the students is monitored as per a system of key indicators (KPI).

They have prepared specific tests for objective control of the results: success rate of the FMI university students, as well as, development of the staff trained by HP GDC in the same courses.

Operational meetings between business department managers and the staff selection managers are also carried out. Deliberate selection based on 3-4 criteria is carried out among their staff in view of sending the best of them to joint training courses. The number of trainees on the part of HP GDC shall not exceed the 10 % quota of the total number of enrolled trainees for a course but "this is not an easy job, given the fact that 20 applicants are competing for 5 places" (#2). For each staff there has to be decided in advance which course is most appropriate and necessary, the importance of the job for the office, the manager's position in the hierarchy, and in what area the manager wants to progress.

Via a built-in HR selection system, GDC HR monitors and maintains individual records upon an interview on the efforts made by the students and their staff trained as follows:

*Application procedure, competence, plans for long-term commitment, plans for additional training followed by coming back to the work place, recruitment success, etc. (#3/ HP)*

This information is accumulated and saved by both the business department and the HR department. Each department then analyses the information in the light of their interest.

At the end of each course is applied a "small test of the trainees – attendance list with history of performance results, which is a quite a good tracking" according to the HP coordinator. The staff is evaluated on equal footing with the other trainees. The lecturers then inform the company about their progress.

## **FMI monitoring and indicators**

According to the Faculty Dean, each of the joint courses is with about 30% participation of pay-roll professors who monitor the training process and the students' performance. As per a Deputy Rector, what matters here is that the professors who are involved in the joint courses shall monitor the teaching activities of their HP colleagues regarding deadlines, predicting risk, etc. In order for a certain course to be organized, it has to be announced by the end of the current academic year for the next one. In the meantime, the company might experience many changes – some people might leave, some clients might withdraw etc. In case of an unpredicted difficulty on the part of HP GDC, the faculty responds, reacts, and offsets whatever it takes – unforeseen absence of a teacher, etc.

FMI carries out entry control by filtering the applicants for a certain course according to their grades.

There is also a SU committee for collecting and analysing data on students' employability, as well as on the companies which have employed them.

The FMI Internet site provides possibilities for feedback from the students regarding themes of the courses or their professors, including joint courses.

More attention is paid on the FMI internship programs. There are standard forms on the CC site available to be completed for each intern before and after the internship. Described are, first the purposes of the training, then the specific tasks which will be entrusted to the company, what kind of knowledge will be received, what kind of skills will be developed and/or improved, what type of a job will be done for the company. After the internship, follows the description of the performance - strengths and weaknesses of the interns under different tasks; need for improvement and assessment of the presentation. Who, when, what, and how is going to be assessed are well indicated. The mentor monitors the process of acquiring skills, takes notes, provides the trainees with a standard form of questionnaires, and then writes a review on the results achieved. The intern performs a self-evaluation in the same sequence of steps. The final evaluation is carried out by the academic mentor based on completed information regarding the implementation of the internship. By now, there is no information as to whether the results of the individual files of the interns are summarized, analysed, lessons learned, and recommendation for improvement suggested.

Unlike the HP GDC organizers who describe detailed mechanism for monitoring the courses and the trainees as the one of the Interns, the Head of IT Department thinks that in practice apart of the questionnaires for evaluation of the lecturers and the final test after each course, nothing else is done.

*There is no continuous monitoring in place, there isn't anybody designated to collect and systematize data on the matter. When we are requested to provide information we start collecting, presenting... Each year in the dean's office some kind of need emerges - to apply for something or do something else to that effect. (#4/ FMI)*

In fact the ad hoc references are not only made accidentally. At least two nationwide systems evaluate the performance of the educational institutions according to a large number of indicators sorted in 5-6 groups of criteria. To some extent the distribution of the state funding among the universities depends on their assessments. The higher

schools collect and maintain detailed documentary data and information in the required format and content, at least for these evaluation systems.<sup>10</sup>

As required by the Accreditation agency, at the end of the academic year the universities present references for their work by the partner organizations. (The CC had just received a large number of letters with assessments and recommendations, but not from HP.) Unlike the communication between the managers of the joint courses, the communication between the administrative units of both sides involved in the cooperation is not among its good characteristics.

*We only require yearly reference from HP GDC...because we are bound to do that in relation to the accreditation... just a feedback – but they don't do even that. They do not meet the provisions of the contract at all. They only reply when we are very insistent and send them official letters on behalf of the Dean with request and justification. (#7/ FMI)*

According the Bulgarian University Ranking System, in turn, the FMI of Sofia University ranks first among 11 universities under the professional field "Informatics and computer science". (Appendix No 2). The rating system indicators are not a special topic of the interviews, but probably the high FMI ranking reflects indirectly the joint activities of the IT Department and HP GDC.)

## 6. Main results achieved

### “Produced” in the cooperation

In 2012, one of the top HP manager has recommended to the Bulgarian government to introduce a university Quality system in view of providing a common criteria for what is considered to be university “production”

For the purposes of the case study in question, the cooperation “production” shall be understood as everything created individually or jointly by the cooperation parties involved, in view of achieving the goals they have agreed formally or informally.

The analysis of the interviews shows that there are two outcomes of the cooperation between SU and HP:

- Real and sustainable cooperation has been established by the IT Department and HP Business Department.
- Graduates with practical skills have been educated and they are ready to hold positions requiring high technology qualifications and to work or continue working for ICT companies.
- Methodology for training teachers has been developed. Training course has been adapted for this training. HP has provided highly qualified lecturers (incl. foreign) for training the teachers. The professors trained have been certified for teaching the corresponding technologies, as well as, authorized to evaluate knowledge.
- Specialized technology courses have been continuously developed under HP methodology for the Specialty “Distributed Systems and Mobile Technologies”.

---

10

[http://www.neaa.government.bg/assets/cms/File/criteria/Kriterii\\_Eng/Kriterialna%20sistema%20za%20IA\\_eng.pdf](http://www.neaa.government.bg/assets/cms/File/criteria/Kriterii_Eng/Kriterialna%20sistema%20za%20IA_eng.pdf)

The Program has been upgraded in view of introducing more practical orientation (having no analogue among other universities in the country). Within DSMT MSc Program framework each student has had the opportunity for optional combination of courses in view of specializing in one the possible directions. Thus, the possibility of creating a new or modified program requiring a complicated bureaucratic procedure has been avoided.

- Selection mechanism for trainees has been developed as per course complexity and students' grades while for the HP staff according to their functions performed or would be assigned.
- With the emerging new technologies or their successive versions, courses have been updated annually and accordingly. Parallel to expanding and diversifying the courses, HP has been providing more lecturers which are also accompanied by certification of the respective new technology companies.
- Three computer halls have been equipped with modern computers and servers.
- Arrangements and schedule of carrying out courses have been developed to the convenience of the students trained (most of them working and studying) and HP staff trained, as well as, HP lecturers for whom the courses are additional commitment.
- The content of the courses has been made objective in such a form, that it is possible for the students to use (when they have missed to attend some of the classes).
- Presentations have been made regarding company performance during career days organized by FMI.
- Some students and teachers have been supported financially. (according the Head of IT Department)
- Instruments (questionnaires and tests) have been developed and regularly used for evaluation of teachers and trainees' success rate.
- Selection Indicator system has been developed and used by the HP to evaluate the staff's progress after the training.
- Persons trained in the course and recruited by HP upon quality selection.

Generally speaking, more "production" of a higher quality regarding IT business needs has been achieved with HP participation, than would have been achieved by the faculty without HP participation.

### **The key ingredients of successful collaboration**

- Clearly formulated challenges or needs
- Professionalism and complementary resources
- Result oriented work
- Mutual benefits from the common activities
- Confidence in the usefulness and the significance of the outcome for a larger context
- Motivated partners

The core of cooperation consisting of 5-6 persons assigned all the achievements to their good communication and mutual understanding.

*Very naturally it happens so that the graduates from here go to work there, but the accumulation of knowledge and skills here are later brought back by carrying out courses here. (#4/ FMI)*

*We communicate with the people, not with the positions. When professor X requires technology we understand each other, and that level of communication is more than enough as a ground for undertaking the corresponding actions. Top management is only needed for signing the contracts. (#2/ HP)*

All three managers responsible on the HP part of the cooperation are FMI graduates. They claim that they are aware of the ways the courses are carried out, and the difficulties experienced by the faculty. The three managers highly appreciate the profound knowledge, experience, and the ambition of the two FMI professors which offer their student new opportunities. They assume that much more could have been achieved if “there were more people like them...”

The key persons in the FMI team (#4., 5.) are convinced that there is not yet experience with such type of cooperation in Bulgaria. They suppose that in other universities worldwide there are clear mechanisms for institutional support (or at least an internal mechanism). The problem is that every one of the few professors engaged with the cooperation is in charge of many and different related activities which are added to the duties of his main job. They do everything themselves while an institutional intermediary should exist between the university and the industry in order, at least, to check and organize the information (“you would not have to come to me”).

*„In our university everything is burdensome. The big universities are this way – they survive because everything happens slowly and in a complicated manner”. (#4/FMI)*

There are some formal impediments, as for example the legalization and the accounting rules for the donated computer equipment. (The company has to write it off it in order to substitute the computers with new ones. The company can only offer them “for use” with a transfer protocol and not with an official contract.) This hampers both sides and narrows the possibilities for this kind of cooperation.

The recommendations by the university’s and the company’s managers are addressed to the state - to create the conditions for cooperation between the business and the universities; to formulate a vision for the development of the industry (with a priority for the ICT); to adopt new legal rules; to carry out an educational reform; to create a modern milieu for innovative production, etc.

### **Expected versus obtained**

The key DSMT MSc Program players are satisfied with results. They didn’t expect and didn’t plan more than what has been “produced.”

*The level has been raised significantly, the word was spread very quickly and now the demand for this specialty is huge, as we offer something really updated unlike other courses, which rely on obsolete training material more than 10 years ago. (#1/ HP)*

As per the students (#10, 11, 12.), the information “produced” regarding the DSMT MSc Program and the opportunities which it offers is definitely not sufficient. The bachelor program students (#15 and others) are only aware of the HP brand of the computers in their classrooms (they are not aware of the donation regardless of the boards in place with the HP logo at the entrances of the building and the computer halls).

Part of the FMI students know nothing about the HP joint courses, they have only got a general idea.

*It is good that big companies do such a great job for FMI, but it seems as if they have occupied the whole studying space. If someone wants to study another emerging technology without a donor, he/she won't be able to find an appropriate course. (#14/ Undergraduate Msc Program student)*

The students who have already taken the courses confirm that the courses are not promoted enough and they themselves have heard by chance and have chosen the FMI Major Program especially because of the DSMT MSc Program. They are convinced that the applicants for the program would have been much more, had the program been promoted in a better way.

As detrimental to the FMI cooperation with the business, some professors (#6, 8.) see the fact that the students begin work with a very high starting salary and because of that would not opt for teaching. Only a few would go back to teach.

There is some dissatisfaction among other units and positions from both partner parties. It is caused by different and/or higher expectations. Respondent from the Career centre has expressed direct disappointment with the fact that the HP doesn't offer internships (main concern of the CC). They have had higher expectations that HP will grant students with scholarships (even if there were such cases, they had happened without CC knowledge). They are also unhappy with the HP person responsible for the communication, who is avoiding them and treats them as only a "source of experts". On the rare occasions when they have addressed HP with a question or request, they have received a negative response with the only explanation that "the HP corporate policy wouldn't allow." They have also fumbled an attempt for sponsorship of various faculty events and initiatives.

There is certain jealousy indirectly felt in the interviews with SU and FMI professors and managers (#6, 7, 8, 9.) regarding the HP's entire focus on the students. They have expectation to be invited to take part in HP research projects, as well as, to work together with company professionals under operational program projects financed by EU funds. The HP experts who have been included in a given proposal and have declared their participation would have later resigned given the fact that the proposal has been approved.

Professors emphasize on the role of the university to provide academic knowledge. They have some apprehensions that they are not preparing sufficiently the students even for the needs of the businesses, which are already demanding more fundamental knowledge, leadership and "soft" skills.

According to the ranking system under the professional field "Informatics and computer science", the American University in Bulgaria is ranked second after SU/FMI. (See Appendix No 2) Comparing the education of the students from both universities, the Vice Rector summarizes:

*Students are taught there to become managers, while we teach them here to become workers. (#8/ SU)*

## **7. Benefits of the outcomes**

### **Benefits for HP**

- Benefits for HP according to HP

According to PH, the main benefit for them is the possibility to select and recruit students during the training.

*I am less involved in these courses than a user – I am getting people ready to work (#2/ HP)*

Another benefit is the refreshing of the HP staff skills in the same courses.

The HP people do not miss to point out the fact that many of the graduates are holding manager's or other key position in the company.

The benefit of the various new technology teaching (rather than specialized "own" technology) is that they themselves, as well as, their clients work with different technologies.

- Benefits for HP according to FMI/SU

The university representatives' opinion is the same – the main benefit for HP from the business point of view is the direct monitoring for quality selection of students and raising the IT qualification of their experts. In addition, they also point out the use as trainers in the company, staff who have previously been assisting FMI professors. (#4, 8.)

- The benefits for HP according to students

The students, who have completed courses under the program, see as a tangible benefit for HP, the possibility to train their colleagues in the same courses, as the costs for that on an equal footing would otherwise be much higher. (#10, 13.)

The students appreciate the HP high quality technology, programs, and products with which they work and believe that they generate interest in the brand (#12, 13.).

The communication with the young lecturers is very impactful for the future choices the students will be faced with (#10, 11, 13).

### **Benefits for the students**

- According to the students

The access to a high class technology with great potential and speed enables them "for one class hour to learn much more." The undergraduate program students believe such high-level machine configuration systems and servers they won't be able to use elsewhere (#15.)

There are no negative reviews on the courses by the students who have already been trained there. On the contrary, they see the DSMT MSc Program courses as "great courses" with "great teachers", and very convenient schedule.

As particularly important for themselves they point out their possibility to "absorb" the training material during the lectures and need not to read additionally.

Some students define the benefit as "a significant financial relief" for them as they only have to pay the Master's program fee given the fact that, the costs of such courses elsewhere are 4-5 times higher (#10, 13.).

For some students the winners are those who have been already recruited by HP with its attractive collegial and material environment (#10, 13.).

Others (#11.) do not intend to apply for the HP because of its "restrictive policy" regarding the provisions for leaving the company. Most of them have chosen their development path with the most appropriate courses. They are explicit in their belief that with the exception of HP Lustre, the other technologies studied under the DSMT MSc Program have universal application (#10,13.).



- Benefits for students according to HP

On their part, HP point out that apart from the company, students are also winners, as many of them have been recruited and have advanced in their career. They have acquired skills which can only be acquired in high cost courses outside of the university. The most important benefit is that they have managed to prepare the students and to recruit them even before their graduation.

- Benefits for the students according to the professors

Computer scientists in general are recruited immediately upon or even before the graduation (#4,9.).

*The type of job makes a big difference depending on being laborious, boring etc., or highly – qualified, better paid, and with better chances for advancement. (#4/FMI)*

According to the observations of the assistant professor in charge of the DSMT MSc Program, the majority of the students in the Program are there precisely in order to find a better position than their current job. (#5/ FMI.)

#### **Benefits for FMI/SU:**

- According to the professors

The main focus of FMI professors, which are responsible for the cooperation, is on the students. The students are happy with their DSMT MSc Program education. This gives the professors recognition and satisfaction with a job well done, and prestige for the department, the faculty, and the university (#4, 5.). They are fully convinced in the necessity of the educational service which they provide, but are also aware that they wouldn't have succeeded without the support of the business to start the program in time, to update appropriate technology, to find and retain good teachers/practitioners keeping abreast with the new development of the new technology, etc.

Another benefit is the assistance they get to solve any kind of problems they might experience with the equipment.

- Benefits for FMI according to the students

As per students, the material benefits for FMI prevail – high quality technology which even after being depreciated could be used for "simpler tasks." (#11, 14, 15.)

Highly appreciated is also the organization of the training (during the evening) which provides FMI's other students with access to laboratories (during the day) for their exercises and research tasks. (#13, 15.)

Students who have previously studies in Technical University of Sofia are strongly impressed by the different level of education in favour of DSMT MSc Program. (#11, 12.)

- Benefits for FMI according to HP

The HP managers point out the fact that in the public space there is lots of talking about the education being distanced from the business, while FMI proves the opposite "that they are well oriented and assist their students to navigate into the future." (#2/ HP)

#### **Benefits for ICT sector, the economy of the country and the region**

Most of the interviewed for the purposes of the present study are convinced that the Bulgarian IT sector benefits from the high quality IT experts and that the FMI

graduates are among the most demanded experts by the companies. The development of the IT sector and its GDP share is growing and turning into "a magnet for high-tech outsourcing" and investment. Top HP managers have rapidly stated that the business investment in education contributes significantly to "the prosperity and prestige of Bulgaria and that it is the role of the state to position the country as a leading educational centre for young people of the region and the world."<sup>11</sup>

## 8. Outcomes achieved

The way in which the managers and professors interviewed present numerical data in shows that the quantitative indicators are not their priority and the question of "how much" creates difficulties for them. Adequately to the goals set by the cooperation, the achievements are described mostly in qualitative information.

*Over the years the material support has been increased. This is the tangible result which is visible, while the intangible result is related to the second period of the DSMT MSc Program, when many experts were employed by HP and some of them began teaching in the FM, and others in the company. (#4/ FMI)*

- The main FMI goal of the cooperation to provide the highest employability of its graduates has been achieved. This has been made possible thanks to the collaboration with HP through a parallel or sequential implementation of the sub-goals from the point of view of FMI:
  - Created appropriate learning environment with modern tools for teaching
  - Offered a wide range of joint courses on modern technologies
  - Carried out courses with the participation of lecturers with business experience
  - Controlled input access which has impacted the outcome quality
  - Acquired new technological skills by the graduates
  
- The main HP goal of the cooperation to recruit qualified and talented young people trained and enabled to work with the newest technology has been achieved. This has been made possible thanks to the collaboration with FMI through a parallel or sequential implementation of sub-goals from the point of view of HP:
  - Selected suitable MSc Program, within which to develop new technology courses and methodology for teaching
  - Trained FMI professors by highly qualified lecturers invited for the purpose.
  - Trained for HP lecturers to participate directly in the educational process - to assist, teach, train, practically train, as well as to evaluate the success rate of the students.
  - Proposed trainees for recruitment at HP, whom the lecturers have considered as the most appropriate.

---

11

[http://www.klassa.bg/News/Read/article/163605\\_%D0%A1%D0%B0%D1%88%D0%B0%20%D0%91%D0%B5%D0%B7%D1%83%D1%85%D0%B0%D0%BD%D0%BE%D0%B2%D0%B0\\_%20%D0%B4%D0%B8%D1%80%D0%B5%D0%BA%D1%82%D0%BE%D1%80%20%D0%BF%D1%83%D0%B1%0%B3%D0%BE%D1%81%D1%80%D0%BE%D1%87%D0%BD%D0%B0%20%D0%B8%D0%BA%D0%BE%D0%BD%D0%BE%D0%BC%D0%B8%D1%87](http://www.klassa.bg/News/Read/article/163605_%D0%A1%D0%B0%D1%88%D0%B0%20%D0%91%D0%B5%D0%B7%D1%83%D1%85%D0%B0%D0%BD%D0%BE%D0%B2%D0%B0_%20%D0%B4%D0%B8%D1%80%D0%B5%D0%BA%D1%82%D0%BE%D1%80%20%D0%BF%D1%83%D0%B1%0%B3%D0%BE%D1%81%D1%80%D0%BE%D1%87%D0%BD%D0%B0%20%D0%B8%D0%BA%D0%BE%D0%BD%D0%BE%D0%BC%D0%B8%D1%87)

- Approved and recruited are some of the best FMI graduates
- Refreshed qualifications of some of the HP staff in the same courses.

Although incomplete and approximately, some numerical data however give orientations for the quantitative scale of the achievements.

- On average around 100 students have increased their technological skills. Increased is also the number of the students especially the Master's Program students enrolled in courses with HP participation. In 2012 - 2013 over 300 people have been trained – around 100 bachelor students and more than 200 Master's Program students.
- Starting from 3, the number of technology courses has been increased to 15 with HP participation in 2012 - 2013 academic year.
- Starting from 3, the HP lecturers in the joint courses have been increased to about 10 (the number varies in different semesters). Thus, the FMI goal to provide professors with business practical orientation has been achieved. HP also has achieved its goal through direct involvement in the training on the part of its professors to select the best students for the company.
- Refreshed are the skills of the HP staff trained in the same courses (within a frame of 10% quota of the DSMT MSc Program trainees which make up to 10 employees per semester).

Since the beginning of the cooperation, 100-200 graduates have been employed by HP, many of them holding key position.

*It's very hard to tell how many, because the company is very big and people are being employed by different managers, so I can't count them but for sure, the total number should be above 100, could also be above 200 (#1/ HP)*

- After the first semester of this academic year, HP has recruited three exceptionally capable young people suggested by their professors and followed by a complex HP approval procedure. Given that the selection was made among those enrolled in the most complex courses where 15-20 people are trained for masters (and not all of them manage to graduate as per schedule) it could be assumed that these are around 20% of the core target group for the HP graduates
- At the discretion of the faculty Dean, "the problem with the technology for the moment is solved" (with the support of other companies also). The equipment donated by HP together with the computers provides for the total of 55 workspaces. It includes modern workstations of the series HP Z200, widescreen computer monitors and projection technology. The approximate estimation of the donation comes to around EUR 100 000. At the discretion of the faculty management this financial aid is much higher than FMI /University could afford to buy on their own.

## **9. Impact in terms of skills development**

### **New technological skills**

DSMT MSc Program graduates have acquired new technological skills. This is the assessment of the lecturers and the self-assessment of the student themselves.

This has been achieved in the training process of the DSMT MSc Program joint courses. The program goals have been achieved for the students to acquire the following skills:

- practical experience in the development and use of ICT to solve business problems;
- capacity to define problems, analyse alternatives,
- create new approaches, methods, and software tools for the development, implementation, and maintenance of information systems for the business

**These skills have been acquired through the provision of:**

- use of high quality technology in the training process
- access to relevant programs, products, and technologies
- highly qualified professors and certified lecturers with practical orientation
- interactive training
- continuous feedback and adjustment to the students' needs ,

**Improved employability of the FMI graduates**

- As a result of the skills acquired in the DSMT MSc Program, the FMI graduates are better prepared from the business needs point of view.
- The skills acquired are capitalized in high competitiveness and rapid successful professionalization

**Career**

- Virtually all DSMT MSc Program graduates are holding positions at big ICT companies, banks, mobile operators, etc. in accordance to their speciality
- Some of them are already holding manager positions at HP for example. Some of them have started their own business.

**HP effects**

- Thanks to the collaboration with FMI, HP has managed to perform essential part of its university program.
- The HP employees, the experts trained jointly with the IT department experts, are able to begin right away working for HP projects. They do not need additional training before their actual employment. The productivity of these young people is much higher than productivity of many of their own staff.
- Thanks to the collaboration with FMI, the HP staffs refresh their skills in the DSMT MSc Program courses.
- The staffs who have assisted the FMI professors in the courses acquire teaching experience which they can be used later by HP for internal training of the company IT personnel.

**Public recognition**

In 2012 HP was positioned first as a preferred employer among Bulgarian young people.

*In general we are socially responsible with direct actions regarding Public education. This way we are building our name and image. We even increase*

*our presence on the market - our partners recognize us and choose us as a socially responsible company. (#3/HP)*

## **10. Measures and approaches used to assess outcomes and impact of university-business cooperation**

*Frankly speaking, I do not measure outcomes and impacts. In my opinion, any such cooperation happens if there is common interest. When there is interest it makes no sense to measure it - it is either there or it isn't. This is the driving force. We would rather make comments or talk with the HP people. We discuss their problems and our problems and then make decisions as to what steps to undertake in order to minimize the problems. (#4/FMI)*

The main outcomes are related to the DSMT MSc Program which is the focus of the cooperation.

Whether and to what extent the skills are acquired by the students at the end of each semester is measured with a test. The knowledge and the skills of students are assessed by the traditional for the Bulgarian education 6 point scale where a score of 2 denotes poor/ unsatisfactory result. Scoring 3, 4, 5 denote the corresponding fair, good, and very good, while 6 denotes excellent result. Attached to the results of the test is the attendance sheet of the trainee pointing out when and which classes the student has attended.

The quality of training provided is measured by 10 point scale quantitative evaluations which the students give to training material, the teachers, and the way of teaching. Apart from that, the faculty Internet site also provides possibilities for students' feedback. There they can indicate approval or disapproval (with symbols) of the content of the specialty, the course, the teachers etc., and also give their free - form arguments. Considering that this information is based on those who have responded, the lecturers could use it "to see how the land lies."

It is assumed that the relevant data is saved and accumulated regarding numbers of applicants, number accepted, number enrolled, number cancelled, number delayed, number of graduates, number of employees, number of graduated started work after graduation (including at large companies). External evaluations are also important regarding special skills of students as number of successful participation in student competitions, number of positive feedback by employers, etc. in favour of strengthening the position of the faculty.

The problem is that at the department and at the faculty these data are not recorded and grouped in a way to allow for highlighting the results following from the cooperation - for example students opting for courses with HP participation - these courses reach 10-15 out of total of 50 courses from the program curriculum. HP lecturers can also give lectures outside of the DSMT MSc Program.

## **11. Additional aspects**

### **What is the impact of university-business cooperation on the modernisation of the universities involved?**

Thanks to the university-business cooperation the university's data Centre has been re-equipped. Two laboratories have been equipped with modern computers.

The joint work of university professors and business lecturers allows a relatively prompt teaching of the new technologies. In some cases a technology launched a month ago (Microsoft Exchange 2013 for instance) is taught. Such courses are introduced every year.

The teaching of all the eligible courses is adapted to the needs and the comfort of the students who are treated as clients. According to them the program's courses are very well structured, they offer a precise knowledge about the IT technology leaders worldwide which is not proposed by other universities.

The teaching methods are modernized so that the students absorb information and skills during the lectures and the practical work. The trainees have a virtual access to the content of the courses. The requirements are modernized as well – the emphasis is not only on the theoretical knowledge but also on the testing of its practical application.

During their education the students use the latest software and systems licensed for HP.

Those novelties are exclusive for the eligible joint HP-FMI technology courses but this successful model inspires other business partnership of the Faculty too. Due to the growing requests from the students it will probably be reproduced in the future at the scale allowed by the FMI possibilities.

Those graduated from the DSMT MSc Program are ready to start with mastered newest technologies and with front end professions. They obtain positions in the high-tech sectors of the economy and cover the entire range of corporate IT solutions – communication and mobile systems, cloud technologies and others.

### **To what extent does innovation make university business cooperation necessary?**

The opinion of a student who has not attained a HP course is that there is innovativeness in the FMI which comes, however, not from the university itself but from its students and professors. According to him it is enough that the university brings together a lot of clever and capable people with common interests, that it organizes valuable courses and gives opportunity to work with up to date equipment. So the innovative solutions emerge almost spontaneously. Other students, in turn, think that most of the innovations are generated lonely or in small groups. The professors check, supervise, instruct, but their participation is needed essentially for the eventual publication of the innovative result.

*It is certain that innovative products are created but it is difficult to attribute them because they are no more under the control of the university. People gather and create their own company. Even professors innovate separately, without mentioning the university because this is a truly personal product to be sold at the market. (#15, third year student)*

### **To what extent can innovation be said to be the objective of university-business cooperation?**

According to an HP manager the manner the collaboration with the university is carried out is itself a real innovation – intervention of the company in the university's curriculum and a direct access of business professionals to the students.

*Such a partnership has no analogue in Bulgaria and maybe in Europe. We negotiate new courses with the IT Department – this is quite serious. It is not easy to add a new course in a university. (#1/ HP)*

From another side the core of the cooperation is the set of technology courses whose goal is to enable the trainees to work with new technologies rather than to develop creativity. The DSMT MSc Program students are also perfectly aware that the joint HP/FMI courses definitely do not target the innovation.

*Those are technologies of the leaders from the IT industry. The trainee has to familiarize with them, to be tested, to get a certificate... No innovations are made. Things are invented – we have only to learn them. (#12/student, DSMT MSc Program)*

The FMI has organized four international conferences on „Entrepreneurship and Innovations“, where e-business, e-management and technology entrepreneurship have been discussed. HP was among the companies which declined to sponsor those events.

## 12. Conclusions

The HP/SU cooperation focuses on the education process. The key notions describing this endeavour are mutual interest, complementary resources, joint technological courses, direct access, new technological skills, early career advancement.

A small group of motivated university lecturers and of their alumni who had been freshly appointed at HP decides to design a modern educational service. The mission is accomplished. The somewhat practically oriented existing FMI Master Program is enriched with a different teaching methodology and with a different content of the courses on new technologies.

The team coordinated the conceptual project with the policies of their respective institutions. The initiators managed to convince their managers that it is of mutual benefit to invest in a more appropriate teaching of the students, that the proponents know how to do it, and that they are able to offer jointly the expected service. The FMI's objective is to ensure to its graduates a „flying start“ in the IT business where the demand for qualified specialists is constantly growing. HP, in turn, is looking for the best of them with some specific IT skills for its back office activities.

The cooperative interest is packaged in politically correct intentions such as the social responsibility of the company or the opening of the Faculty to the needs of the business. What is more important, however, is that the real interest of the target group – the students – is taken into consideration which is demonstrated by the interviews of those trained in the program representing the core of the cooperation.

One of the partners has traditions, the other one offers innovation.

The University provides physical and virtual space, academic spirit and potential, administrative services. There are the young people with serious theoretical background and firm mind-set. Part of them is business oriented and striving to be as much as possible adequate to the job market requirements. HP provides hardware, software, a vision about the development of the ICT, transfer of practical experience for the graduates' needed skills. Additionally, the training can draw from the intangible resources of the global HP.

A cost-benefit analysis has probably been made about the mutual matching of the existing resources. But even without knowing with certainty the amount of the costs it is clear that the barter of resources embedded in this cooperation saves expenses and brings specific benefits to both parties involved. FMI receives equipment from HP, while HP trains its employees at the FMI. The students acquire skills which outside the university would have been attainable at a much higher price.

The innovative idea of the team is that FMI is proposing a direct access of the HP lecturers to the students, thus shaping the practical skills of those of them that are suitable for the business sector. The joint courses with HP are freely eligible, they are not customized for HP users – the new technologies taught are widely applicable. The graduates can directly apply for certificates, issued by licensing centres.

The approach has been to gradually overcome (even without any institutional backing) barriers of different kind financial, legal, bureaucratic, mental. The driving force was the certainty that the efforts are for the benefit of the students.

The cooperation under scrutiny lacks a wide foundation. It is reduced to one program in one Faculty, carried out by a relatively small team. It has rather the characteristics of an experiment. The HP-SU cooperation is not publicized. Many people from different level at the University and even at the FMI are completely unaware about it. The interviewed students from the program themselves have learned about those valuable courses by chance. The understanding of the team is that it is not their job to promote the cooperation, that those students who are interested ultimately find their way and that there is no rationale to attract a greater number as there is not enough capacity.

It seems strange enough that in the context of a deficit of IT specialists which are prepared by the Faculty, in the presence of a successful experiment and with a wide open niche, the resources devoted in Bulgaria to similar endeavours are so scarce. Thanks to the cooperation with HP, FMI is still the only Faculty offering such a form of training in the country.

The outcomes achieved result in qualitative improvements – more sophisticated skills in working with the latest information and communication technologies; high chances for early career advancement in leading IT companies. FMI alumni usually find a job while they are still studying, they can often choose among several positions, and are generally preferred over alumni of other institutions in the ICT sector.

If the cooperation is oriented towards qualitative results, then the extremely positive assessment by the target group is the synthetic indicator about the efforts invested by the partners and about the quality of the service provided. The future professional achievements by the graduates will be another test of the drivers' success in pushing the undertaking in the right direction.



---

## Abbreviations

HP/SU cooperation	Cooperation between Hewlett-Packard and Sofia University
HP or HP GDC	Hewlett-Packard Global Delivery Centre Bulgaria
SU	Sofia University
FMI	Faculty of Mathematics and Informatics
CC	Career Centre
ICT	Information and communications technology
HR	Human Resource
DSMT MSc Program	"Distributed Systems and Mobile Technologies" Master's Program
TU	Technical University of Sofia

## Appendix No 1

### Cooperation Agreement

SU (through its Career Center) is bound to:

1. Provide HP necessary information for the educational programs at the University and the acquired qualifications by the students.
2. Promote and organize the distribution of information materials provided by HP about internships and jobs for students and alumni of the University.
3. Assist and organize the advising of students and alumni of the University on job offers and training provided by HP.
4. Provide opportunities for participation HP in projects, programs and competitions of the Center for Career Development at Sofia University.
5. Assist in the establishment of contacts between HP and educational programs at the Sofia University.
6. Publish (on its website and internal university media) information about joint initiatives with HP.
7. Organize and conduct presentations, seminars and training, career days and other events with the participation of HP and other employers.
8. Include HP in the existing database of employers partnering with the University.

The responsibilities of HP are to:

1. Provide the University (through the Career Center) with information about opportunities for internships and gain of practical and social skills by students and alumni who can be held in HP.
3. Provides conditions for internships of students.
4. Select staff officers to organize and control the internships of the students.
5. HP shall issue a certificate for the traineeship of the students.
6. Takes his best endeavor to offer an opportunity to fill vacancies by the successful trainees after evaluating their activity and in case of a suitable vacancy.

7. Provide the Career Center with an annual report on the graduated trainees from the University.
8. Participate in joint educational projects, programs and competitions with the University.

## Appendix No 2

Professional field: **INFORMATICS AND COMPUTER SCIENCE**

	Sofia University	American University BG	Average for 11 Universities
<b>«Teaching and Learning»</b>			<b>25%</b>
Accreditation assessment grade	9,24	8.68	15.% (60%)
Theoretical knowledge	7,45	8.73	0.50% (2%)
Level of practical skills acquired	5,17	7.35	0.75% (3%)
Participation in internships	1,00	0	0.50% (2%)
Teaching	7,14	9.08	0.50% (2%)
Student assessment	6,90	9	0.50% (2%)
Student load	29,91	28.67	0.50% (2%)
Exclusive full-time academic staff	90,13	86.96	2.50% (10%)
International mobility	18,86	197.53	0.75% (3%)
Bachelor level majors	4,00	2	1.00% (4%)
Master level majors	20,00	0	1.25% (5%)
Regulated majors	0,00	0	1.25% (5%)
<b>«Science and research»</b>			<b>20%</b>
University citation index	27,00	3	0.20% (1%)
Citation index by scientific area	5,00	1	3.00% (15%)
Citation index by scientific area, excluding self-citations	4,00	0	6.00% (30%)
Number of citations per paper	0,32	0	0.60% (3%)
Papers with at least one citation	46,00	0	2.00% (10%)
Articles in scientific journals	167,00	2	1.00% (5%)
Student involvement in science and research	17,05	66.67	1.00% (5%)
Total funds for science and research per student	573,11	971.49	1.00% (5%)
Funds attracted for science and research per student	529,91	971.49	1.00% (5%)
PhD programs in the professional field	1,00	0	2.00% (10%)
PhD programs in the university	120,00	0	0.20% (1%)
Doctoral-to-undergraduate and graduate students ratio	1,83	0	2.00% (10%)

<b>«Teaching and learning environment»</b>			<b>5%</b>
Assessment of material resources and infrastructure	7,69	9.39	0.50% (10%)
Stock in trade	61,90	669.68	0.75% (15%)
Equipment	968,16	424.20	1.25% (25%)
Class schedule	6,93	7.87	0.25% (5%)
Library stock per student	101,39	81.56	0.50% (10%)
Library stock assessment	6,99	9.03	0.25% (5%)
Rate of library stock use	15,88	12.93	0.25% (5%)
Availability of information resources	13,00	29.00	0.75% (15%)
Teaching premises per student	1,29	13.65	0.50% (10%)
<b>«Welfare and administrative services»</b>			<b>5%</b>
Scholarships	512,03	5358.02	1.50% (30%)
Student housing	30,17	63.84	1.75% (35%)
Satisfaction with social and living conditions	6,77	8.95	0.75% (15%)
Assessment of administrative services	6,44	8.64	0.50% (10%)
Career development support	6,65	8.62	0.50% (10%)
«Prestige »			10.00%
Secondary education diploma GPA	5,69	5.75	4.50% (45%)
Prestige among students	50,20	3.80	3.00% (30%)
First preference	82,17	80.00	1.00% (10%)
Foreign students	1,12	55.56	1.50% (15%)
<b>«Career and relevance to labour market»</b>			<b>35%</b>
Graduates' insurance income	<b>1641,45</b>	<b>1514.01</b>	12.25% (35%)
Unemployment among graduates	<b>0,95</b>	<b>1.25</b>	12.25% (35%)
Applicability of degree acquired	<b>87,26</b>	<b>79.31</b>	7.00% (20%)
Contribution to the social security system	<b>83,73</b>	<b>33.75</b>	3.15% (9%)
Regional importance	<b>44,19</b>	<b>6.67</b>	0.35% (1%)

## Subsea sector case study

Louise Kempton,

Newcastle University

### 1. Introduction to Case

This University-Business collaboration was between Newcastle University, Newcastle College and Subsea North East, a cluster of businesses operating within the Subsea Sector. The collaboration took place over the period 2009-2010 and the key activities were the development of an MSc in Subsea Engineering and Management at Newcastle University, a Foundation degree in Subsea Engineering at Newcastle College, the purchase of subsea equipment to support students in both these courses and awareness raising activity about careers and opportunities within Subsea.

All of this activity enabled a transition of the collaboration from an informal grouping to a more formal grouping with key roles and responsibilities. The collaboration achieved all that it set out to achieve, but more importantly has become a sustainable entity that cooperates on bringing in significant investment to the subsea sector, enhancing the reputation of the region as a world leader in innovation and technological development in subsea. A shining example of this is the recent government backed development of the Neptune Centre, a £7 million collaborative investment for a state of the art facility for the Subsea sector to be located in Newcastle upon Tyne.

The University-Business collaboration, the subject of this case study, emerged out of already well developed relationships between the university and business. The MSc developed in Subsea was modelled on a previous university business collaboration for Pipeline Engineering. The table below provides a summary of the project key information.

Overall budget for the project	£1 803 407
Budget per year	Year 1 = £ 589 444 Year 2= £ 917 473 Year 3 = £ 296 490
Budget in inception year	Year 1 = £ 589 444
Project duration	3 years
Partners involved (please list)	Newcastle University Newcastle College Subsea North East

	Atkins Boreas BEL Valves DUCO Perry Slingsby Wellstream IHC Engineering Business
Contributions by partners and other funders (£'s)	University+ College = £622 425 Industry = £598 500 Single Programme = £ 582, 482
How many members of staff are involved in managing/delivering the collaboration	4 direct posts and an additional 3 posts as in-kind
How many beneficiaries (students etc.)	262 ( <i>estimate</i> )
Who is the audience?	Subsea firms employees and wider students
With which units in each organisation lies the responsibility for the collaboration	Newcastle University Business School Newcastle College school of applied sciences Managing Directors of Businesses

### About the Subsea Industry and the history of Subsea in the North East

Firms in the subsea sector design, engineer, build operate and maintain complex systems including remotely operated vehicles (ROV's) valves, pipelines, controls and other complex machinery, to operate in hostile ocean environments often to produce oil and gas, but also in the telecoms and marine renewable energy arenas. Equipment operates in depths of up to 3,000 metres in highly corrosive environments, for 25 years or more and sometimes has to be deployed in storm force seas at air temperatures below minus 30 degrees centigrade.

The demand for subsea technology worldwide remains very healthy as the search for sources of energy becomes even more challenging. Although the main focus of the UK subsea industry is Northeast Scotland, what is less well known is that Northeast England also has a cluster of firms who are world leaders in their respective fields and key contributors to the region's economy (£1 billion turnover and 10,000 employees) as well as the UK subsea sector (11% of total UK turnover)

There is an increasing demand for subsea engineering graduates globally as reported in the Subsea UK's 2020 Vision published in 2007. There was only a small offering of Masters courses in Subsea Engineering (Cranfield and Robert Gordon University, Aberdeen) This continues to be a key issue that needs addressing.

The 2020 Vision report stated that recruitment difficulties were anticipated amongst businesses for Graduates 46%, Engineers 62%, Project Engineers 61%, Senior Project Engineers 70% and Technical Managers 68%. Businesses in the North East confirmed similar difficulties in recruitment and anticipated difficulties.

## **2. Reasons for this university-business co-operation**

- Early stage activity that contributed to the development of this collaboration
- Existence of small firm clusters in Marine Design and Pipeline Engineering and public sector investment

Since the mid-nineties, in the North East of England there has been an emergence of small specialised firms in marine design and pipeline engineering from closures and relocations. In 1995, it was the closure of Swan Hunter and in 1996 the relocation of the British Gas Engineering research station. These micro clusters found strong public support within North Tyneside Council, where a small specialist Council team supported these firms develop into two collaborative clusters. The public support provided was used to support research and development activity, IT support and promote the cluster in identifying business opportunities and encourage collaborative activity within the cluster. A key area of concern to these clusters was technical skills development and a strong awareness that those employed in the sector were reaching retirement. Later on, businesses within the Pipeline cluster worked very closely with Newcastle University to develop the Pipeline MSc and hence create the model for course development with Industry collaboration.

### **A compelling narrative – the Subsea Story**

More recently, Frank Siedlok began researching the potential for collaboration within the marine sector, and discovered that there were significant businesses emerging in the Subsea Sector that were thriving in the North East. Siedlok saw this emergence as a direct result of the “extinction” of shipbuilding, which generated the conditions for the new sector. One of the interviewees for this case study, described Siedlok as gathering the businesses together, and being able to tell “*a compelling story*” about their sector. At the time many of the businesses were operating individually and did not realise the extent of activity going on in the North East.

### **Key Drivers leading to the University-Business Collaboration**

- Needs of the North East Subsea sector

A cluster of Subsea sector firms already existed in the North East of England and there was the beginning of a solid relationship with Newcastle University. The subsea sector identified a key priority for them as higher level skills and the difficulty in being able to recruit technical staff, they also wanted their engineers to be provided with appropriate continuous professional development. Although there had been a long

term issue in the Oil and gas industry on skills there was no vehicle to do very much about it. The Industrialists also wanted to raise the profile of Subsea, helping to engage with young children through schools. They saw both the short term skills needs and the longer term problems if these issues were not addressed.

The University listened closely to the needs of the firms and started to explore how best the University expertise could benefit the firms. A lack of awareness of the subsea sector in North East England was identified as a key constraint to the development of the industry in the region. As mentioned earlier the pipeline engineering sector had previously worked with Newcastle University to develop a Masters degree in pipeline engineering and the subsea sector was keen to have a similar degree to highlight the subsea expertise in the region.

- *Existing well established relationships between the Subsea Businesses and Academia*

The Industry/University relationships within the Subsea sector were long-standing, one of the Academics had been working closely with businesses within the cluster as part of her long standing research into clusters and regional development. When the opportunity arose to bid for capacity funding, the collaboration could move quickly as the trust and understanding was already well established.

- *Previous research which identified ways in which businesses can work together to promote their industrial sector and co-ordinate skills provision to meet their requirements*

A European and Social Research Council funded project with one of its aims as strengthening links between firms by promoting collaborative working and focused on identifying the routes by which firms can engage with young people and also through which firms can obtain tailored training for their employees. The University Business Collaboration described in this case study, emerged out of this ESRC project.

- *Strategic fit with the need for Higher Education to be more demand led*

The Leitch Review of Skills was an independent review commissioned by the British Government in 2006 to identify the optimal skills mix for 2020. Amongst many other recommendations, the report identified the need for UK's Higher Education and Further Education Institutions to be far more demand led. It stated that employers should be much more engaged in articulating priorities. This high level policy document had filtered into the strategies of funding bodies and institutions were looking at ways in which they could ensure their courses were demand led.<sup>12</sup>

- *Strategic fit with the need for Subsea North East to raise the profile of the sector*

---

<sup>12</sup> <http://www.delni.gov.uk/index/publications/pubs-further-education/the-leitch-review-of-skills.htm>

Subsea North East is the regional advocacy group for North East of England's Subsea Sector. The development of a university/business collaboration which addressed a key issue within the sector was an excellent way to raise the profile of what Subsea North East as a cluster could achieve.

*Regional economic development perspective and funding to invest in collaborative activity*

At the time, One NorthEast the regional development agency for North East England was still in existence, there was a team of sector specialists who were tasked with developing sector strategies. The Subsea Sector straddled both energy and renewables as well as the offshore sector and discussions with Industry highlighted the current and potential skills shortages around technical experts. The RDA had specific funding to invest in regional economic development and designed the Higher Level Skills Capacity Fund to call out to industry and HE and FE institutions to define the key issues that needed investment.

- *A passion and commitment to the sector from both Industrialists and Academics from the top.*

One of the key factors mentioned in several of the interviews with Industrialists and Academics is their own personal passion and commitment to make a difference within the subsea sector and see the industry thrive. This commitment has been a key driver to initiate the collaboration as the Managing Directors of businesses invested a great deal of their personal time and so did the Academics, it also has been a key driver during the delivery stage and post funding. This has ensured that the collaboration has become sustainable and still continues today.

Between the University, Industry and Regional Development Agency, conversations and discussions happened informally to understand how to drive the university business collaboration forward, this high level of commitment meant that all were willing to be flexible, adaptive and responsive to the needs of the collaboration without the constraints that a more formal structure might impose.

- *Serendipity – Chance meetings*

On reflection one of the factors that initiated the University Business Collaboration was a few chance opportunities which enabled a few key people to have some more in-depth conversations that were unframed and with no agenda. For example Fiona Whitehurst, Julia Race and Frank Siedlok were able to have detailed discussions on university/business collaborations on a train journey to Cambridge, Another example is a meeting mix up that led to an hours discussion between an Academic and the Managing Director of one of the key businesses. These were events that were unplanned but played a significant part in cementing relationships and facilitating deeper discussions on what could be achieved.

### **3. The University Business Collaboration - subsea future talent**



Newcastle University led the successful bid to the Regional Development Agency, One North East's Higher Level Skills Capacity Fund to develop a range of subsea specific skills provision in the region. This bid was a collaboration with Newcastle College and Subsea NE and secured funding of £0.582 million towards a project worth £1.8 million, with the remaining amount being funded by contributions from Newcastle University, Newcastle College and firms in the region's subsea industry. The project supported the development of the MSc, but also led to a Foundation Degree in Subsea Technologies at Newcastle College.

Key Activities within the Collaboration

- **Created a new MSc in Subsea Engineering and Management at Newcastle University**

This involved setting up an Academy-Industry committee to design content to meet specific industry need. (e.g. behaviour of fluids at extreme water depths; materials in highly corrosive environments; umbilicals) The MSc is delivered on a full-time and part time basis in "blocks" and modular format (to satisfy CPD requirements and make the provision attractive to employers and employees)

- **Create a new Subsea specific Foundation Degree Programme Pathway**

This involved developing Subsea specific content to complement existing Foundation degree programmes core skills and knowledge programme including maths, science, business, personal professional development and engineering principles and processes. The degree is modularised enabling a blended learning part-time or full-time approach to fit the needs and requirements of subsea companies.

- **Development of a control room to house Subsea specific Plant and Equipment:**

Provision of a Water Injection Christmas tree (modular style) and associated equipment (e.g. umbilical components) and the development of a bespoke control room.

- **Technical Seminars as part of Continuing Professional Development**

A range of technical seminars were developed in collaboration with the Subsea Businesses to showcase cutting edge developments. The Seminars were well attended and received positive feedback

▪

- **Knowledge Based Business Collaborations**

A part of the collaboration involved developing knowledge based business collaborations where students and industry could work together on a project that was required by the business and would prove interesting from an academic perspective too.

- **Work with schools to raise awareness of career opportunities in Subsea**

The project worked in partnership with other organisations to raise awareness amongst children and young people of the opportunities that were available in Subsea Engineering. Examples of this were working with OPITO on Energise Your Future a highly interactive event aimed at 14-19 year olds, it aimed to present the wide range of companies within the Oil and gas sector to showcase careers within the industry and the various entry routes. The collaboration was also involved in the Oceans of Opportunity event, presenting a range of stimulating, interactive activities that brought science and technology learning to life which was targeted at 15-18 year olds. A great deal of time and effort also went into planning for Boom! North East Engineering Show – the event got cancelled but some opportunities to collaborate with schools still came out of this.

- **Communicate clear progression routes**

The project application form stated that the project would provide clear progression routes from Specialist Diploma to Foundation degree into the appropriate Honours and Masters Degrees in Subsea Activities thereby providing a clear “learning ladder”. There were different interpretations about what this in effect meant and this is picked up in lessons learnt.

## **The role of each of the partners within the Collaboration**

- **The University**

The University was the project lead and the organisation that could deliver a level 7 qualification. As project lead the University was responsible for contracting directly with the funding body and ensuring that all the project outputs and milestones were delivered on time and within budget. The University was also responsible for employing the Project Manager, reporting back on performance and submitting project claims. The University was also responsible for designing and developing the MSc in Subsea Engineering and ensuring it was accepted by the University’s academic boards as a formal qualification.

- **The College**

The College was responsible for the design and development of the Subsea Foundation Degree and ensuring that it was approved by the appropriate University within the timeframe of the project. The College was also responsible for developing a control room which would house subsea equipment e.g. the Christmas Tree and Diving Bell. The 26 tonne Tree and the other equipment was located in Plymouth and this involved significant technical planning. The college worked closely with some of the businesses, utilising their expertise to ensure the equipment was delivered and installed safely and that the students were safe when accessing the control room. The college also developed a simulated Remote Operating Vehicle.

- **The Businesses**

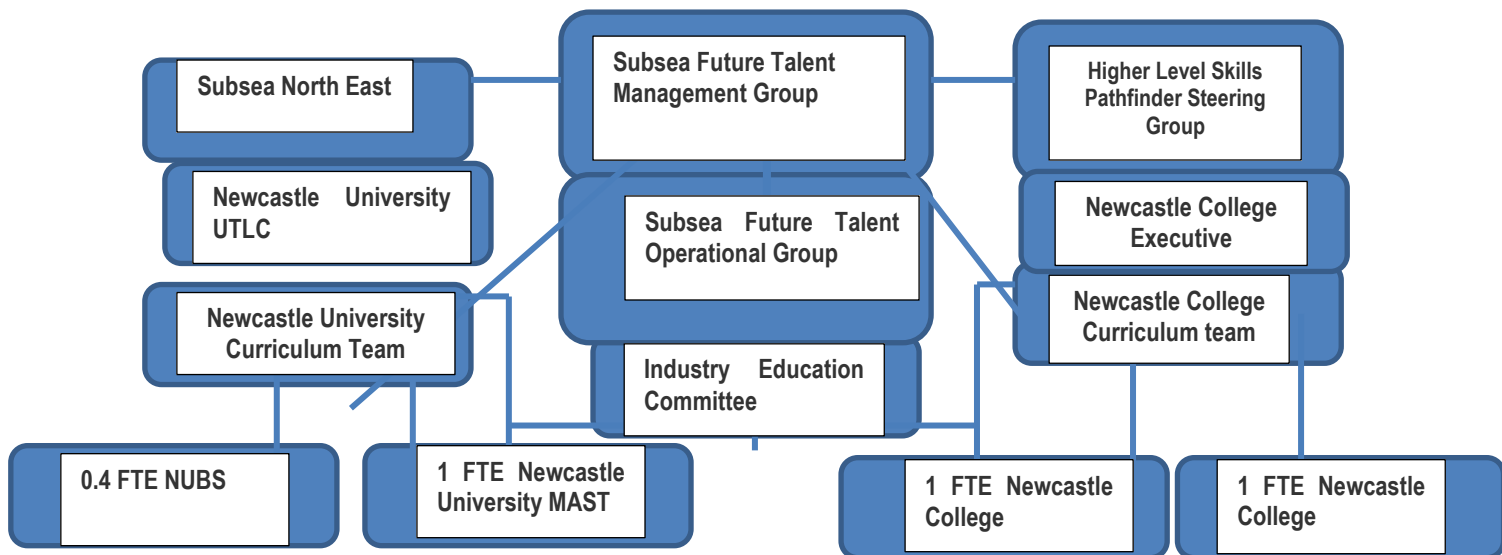
It was the businesses role to engage with the University and the College and articulate what they wanted. The businesses looked at the existing engineering

degrees on offer to students and looked at where the gaps were. The businesses contributed to the technical design and development of the courses. There was an expectation that the businesses involved would utilise the provision once it was developed for their staff.

▪ **Subsea North East**

Subsea North East, had a role in bringing everyone together, keeping businesses engaged and ensuring that the activity that the project was engaged in was promoted regionally and nationally. Their role was to support the collaboration in providing research project opportunities too and really push the industry as an emerging cluster in the North East.

**Figure 1 Management structure of the University Business Collaboration**



**3. Main objectives of this university-business co-operation**

Key aims of the university-business co-operation were:-

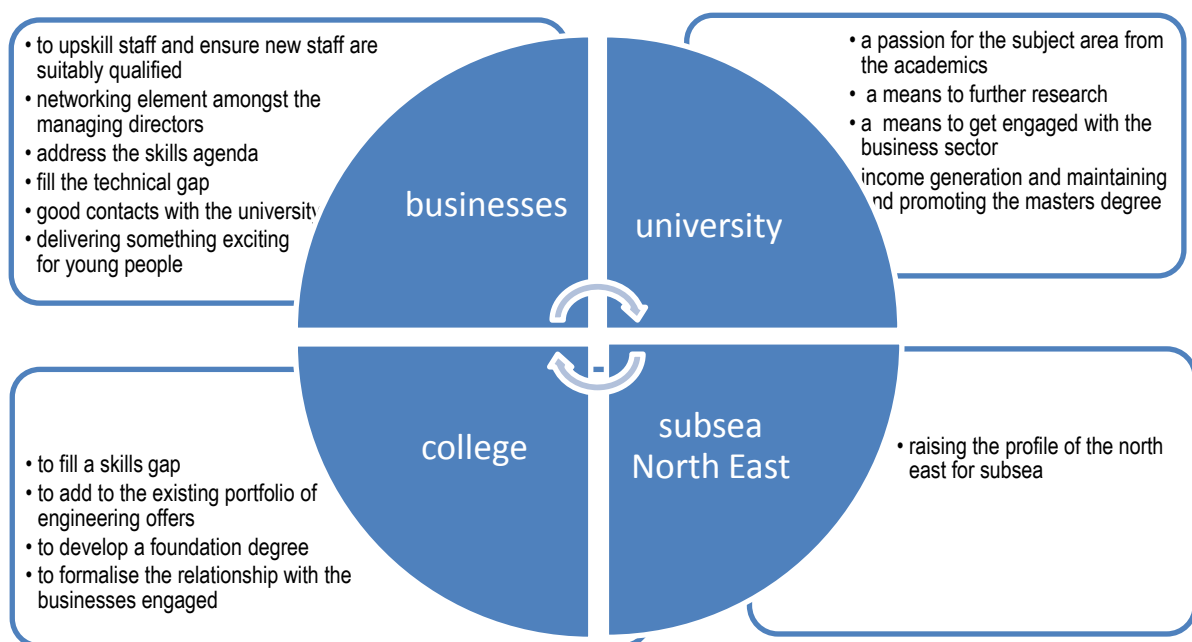
- To provide regional employers in the subsea sector with the high quality specific higher level skills provision that they know they need to sustain and grow their innovative and highly significant world class sector
- To deliver a seamless range of highly attractive subsea related educational opportunities from Level 4 upwards to attract a broad range of learners.
- To speed the development of the nascent yet growing relationship between the subsea sector and the university and college

## Key objectives of the university-business cooperation known as Subsea Talent

- To develop new demand led programmes and stand alone modules to ensure that the Level 4-7 curriculum offering from Newcastle University and Newcastle College matches the needs of the subsea employers in the region (in terms of providing for the upskilling of their existing workforce and attracting new suitably qualified entrants into the industry).
- To meet the differentiated requirements within subsea firms for a curriculum which covers the hardware used in subsea (including umbilicals, ROVS, risers and flexibles as well as important issues such as field layout, flow assurance and installation/maintenance in ever increasing water depths, pressures, corrosive environments and extreme temperatures).
- To ensure that those studying this curriculum forge relationships with regional subsea businesses in order to increase attraction and retention of people with relevant skills for the subsea industry in the region.
- To turn existing goodwill and momentum, built up in the firms and skills providers into sustainable actions by the provision of dedicated resources to drive forward and co-ordinate activities in a timely, responsive and comprehensive manner.

Each of the partners had a view on what the most important objective of the collaboration was as seen from their organisation and this is laid out in the diagram.

**Figure 2 KEY BENEFITS OF THE COLLABORATION FOR EACH OF THE PARTNERS**



#### 4. Monitoring mechanisms and indicators used

This section outlines the key monitoring mechanisms that were used and the key indicators. In project terms these are referred to as the key quantifiable outputs for the project and they are outlined below. Each output had a formal definition within the National Tasking Framework (NTF) as to what had to be monitored and measured. These key outputs are presented below as are the milestones. The University as the lead applicant was expected to produce a quarterly report on progress against both the outputs and the milestones.

Key Outputs for the project	Forecast	Actual
<b>Businesses Supported (NTF4)</b>	40	40
<b>Knowledge based business collaborations (NTF6)</b>	20	22
<b>Total amount levered (NTF5)</b>	£1,103 286	£1,327,574
<b>Skills (NTF6)</b>	262	99 (estimate)

In order to ensure that the University/Business collaboration was delivering to plan project milestones were agreed, and each had target dates set against them. The table below demonstrates the key milestones for the project

Milestones	Target Date
<b>College staff development programme (SDP) designed and implemented</b>	31/12/2008
<b>University based posts recruited and operational</b>	28/02/2009
<b>College project management resources recruited and operational</b>	28/02/2009
<b>Subsea Christmas tree and Umbilical received and situated at Newcastle College</b>	28/02/2009
<b>Orcaflex software installed at Newcastle University</b>	31/03/2009
<b>Subsea simulated control room operational at Newcastle College</b>	30/06/2009
<b>Remaining capital equipment (pipelines, valve and actuator) available at Newcastle University/College</b>	30/06/2009
<b>Industry/College steering group meetings</b>	3 prior to 30/06/2009
<b>Industry/University steering group meetings</b>	6 prior to 30/09/2009
<b>Equipment with other subsea firms</b>	On going
<b>Project Review meetings held</b>	4 per annum for project duration
<b>Foundation Degree and curriculum pathway development completed</b>	31/03/2009
<b>Foundation Degree and curriculum pathway validated</b>	30/06/2009

<b>MSc and other modules approved</b>	31/03/2009
<b>First running of fundamentals of Subsea Engineering module (stand alone element of Master programme)</b>	04/2009
<b>Sustainability plan developed and implemented</b>	31/07/2009
<b>First foundation degree pathway learner cohort enrolled</b>	30/09/2009
<b>Foundation Degree pathway programme initiated</b>	30/09/2009
<b>Dynamometer operational at University</b>	31/03/2010
<b>First enrolments to Subsea MSc</b>	30/09/2009
<b>Second enrolments to Subsea MSc</b>	31/01/2010

Following on from project completion, the MSc course and the Foundation degree are being monitored for student numbers and quality of the course, the student destinations will also be monitored but there are no other monitoring systems in place. The mechanisms described here are the standard monitoring procedures applied for all courses at the College and the University.

## 5. Outputs, results, outcomes and impact

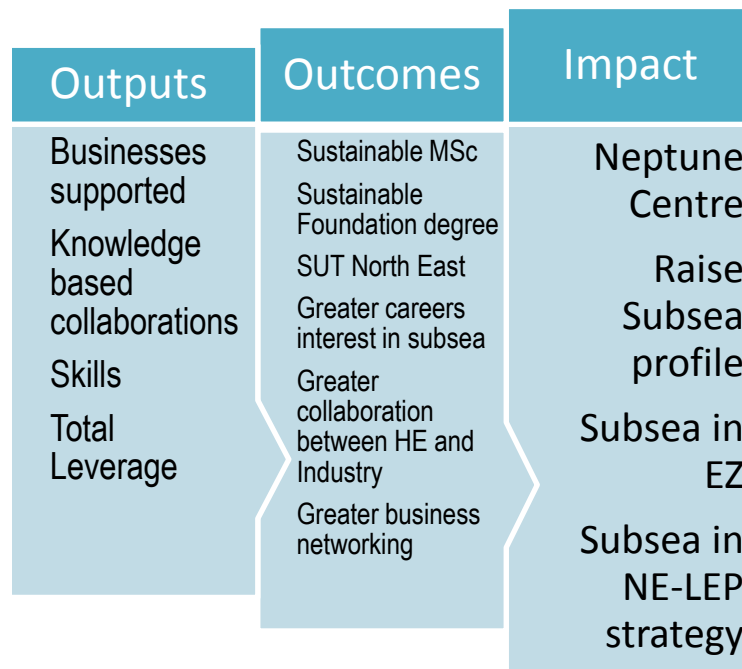
This section looks at what the collaboration achieved, directly and indirectly. It also considers these achievements during and beyond the life of the project. To avoid any confusion around definitions, the case study defines what is meant by outputs, outcome and impact

**Outputs** – This refers to the activity that is directly attributable to the project and is the activity that is counted as part of the project. Outputs are measured within the project and clear evidence will have been provided for these outputs.

**Outcomes/Results** – This refers to activity that can be attributable over the medium term to the project, activity that has happened because of the delivery of the project. It often refers to changes in behaviour or attitudinal changes that have taken place amongst various partners or beneficiaries of the project.

**Impact** – This refers to activity that is partially attributable to the project over a longer period of time. It is not so easy to evidence that an impact would not have taken place if it wasn't for the project, but it is possible to state that the project contributed significantly towards achieving this impact.

The figure below displays the outputs, outcomes/results and impact for the university/business collaboration.



## Outputs

The project had a number of key outputs to deliver, these outputs were defined as part of the National Tasking Framework and were the outputs that Regional Development Agencies used when funding projects. They had specific definitions and required specific evidence.

- **Businesses Supported**

The project delivered 40 business support outputs which were defined as the number of businesses assisted to improve their performance

- **Knowledge Based Collaborations**

The project delivered 20 Knowledge based business collaborations, defined as the number of businesses working with a knowledge based organisation (e.g. university or college)

- **Skills**

The project delivered 262 skills outputs, this was defined as providing 6 hours of training to each individual supported. The training could be modular and split over a number of sessions.

- **Total Leverage**

Another requirement that was defined as an output in the project was the amount of leverage that the project pulled in. The project secured £1, 220 925 of leverage from the Private sector, University and College.

The other three key outputs for the project were as follows:-

- **The creation of a new MSc in Subsea Engineering and Management at Newcastle University**

Academic-industry committee designed content to meet specific industry need (e.g. behaviour of fluids at extreme water depths; materials in highly corrosive environments; umbilicals)

The MSc was delivered on a full time or part time basis in “blocks” and modular format (to satisfy CPD requirements and make the provision attractive to employers and employees) as required by the local industry. The course has involved substantial industry involvement with guest lectures from world renowned industry experts, site visits to emphasise the scale of the industry in the region and industrial projects to ensure that students get the industrial experience so valued by their employers.

- **The creation of a new Subsea specific Foundation Degree Programme Pathway at Newcastle College**

Subsea specific content was developed to complement existing Foundation degree programmes, core skills and knowledge programmes including maths, science, business, personal professional development, engineering principles and processes. The Subsea Foundation degree pathway programme caters for flexible delivery including aspects covered at company premises. The Foundation degree pathway was modularised enabling a blended learning part-time or full time approach to fit the needs and requirements of subsea companies. The design of the programme incorporated work related industrial projects, site visits and the involvement of industry specialists. The Subsea Foundation degree pathway programme provides opportunities to develop workforce up skilling courses and HE APL Framework, and development of functional and transferable skills in communication and personal skills up to Level 5.

- **Provide Subsea Plant and Equipment and development of bespoke control room**

Provision of Water Injection Christmas Tree (modular style) and associated equipment (e.g. umbilical components) has enabled relevant sections within Newcastle College School of Applied Science and Technology e.g. engineering, computing technology and vocational science to contribute an integrated Foundation Degree pathway programme offering. Subsea plant and equipment located within the College will help the region to become recognised as a subsea centre of excellence for skills and educational training.

## **Outcomes and results**

### **Anticipated Outcomes**



The anticipated outcomes of the project were documented in the funding application form and these are listed in more detail in the monitoring and measurement section.

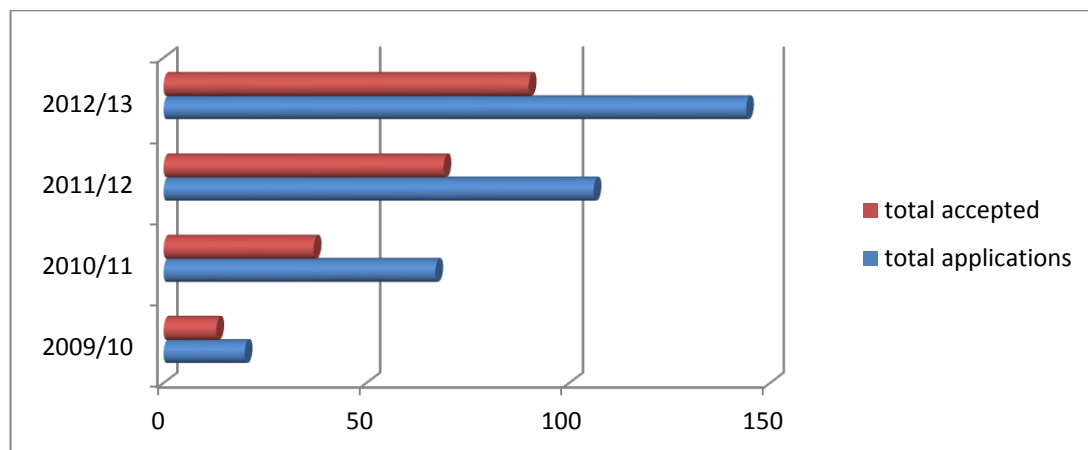
### Perceived Outcomes

These outcomes are the perceived outcomes of the individuals interviewed for the case study.

- **Sustainable and developing MSc in Subsea Engineering**

A key outcome agreed by all the partners was to achieve a sustainable MSc in Subsea Engineering. The collaboration provided an opportunity to develop new modules and new programmes that were based on a clearly identified industry need. Discussions with the local employers confirmed a long term demand for the provision. Businesses involved in the design and development of the course, indicated a willingness to upskill their existing employees by using the new provision.

The chart below shows the number of full-time and part-time student going through the course. It demonstrates that the course continues to attract students and is therefore proving to be sustainable with on-going fee income to support the delivery of these programmes



Source: Quarterly monitoring form for the Higher Level Skills Capacity Fund

There is on-going support from businesses of the MSc, through the delivery of courses as guest lectures, company visits, project opportunities and student placements on a long-term basis. Many subsea businesses have used the MSc for their staff.

- **Sustainable and developing Foundation degree in Subsea Engineering**

The Subsea Engineering foundation degree is continuing to attract students post funding and so has achieved sustainability. The degree has now been incorporated into the standard college qualification /programme offering. The degree is building

a strong reputation in Subsea sector (A large British multinational oil and gas company as expressed an interest in the course)

Businesses have used the foundation degree, and had many apprenticeships go through the course.

- **Development of a control room with subsea technology equipment for students to utilise**

The control room developed as an output within the project, is up and running and continues to be utilised by students, enabling them to apply their theoretical knowledge. Though there is a feeling by both students and businesses that this facility could be utilised more (see lessons learned)

- **Development of a control room with subsea technology equipment for students to utilise**

The engagement with the University has developed on many levels. Businesses are engaging more in research at project level, but are also engaging with the Careers department within the University, participating in mock interviews and so on.

Promotion of the career and education prospects in the subsea industry should also provide demand for the courses/modules from “new” learners.

- **Raising the profile of the Subsea Cluster for business development purposes**

The university business collaboration has contributed to raising the profile of the subsea cluster and the businesses within it, as national and regional press and specialist journals report on the clusters activities. However another outcome is that businesses use it as part of a business development tool. Many of the businesses that are part of the cluster are medium sized businesses operating in a global field, and one of their unique selling points is the fact that they collaborate amongst themselves and with the university, this has worked in their favour to impress their clients.

- **Students benefit from on-going industry involvement in the MSc**

All the MSc students get the opportunity to be exposed to the industry directly, they can see it in operation, they benefit from the technical lectures and they benefit from the Technical Directors of businesses giving them real live examples of issues in the sector. In addition the participation of industry keeps the course fresh and up to date. Another angle to industry participation is that students get more of an informed choice about the types of opportunities within the Subsea industry.

- **Generated increased interest in Subsea as a career choice**

Businesses reported that they had more interest from people thinking about developing a career in Subsea, a learning and development co-ordinator stated she had found more CV's coming through and a larger number of people being proactive about enquiring. The business had in the past struggled to generate that level of interest, even though it had an excellent reputation within the sector.

- **Greater business collaboration at every level within the organisations**

The businesses within the subsea sector are talking to each other at different levels. Many of the operational staff have built long lasting relationships through the collaboration as well as the managing directors and technical people. One interviewee gave the example of calling other businesses up to see if there is scope to take on their staff threatened with redundancy. Businesses commented on beneficial spin-offs from the relationships developed and enjoying meeting with like-minded people.

- **Supported the development of the Society of Underwater Technology in the North East**

One of the key industrialists on the Industry Executive Committee had been tasked with establishing the Society of Underwater Technology in the North East, as a result he was able to quickly make the relevant contacts and get the Society off the ground. The technical seminars that SUT North East provided greatly enhanced the perception of the North East as an important hub of Subsea activity.

- **University and College were invited to participate in National Subsea institutions**

The university was invited to participate in the National Subsea Research Institute and was a contributor with one of the businesses. The college was invited to be part of the National Skills Group for Subsea UK so that Subsea UK could have regular updates on the skills activities that were going on as part of this collaboration.

- **Raising awareness amongst young people of Subsea Engineering**

Businesses were able to work with young children, offering training sessions and work experience. One of the businesses designed model equipment that was interactive to help young people understand what the sector did. The collaboration input into several interactive events raising awareness about careers opportunities in the Subsea sector. (example, Energise Your Future)

- **Winning an award for Collaboration in Higher Skills**

The collaboration won an award in the Celebrating Learning and Skills Success (Class) awards recognising the efforts made in addressing the skills needs of the

region's cluster of subsea technology firms. The collaboration was cited as "an exceptionally broad and innovative example of employer engagement."

## Impacts

- **Enhanced the subsea reputation of the region**

Over the last few years the reputation of the region as a key player within the Subsea Sector has been significantly enhanced. The region has enjoyed significant publicity and profile raising at both a national and regional level. The University Business Collaboration has played its part in ensuring the region is seen as a world class hub for Subsea. There are many international students on the MSc course from Nigeria, Mexico and the Far East.

- **Neptune Centre – University Business Research facility to be based in Newcastle upon Tyne**

In March 2013 the Neptune National Centre for Subsea and Offshore Engineering was announced by the Business Secretary Vince Cable as a key part of the Government's Oil and Gas Strategy. The Centre was hailed as the first of its kind bringing together industry and academia to create a world-class engineering research facility. The site of the centre will be the former Neptune shipyard at Walker Newcastle, the project is a joint venture between Subsea North East, Newcastle University and the Higher Education Funding Council (HEFCE). The Neptune Centre is a £7 million project with £3 million from HEFCE, £2 million from Newcastle University and £2 million from Subsea North East (Private sector leverage)

It was expressed by many of partners, including the Pro-Vice Chancellor of Newcastle University, that the existence of a flourishing collaboration between Higher education and the Subsea businesses played a significant part in enabling the Neptune Centre to be located in the North East, contributory factors include the enhanced reputation of the cluster at a national level, the close working relationships already in existence between industry and academia and the global marketplace that the businesses operate in.

The Neptune Centre is also a good example of how the joint development of an MSc and Foundation degree has also lead to greater collaboration between business and higher education in cutting edge research.

- **NE-LEP Enterprise Zone status has one area cluster focused on Subsea**

One of the North East Local Enterprise Partnership Enterprise Zone sites is focussed specifically on Advanced Manufacturing, Subsea is given a specific mention with Oil and gas and renewables and port related activity. It means that businesses looking to locate their Subsea activity in the region are able to enjoy all the benefits of EZ status. One of the businesses stated that this would not have

happened without the Subsea focus that had been building up over the years, the University Business Collaboration being a key activity within this.

- **NE-LEP Independent Economic Review and development of Innovation Strategy**

Subsea Engineering has featured as a significant sector within the recent Independent North East economic review and one of the Academics within Newcastle University has been invited to contribute to the North East Local Enterprise Partnership’s innovation strategy. This again is partially due to her involvement with the Subsea sector and the University Business Collaboration. It is also helped by the fact that the Chair of Subsea North East is also a Board member with a portfolio for Skills within the North East LEP. These interwoven roles and responsibilities within the region, help to foster the right conditions for a region to specialise in innovation.

### Impact in terms of skills development

It is too early to provide any impacts relating to skills development, the outputs and the outcomes, a sustainable MSC and a sustainable Foundation degree which is on offer part time and in modules have been highlighted in other sections. There are measures that could be put in place to identify potential impacts in terms of skills development are covered in 7.3 below.

## 7. Measures and approaches used to assess outcomes and impact of university-business cooperation in this case

### Forecast outcomes, measures and progress

As part of the project application, each collaboration was expected to submit their forecast outcomes and the approach taken to measure and assess these outcomes. The table below provides this.

Forecast Outcomes	Measures and approaches	Progress
<b>Strengthening and increasing the resources and profile of Subsea North East</b>	New programmes operational and marketed	All project posts appointed. Press coverage of projects and courses . Showcasing of subsea industry at a range of events. Open evenings for MSc and Open day for Foundation degree.
<b>Recognition of the region as</b>	Coverage of new	Press coverage of project,

<b>an area of excellence in Subsea Engineering</b>	provision and relationships in industry publications	showcasing of subsea industry at a range of events
<b>Alignment of the curriculum from Foundation Degree, to Under Graduate and then Post Graduate level for subsea specific skills</b>	New programmes operational and marketed	A group was formed to discuss progression
<b>Continued representation for Newcastle College and Newcastle University on Subsea NE Skills and Resources committee</b>	Attendance at 10 meetings	Complete
<b>Continued representation for Newcastle University on Subsea NE Executive committee</b>	Attendance at 6+ meetings	Complete
<b>Generate specific intelligence about the skills needs of the subsea sector.</b>	Recognition by Sector Skills Councils and existence of robust Labour Market Intelligence and GVA figures	Work done on GVA figures for businesses
<b>Subsea plant and equipment installed and in use at Newcastle College</b>	Subsea Christmas tree and control room situated at Newcastle college	Xmas tree, control room and associated equipment now in situ at Newcastle College.
<b>Increase the capability and capacity of Newcastle University and Newcastle College to meet the higher level skills demands of employers within the key growth sectors identified in the RES</b>	Evidence of best practice dissemination	Best practice dissemination events in Cardiff, Birmingham, Singapore and Newcastle
<b>Subsea specific qualifications available to companies to enable employers to improve the skills of new and existing employees</b>	Programme curriculum completed and validated	FD and MSc including individual modules available.
<b>Availability of a suite of subsea specific skills provision</b>	Availability of curriculum	Curriculum Courses available. publicised

<b>attractive to potential inward investors</b>		internationally via Newcastle University International Office, through individual contacts in Singapore and through UKTI.
---	--	---

During the interviews undertaken for this case study, interviewees identified outcomes that they felt the collaboration had achieved and the table below lists if these can be measured and if not the approach that could be taken to measure them.

### Actual outcomes, measures and progress

<b>Perceived Outcomes</b>	<b>Measures and approaches</b>	<b>Progress</b>
<b>Sustainable and developing MSc in Subsea engineering</b>	Student numbers	Student numbers are good and course is still running
<b>Sustainable and developing Foundation degree in Subsea Engineering</b>	Student numbers	Student numbers are good and course is still running
<b>Development of a control room with subsea technology equipment for students to utilise</b>	Control room developed	Students utilise control room for their courses, but this could have been utilised more.
<b>Raising the profile of the collaboration for business development purposes</b>	Businesses mentioning the collaboration for business development purposes	2 businesses interviewed mention the collaboration in influential settings to enhance the business offering
<b>Students benefit from on-going industry involvement in MSc</b>	Student feedback	Students have commented on how they enjoyed being talked to by people from the industry
<b>Generated increased interest in Subsea as a career choice</b>	Number of CV's and applications to businesses	Some of the businesses interviewed said there was a big difference in the interest pre and post collaboration
<b>Supported the development of the Society of Underwater Technology in the North East</b>	Establishment of SUT	The SUT developed alongside the collaboration and benefitted from the network

<b>Greater business collaboration at every level within the organisation</b>	Businesses commenting on collaborative activity	Businesses comment on the greater levels of engagement
<b>University and college were invited to participate in National Subsea institutions</b>	Invitation	Participated
<b>Raising awareness amongst young people about the Sector</b>	Enquiries from young people	Subsea North East Talent participated in a number of awareness raising events

### Measures that could be used to capture wider outcomes and benefits

It is apparent that it is quite difficult to measure approaches and understand the legacy of the project when the project posts and resources are no longer there. Many of the measures of success have been mainstreamed and fully integrated into the Higher and Further Education Institutions. So for example, the numbers of students on the MSc in Subsea Engineering, the quality of the course and the student feedback are all data that is being monitored as part of the University approach to assessing courses. The same is true within the college, students and employers both provide feedback.

Apart from the courses that were developed, there are no longer term measures or approaches that have been put in place. The interviewees for this case study made several suggestions on what could be measured and different approaches that could be taken. These are outlined in the table below:-

### Approaches and measures to assessing long term impacts

Measures and Approaches	Timeframes
<b>Number of students applying for the course</b>	Short term and on-going
<b>Number of students with a better understanding of subsea</b>	Short term and on-going
<b>Feedback forms from the course</b>	Short term
<b>Country/Region students are coming from</b>	Short term
<b>Reductions in induction process within businesses</b>	Short term
<b>Reduction in travel time for students/employees and impact</b>	Short term
<b>Comparison in numbers registering interest in subsea year on year pre and post collaboration</b>	Short term



<b>Have the businesses continued to grow and be a success?</b>	Short term and on-going
<b>Have the businesses been able to attract a number of businesses from outside the area</b>	Medium to long term
<b>Level of government backing for Subsea in the North East</b>	Medium term
<b>Is the Collaboration still going on</b>	Short term and on-going
<b>Are students coming out of it well rounded (capturing their narratives of the impact)</b>	Medium to long term
<b>Has there been an increase in networking and collaborative ventures as a result?</b>	Short to medium term
<b>What are the employment rates for the students coming out of Subsea courses , how do these compare with average employment rates?</b>	Medium to long term
<b>Has there been a repeat of the Subsea UK 2007 survey about skills needs, is this saying anything different?</b>	Short term and on-going

- **Businesses do not have much of an appetite for monitoring**

Recently the Subsea businesses in the collaboration got together, and considered whether there was any point in continuing the collaborative activity. What was tabled was that the businesses had set out to achieve a certain set of objectives around skills activity and this work was now complete. The overwhelming response from all the Managing Directors participating in the discussion was that the collaboration should continue, as there were other areas to focus on, now. For businesses, regular discussions like this are sometimes all that is required to keep engaged. They are not looking for a set of measures and indicators. One business commented on the fact that businesses do not have much of an appetite for monitoring, the fact that they are participating is evidence enough that they are getting a return. This was confirmed by the Higher Level Skills Development Manager, who said the time sheet requirements for evidencing, in-kind contributions was found extremely onerous by business.

## **8. Innovation and university business co-operation**

Academic and Industry Co-operation is an ideal vehicle for innovation – Utilising the expertise from those working at the forefront of their sector in both institutions can create several opportunities for innovation.

Innovation can be strongly fostered within a teaching environment, i.e. MSc or Foundation degree through project work, work based learning etc.

Businesses have been impressed when they have participated in College Open days, by the innovative products that have been created by students as part of their learning.

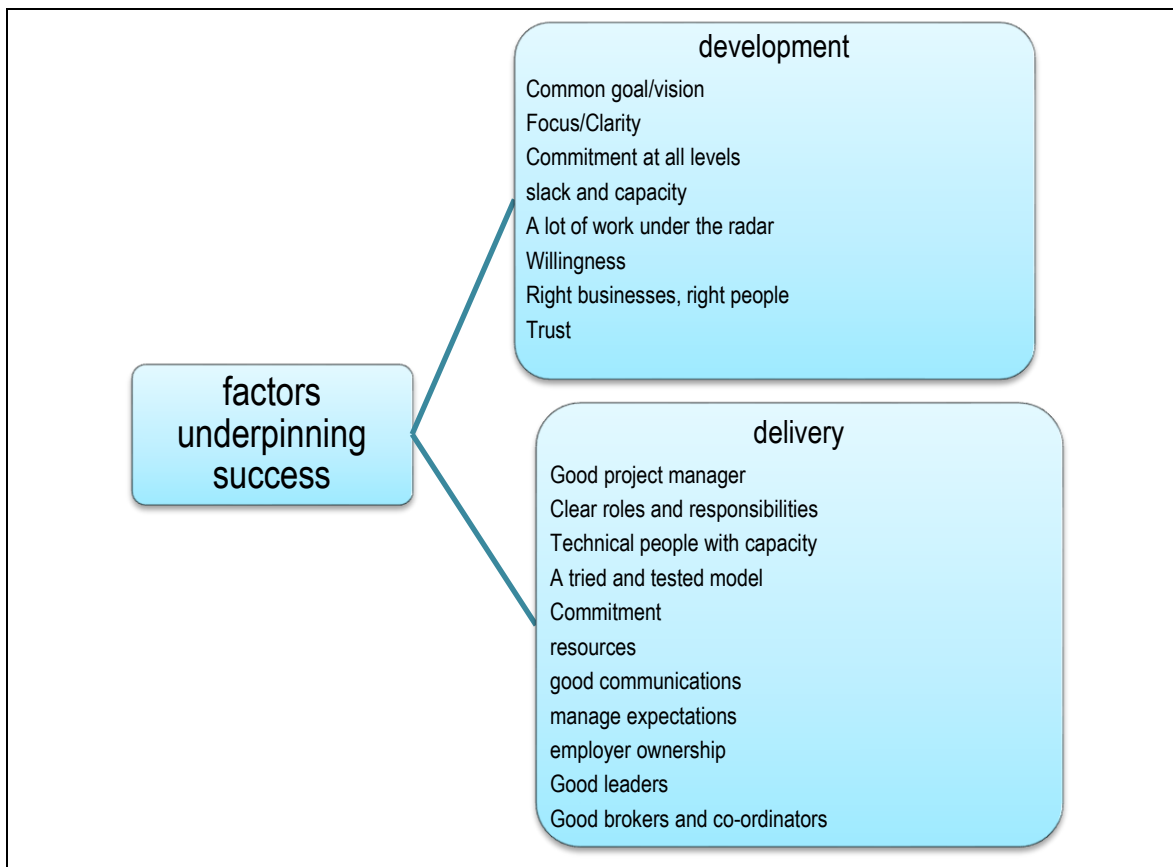
There are frustrations in timeframes though and practicalities. Businesses requirements tend to be focused on the 3 month time frame. An MSc project requirement is for 1 month, which is often too short to produce something of commercial value, and a PhD. requirement is over a year to three years. Knowledge Transfer Partnerships are a positive way of promoting innovation through University Business Collaborations for both partners.

## **9. Conclusions**

The overall collaboration was viewed to be overwhelmingly successful. It has delivered the outputs and the outcomes it set out to deliver bringing benefits to all the participating partners. In many instances the connections and personal relationships that were developed during the collaboration have continued to grow and develop. New collaborations have emerged from this one and led to developments which will have a significant impact on the North East Economy. The Neptune Centre, a £7 million investment is perhaps the best example of this continued university and business collaboration. There are many other smaller scale collaborations that have emerged to strengthen the Subsea Presence in the region, the development of the Society for Underwater Technology is an example of this. The on-going technical input of industry to the MSc means that there are on-going opportunities for informal discussions and through the Subsea Executive group, forums to pursue common objectives and goals.

The following sections take a more detailed look at what has underpinned the success of the collaboration and what needs to be in place for a collaboration to be successful. Whilst the collaboration was viewed to be a success, there were some weaknesses that were pointed out and partners also highlighted areas where the collaboration could have achieved more.

### **Key factors underpinning success**



- **Key factors that underpin success – Development Phase**

References were made in the development phase to the importance of having common objectives and a common goal to work to that would provide the collaboration with a focus. In this collaboration, once the key skills need had been identified the opportunity to access funding provided a key focus. There was a strong emphasis by several of the interviewees about the need to have a mandate for action, and commitment from the highest levels of the collaborating organisations. It was also recognised that much of the success was based on the commitment, drive and passion of the people within the partnership, at various levels, e.g. Industry executive group who were driving the collaboration forward.

One interviewee commented on the collaboration having the right type of businesses within it, ones that were able to provide the technical capacity but also shared the values of doing something for longer term benefits within the industry. From the University and College side there were committed individuals that went beyond their job roles, working as boundary spanners and connectors to ensure that the foundations were laid for strong collaborative activity.

- **Key factors that underpin success – Delivery phase**

During the delivery phase, clarity was again mentioned as important, having clear roles and responsibilities and being able to manage expectations. Having a good project manager was quoted as important, especially someone who was seen to be

working for all the partners not just the project lead, this plays into the issues of trust. An interesting point raised by one of the partners was around the role of trust, where in some instances there was individual trust, but a lack of organisational trust.

Good project management also required someone who was willing to build the relationships with the wider institutional infrastructure, e.g HR, Finance etc. These structures can sometimes be quite prohibitive when establishing a project and can stall the process, it was mentioned that working alongside these established departments and teams was a key factor to ensuring the success of the project.

When it came to the development and design of the Courses, in particular the MSc in Subsea Engineering, several interviewees commented positively on how well the University lead the development of the modules. The University had already designed an MSc in Pipeline Engineering and this model was applied to the MSc in Subsea. The university was able to be very concise about the requirements for an MSc, letting businesses know which parts were flexible and which ones could not be altered and this clear structure was seen as helpful. There were some tensions around course content and disagreements, but inevitably because the participating individuals had come to the table with a genuine commitment to what would be best for the students, agreement was always reached after discussion. Through this process of design and development, businesses developed a strong sense of ownership of the courses. As both the foundation degree and the Masters were being designed in parallel, the communication between both curriculum groups was critical.

- **What more could the collaboration have achieved?**

Whilst all those interviewed felt that the collaboration had been a success and achieved most of what it set out to achieve, there was also a feeling that it could have achieved more, in particular around the alignment of the Foundation Degree and the MSc, utilising the control room at Newcastle college more for the MSc and also for short industry courses. One business felt that the collaboration could have done more to develop industry/university projects and saw the differing timeframes of industry and Masters as problematic in achieving this. There was a view that more could have been done with schools but one of the key obstacles to achieving this had been the school curriculum. The final reflection was one on legacy, and the feeling that more could have been put in place by the collaboration to ensure the connection between the college and the university remained strong.

## **Reflections on strengths and weaknesses and lessons learnt**

- **A compelling narrative**

The initial meeting with the Frank Siedlok was important for the businesses, to hear the story of the Subsea cluster played back to the businesses. Many of the businesses at the time were operating as single entities and did not have much knowledge of what else was going on within the region. Hearing that compelling story as a collective was powerful in triggering off the desire for the businesses to act together to solve their collective needs.

- **A shared vision and common objectives**

Without doubt, having a shared vision and common objectives, enabled the collaboration to stay focused and reach agreement on a range of issues. All technical discussions for example about what was required and needed for Students undertaking the courses were viewed from both a business perspective but also a wider industry requirement and this greatly helped in reaching an agreement where there were tensions.

- **A mandate for action is necessary**

The collaboration had a mandate from the key decision makers within Industry and the University and College. This greatly helped in maintaining the pace of the project. An example of this was where the University was given special dispensation to advertise the MSc prior to Part 2 of the qualification assessment being fully completed, in order to meet the timeframe of the project. Other examples from the Industry side are decisions to offer business resource, and donate equipment to the control room could all be made swiftly with the decision maker at the table.

- **Strong relationships with businesses that pre-exists the collaboration are critical**

This was fundamental to the success of the university business collaboration. One of the Academics had very strong links into the Subsea sector and had been working closely with the businesses over a long period of time. This close working relationship had built up trust and respect and this was able to be harnessed for the University Business collaboration, there was a small concern that this did create a risk to the University as the whole of the Subsea industry/university relationship depended on one Academic.

- **Aligning the “Subsea Offer”**

There were several different opinions expressed about what this “Alignment” actually meant. For the University it was clear that aligning the offer, meant that the University and the College would be able to promote both the foundation degree and the MSc to Industry, for the College there has been a clear expectation that alignment meant presenting a “progression pathway” between the Foundation Degree and the MSc and there were a few businesses that stated this was the expectation. Many interviewees saw the lack of a progression path as a missed opportunity, making investing in a foundation degree a less attractive option for those who might want to move on to a full honours degree.

- **Trust within the collaboration is key and lack of trust might have held the collaboration back**

The relationship between the college and university had not pre dated the collaboration, the two institutions had never worked together and there was a steep learning curve. This learning was done in a background of organisational mistrust, partly fuelled by the very different cultures within the two organisations. There was however individual trust between those developing and co-ordinating the bid at the University end and those driving the project forward from the college end and these individuals played the role of brokers within the partnership. Many of the individuals on both sides have either left or are no longer performing those roles and this partnership has weakened since the closure of the project.

- **Being able to apply a tried and tested model to the MSc development was very constructive**

A model of University Business cooperation for MSc development and design had been developed for the Pipeline in MSc by the same department and the same Academic. This was the model that was used for the Subsea MSc and many businesses commented on the clarity and concise way in which the industry executive committee were able to input into the design of the course. It was felt the pace of progress was just right, and the request for industry input was right too – businesses did not feel the task was onerous, but felt satisfied with their contribution.

- **Seed funding can be very useful as a focus for a collaboration**

For the Subsea Collaboration, seed funding was an important way of providing the partners with a focus to accelerate the pace of activity. It provided the resources and the capacity for the partners to work together effectively.

- **The Control room and Subsea equipment is a useful resource but it needs to be utilised more effectively**

The effort and achievements of transporting the 26 tonne Christmas tree and other subsea equipment to the College and the development of the control room is a credit to the college and the businesses that supported them in this endeavour. There is a general feeling that the equipment has not been fully utilised yet. Students commented that they saw the control room but did not really get a chance to use the equipment. Another Interviewee suggested he would like to see MSc students get a regular opportunity to visit and use the control room. One of the businesses said that more could be made of the control room for shorter courses too.

- **Resources need to be allocated to measure impact and legacy of the project**

The project outputs and key milestones were measured and reported back regularly to the funding body, One North East. Beyond the life of the project only key outputs are measured, and these are the student numbers, destinations and the quality of the courses, the courses have been fully integrated into their respective institutions. The downside of fully integrating the courses however, is that there are no resources to measure the full impact and legacy of this project. There are many more potential outcomes that could be considered and these were put forward in section 8.

- **Collaboration is a powerful tool to provide solutions for local communities and the local economy**

The partnership between the College and the University was seen by one interviewee as a powerful tool to provide solutions for the local economy. The college works very closely with disadvantaged communities in the local area, and supports many students from these communities access higher education.

## 10. Additional information

### Desk research with secondary material

Author and Publisher if relevant	Title
Dr Fiona Whitehurst, Dr Frank Siedlok and Dr Julia Race International Small Business Journal, 2008	Reach-In and Reach-out: The Story of the MSc in Pipeline Engineering at Newcastle University
David Charles, Fiona White Hurst and Julia Race - End of Award Report form for the Economic and Social Research Council	Exploiting the potential of the subsea energy cluster in the North East of England: promoting collaborative working to address the skills and recruitment gap
Sophie Brettell	Higher Level Skills Capacity Building Aligned to the needs of priority sectors – State 2 Application form to One North East
Dr Fiona Whitehurst, Dr Catherine Hodgson	When Two (or Three or Four) Worlds Collide? The case of a collaboration involving further education, higher education and industry
	Background to University Business Collaboration
Internal document by Dr Fiona Whitehurst	Project Manager's Quarterly Report for the period 1 April to 30 June

	2010 for Subsea Future Talent
Louise Kempton	University Business Collaboration (Draft)
Newcastle University Press Office	£7 million extreme engineering centre announced (about Neptune Centre)
<a href="http://www.nofenergy.co.uk/energy-industry/oil-and-gas/subsea-north-east.html">http://www.nofenergy.co.uk/energy-industry/oil-and-gas/subsea-north-east.html</a>	About the Subsea Industry in the North East
<a href="http://www.thejournal.co.uk/business/business-news/regional-awards-celebrate-subsea-collaboration-4459421">http://www.thejournal.co.uk/business/business-news/regional-awards-celebrate-subsea-collaboration-4459421</a>	CLASS Awards



## HOW TO OBTAIN EU PUBLICATIONS

### Free publications:

- one copy:  
via EU Bookshop (<http://bookshop.europa.eu>);
- more than one copy or posters/maps:  
from the European Union's representations  
([http://ec.europa.eu/represent\\_en.htm](http://ec.europa.eu/represent_en.htm));  
from the delegations in non-EU countries  
([http://eeas.europa.eu/delegations/index\\_en.htm](http://eeas.europa.eu/delegations/index_en.htm));  
by contacting the Europe Direct service  
([http://europa.eu/europedirect/index\\_en.htm](http://europa.eu/europedirect/index_en.htm)) or  
calling 00 800 6 7 8 9 10 11 (freephone number from anywhere in the EU  
(\*).

(\*) The information given is free, as are most calls (though some operators, phone boxes or hotels may charge you).

### Priced publications:

- via EU Bookshop (<http://bookshop.europa.eu>).

### Priced subscriptions:

- via one of the sales agents of the Publications Office of the European Union  
([http://publications.europa.eu/others/agents/index\\_en.htm](http://publications.europa.eu/others/agents/index_en.htm)).

