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From University to Industry Standards

The Role of the Universities in Technology Competition

SELMANOVIC SANIN
STANICIC ROKO
ZEKIC SANJIN

Department of Applied Information Technology
IT UNIVERSITY OF GÖTEBORG
GÖTEBORG UNIVERSITY AND CHALMERS UNIVERSITY OF TECHNOLOGY
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EXECUTIVE SUMMARY

With a dramatically increased demand from technology and software industries for higher competence, university-industry cooperation is becoming an increasingly important subject. This cooperation has previously been shown to be for advantage of the industries as well as a suitable tactics to in early stage recruit students.

This project has investigated the relationship and cooperation between universities and industries trough exploratory research (case studies) and comprehensive interviews with relevant contacts at different IT companies and IT University of Göteborg. From the information collected from these interviews, we´ll examine and conclude what makes this cooperation beneficial for both parties as well as the issues that arose. Based on these interview results, as well as the public access material such as web page, reports and other written material available, recommendation for industries as well as universities to improve their cooperation will be presented.

Furthermore it is suggested that this study should be seen as a starting point for other researchers that seek to explore ways that the universities and industries may benefit from each other.

Concerning these recommendations of investigated practices and case studies, this document identifies a range of actions to enhance the relationship between universities and industries as well as identify a number of examples of good practice which universities and industries may wish to consider in their cooperation planning.

The main conclusions drawn from this research are:

- There is an increasing will on the part of the universities and the ITC for closer relationships that go to the heart of the contribution the university can make via it´s teaching, researching, leadership and other strengths.

- ITUs can make a far more substantial contribution to the IT development needs and viability to industries beyond that of being a simple employer and local purchaser.

- There are numerous research analyses and empirical evidence of good practice in a number of universities around the world in terms of their competence connections with industry; but

- There are also a number of impediments at university and industry level which are holding back the strengthening of the relation between them.

- The ITUs management is consisted mostly of traditionalists that are afraid of exposing the universities too much and that the market could take over.

- The ITUs are offering a poor variety of courses in their bachelor programs and the students end up knowing technologies that are irrelevant or unattractive.

Keywords University-industry cooperation, technology competition, competence building

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INTRODUCTION

This chapter will give an introduction to the bachelor thesis together with background information to give a better understanding of the focal point of view.

BACKGROUND

Universities lie at the heart of successful, leading companies around the world (The Role of Universities Today: Critical Partners in Economic Development and Global Competitiveness, 2006). The role of world most leading universities in scientific knowledge, discovering breakthrough ideas, fostering innovations, seeding new companies and creating jobs has became important than ever. This has lead to a dramatically increased level of research collaboration between industry and universities over the past decade (Turpin 1999; Siegel et al 2001; Poyago-Theotoky et al 2002). Today companies see universities as source and opportunity to in early stage recruit students for the advantage of the company. These since universities today encompass much more than just education and basic research like they traditionally did.

There are a number of broad reasons why in recent years in the role of universities in contributing to the technology competitiveness of the industries has become more important.

One is the dissemination of knowledge and ideas by way of student education, collaborations with industry, and through a variety of virtual-world mechanisms such as online training and e-learning, that universities today have broader contribution to the industries and companies, their economy and their own prosperity and quality of life. This essential contribution and strong partnership that universities provide to the leading technology companies with a competitive advantage through skilled students has been realized by the business leaders in the information technology industry. This has lead to a higher initiative to integrate the industry into the universities to gain interests. Leading companies are giving away free software and hardware to the universities in order to achieve this. The fact that universities has big impact and has a growing role they play in has been supported by empirical evidence and also the numerous research analyses such as above mentioned 'The Role of Universities Today' and impact studies that have been made.

PURPOSE

The purpose of this document is to emphasize the benefits of optimized university-industry cooperation. This work is meant to open the eyes of the ITC executives together with the ITU leaders and making those two parties collaborate more tightly. Furthermore, there will be elaboration and presentation of how the value of attractiveness of students rises because of this initiative, together with understandings on what tactics are used by the industries to gain this kind of interest.

When thinking about this topic, one should start with the thought of a software engineering student coming out of university with several certifications in the most wanted technology. To be able to reach that goal, we need the companies to provide the universities with software, hardware and support.

A prerequisite for that would be high academic initiatives from the industry and open-minded faculty leaders.

SCOPE

The predominant focus of this thesis will be on analysis of university-industry integration. Also the focus in this thesis will be to highlight and present the role that universities play in the technology competition within the technology and software industries. This will be done through various methods of data collection such as interviews with teachers at ITUG that are already involved in this subject as well as different technology companies. They will help us to present an understanding and study of the importance of the integration between industries and universities and further to present a general study of the methods used from the industries to make them more attractive within the universities. In other words, to see how the contribution of their technologies, different models and organizational processes to the universities raises the attractiveness of them.

RESEARCH QUESTIONS AND HYPOTHESIS

In order to create a discussion, where the main focus will be to address the importance of universities in the industrial technology competition, as well as to discuss what is stated in the purpose section, research questions will be formulated.

These questions will be based on the background and purpose of this thesis and is formulated as follows:

1. **How to encourage university-industry cooperation?**

   - ***Does the ITUG practice the integration of market relevant technologies and technology companies?***

2. **How to improve university-industry cooperation relations?**

   - ***Should all IT-related universities have a separate department for handling university-industry relations?***

   - ***Who should take the responsibility to start such an initiative?***

Hypothesis 1

Students who are exposed to the latest technology will more likely be employed.

Hypothesis 2

Faculties gain positive publicity and valuable funding through collaboration with relevant companies.

Hypothesis 3

There is a need for best practice to establish and maintain university- industry relations.

DOCUMENT OUTLINE

This document is structured as follows:

It is initiated with introduction section, which gives a brief overview of the subject and theme to be researched. The introduction presents the background, the purpose of this thesis and the problem domain as well as the scope and the definition of the research question.

Section two provides with a description of the research approach and methodology used in this thesis, together with a research design. This section will also present the method and data collection as well as the literature review.

In section three, an analysis of the result gathered from the interviews and literature will be presented. This section is divided into two parts. First part of the section will focus on the results from the literature where the second part will summarize the results gathered from the interviews with different stakeholders.

Section four focuses on the discussion where different case studies and hypothesis are be given based on the material conducted from the interviews. This is therefore limited to the extent that only three companies and two lecturers where interviewed.

Section five explores the different steps that universities and industries need to take to improve their relations with each other, such as agreeing on the best practices as well as optimizing the education material.

RESEARCH APPROACH AND METHODOLOGY

This chapter will provide an overview of the research approach and methodology used.

RESEARCH APPROACH

Based on the problem structure which in this case are unstructured researches tend to apply an exploratory research design. This means that if the research problem is hard to grasp, an exploratory research design is required. This design incorporates the collection of data from which a lead is trying to be identified. The more data, especially qualitative data, is gathered the brighter the light at the end of the tunnel gets. Furthermore the research design is very dependent on the type of research method, which in this case is the case study. A case study involves an extensive and an in depth analysis of data gathered in order to report the results acquired throughout the research. The results reflect a neutral unaffected summary of the work performed.

RESEARCH DESIGN

An exploratory research process commenced this bachelor thesis while several case studies were performed. Logically this revealed several facts and insights of the topic of investigation and increased the body of knowledge on which the further progress of this work is dependent. To be precise several interviews with different stakeholders have been performed in order to get on sight information, which are relevant for the development of this thesis. Furthermore literature of relevance for this thesis has been reviewed and the outcome has been findings which fortify our hypothesis and lead to a conclusion which may be used by software engineering companies and also universities with focus on IT. The findings positively affected the drive of this project as they revealed that research and analysis of this topic performed from our perspective is highly valuable for universities with focus on IT and software engineering firms, which try to or already have established university-industry cooperation.

METHOD AND DATACOLLECTION

The process of selecting the appropriate method for collecting data about the collaboration between universities and industry was extensive, narrowing the choice to three different methods:

1. Collective case study, one real case at the ITUG and two case studies from literature:

a. *The regional role of universities in technology transfer and economic development* by Chrys S. Gunasekara; and

b. *The Role of Universities Today: Critical Partners in Economic Development and Global Competitiveness* by ICF International.

2. Meetings; and

3. Interviews with the stakeholders from the real case.

The data collected will be used to create a detailed description of the case, formulate the main issues as well as it will provide the basis for the researcher's interpretation about the case.

When multiple cases are chosen, a typical format is to provide a detailed description of each case and themes within the case (called within-case analysis), followed by a thematic analysis across the cases (called a cross-case analysis), as well as assertions or an interpretation of the meaning of the case. In the final stage, the researcher reports the "lessons learned" from the case (Lincoln and Guba, 1985).

The type of data collected will vary between qualitative and quantitative. Qualitative data will regard the information about the different ways of cooperation between companies and universities as well as the advantages and disadvantages of that cooperation. On the other hand, the quantitative data will present the financial benefit of the collaboration for the universities as for the companies.

A lot of involvement from the stakeholders will be needed in order to validate the research findings from this paper. Let us say that a software engineering company contacts a university and decides to offer free education material and hardware for studying their technologies. The university will see the results immediately through increasing growth of students applying to the programs and courses containing the materials that the company offered. The company, on the other side, will first see the results when these students are out of the school benches.

RESULT

This section presents an analysis of the results gathered from the literature as well as the interviews with different stakeholders.

LITERATURE REVIEW

Interrelations between universities and industry are considered as an important topic for further research, which is proved by numbers of publications addressing the matter. This research will contribute to the literature by highlighting the importance of the university-industry cooperation.

One of the case studies from the literature used was Chrys S. Gunasekara's *the regional role of universities in technology transfer and economic development*. This study was focused on the role of universities in the development of regional innovation systems while most of the studies on the topic concentrated on of institutional analysis of university-industry technology transfer. Several funds in the European Union (Cohesion Fund, European Regional Development Fund and Structural Fund) have the duty of improving regional competitiveness. The funds have highlighted the importance of regional partnerships between public sector, business, **higher and further education** and business support organizations.

The other case study used was Inner City Fund's (ICF) community development publication *The Role of Universities Today: Critical Partners in Economic Development and Global Competitiveness.* ICF is an international company that delivers consulting services and technology solutions to government and commercial clients. In this case, universities are presented as key role players in educating and training skilled workers in high technology and innovation. Universities are considered to be the "***primary drivers*** *of successful regional economies today and are predicted to be the drivers of the global economy well into the future"* (ICF Social Programs & Community Development Publications, 2006).

Compared to these two researches, our research has equal purpose, putting accent on the involvement of the higher education organizations in the industry. It differs, at the same time, by providing more specific and concrete evidence in the real case than the above-mentioned researches. The research findings and contributions in this paper will be significant due to the predictions by several researches that the university-industry collaboration is the key to the future of global economy. The main reason why articles were used and not books lies in the fact that there were not any books found written on this subject.

INTERVIEW REVIEW

This section will present the outcome of the interviews with university personnel and employees at IBM and Sun that have been held throughout our research process. The questions and associated answers will be presented in a synthesized manner to reflect the results efficiently.

Our interviewees have been carefully selected among several alternatives. They have been and are, involved in academic initiatives and deal with major tasks related to industry relations.

The three people involved on the university side were Mr. Bill Sullivan and Mr. Björn Olsson, lecturers at the ITUG, as well as Mr. Kalevi Pessi, head of the IT Management department at the ITUG. All of these people have had exposure to the industry world and are now representing the driving force behind industry relations at the ITUG.

Representing IBM was Mr. Anders Radlund, Independent Software Vendors (ISV) Manager for the Nordic region, taking care of academic relations as well as relations with application developers for the IBM POWER Platforms.

From Sun Microsystems there was Mr. Kent Åberg, business development manager for Central and Northern Europe, also in charge of research and relations with higher education for the mentioned regions. The contact at Microsoft was too busy to answer our questions or our calls.

The questions for the industry stakeholders were:

Q1. What are the different ways you contribute to your academic initiatives?

Through their initiative IBM is assisting universities to connect with local System i business community and also to influence business community to collaborate with universities through student projects, internships and considering qualified graduates for jobs.

Sun Microsystems contributes by providing products with a good price tag, free software and now they are also going to open source all of their software. This was different many years ago when most of the companies charged a lot both for software and hardware as well. But Sun thinks that it´s more appropriate to let customers try out, test and verify the software before they spend any money on it. This way the customers first see if this software suits them, and if it does, they come back to buy support contracts.

Q2. What year did your company's first cooperation with universities begin?

IBM was running a program called Partners in Education from the beginning of year 2000. The program was replaced with the Academic Initiative in 2003. Relations with schools and universities date way before these programs. Sun's cooperation with universities started as early as 1982, the year the company was founded by four students at the Stanford University.

Q3. How many universities does your company cooperate with?

In the Nordic region IBM has active academic initiatives with 5-10 universities at the moment. As for the rest of the world, there are numerous faculties the IBM supports, most successfully in developing countries such as Brazil, Russia, India and China.
Sun's initiative gives students at more than 3000 institutions around the world the opportunity to specialize in their technologies.

Q4. Who does usually initiate the partnership, your company or the university?

At IBM, the partnerships are initialized mostly by networking with contacts like ex-students now working at IBM or for some of their business partners. Sometimes it happens through *cold calls* or the schools contact IBM directly asking for partnership.

In Sun's case it depends, the company does its best to announce, publish and make some PR around what they have to offer and then in some cases researchers call and ask for specific information.

In many cases the contacts are made at conferences when researchers present their papers. Actually, one of Sun's chief architects was hired after he presented his paper at a conference in Boston.

Q5. What were the first steps when you were enrolling the academic initiatives?

When IBM enrolls the initiative the first steps are usually meetings with the university representatives, presentations of the program and discussions on the special requirements from the university.

The challenge facing Sun Microsystems is to get the universities aware of their initiative and the benefits from it. Getting attention from the customers is a challenge to any company. It is difficult because Sun offers the courses, software and certifications for free and the universities are not used to that. Also,

people are mostly used to one type of platform and not even considering trying a different one. Once the awareness is gained, the universities sign up and follow the directives on the website.

Q6. What are the goals and objectives you have with these relationships?

IBM's main goal is to increase the number of candidates with POWER Platforms skills on the market. That would increase the sales and the popularity of the system on the long run.

The interest that Sun has of these partnerships is mostly that the students gain knowledge and become ambassadors of their technologies.

Q7. Has the cooperation raised any issues?

Yes, in the case with ITUG and IBM there were issues with implementation time for the server supplied by IBM, which resulted in delays with the IBM courses as well as delays in development of the project Tech Center, hosted on that server.

No issues, rather challenges. Unlike twenty years ago, today Sun has a very limited funding for the marketing and therefore has to streamline resources to take on a lot of new Student Campus Ambassadors and to build web solutions with materials for the students to use.

Q8. How important is it to your company to cooperate with universities?

IBM gives great importance to the university relations which is proven by the number and variety of courses offered through the academic initiative and also numerous grants in form of either cash or IBM equipment.

In the "old days" Sun Microsystems was all about universities. Today, the university related activities represent about 10% of all Sun activities.

Q9. What is the optimal university relationship for you? How is it managed? What are the in- and outputs?

The University is effective if it manages to train new System i administrators and also manages to network with the business partner community and customers to help the students to find jobs. Then joint efforts to increase market awareness of the IBM based training and networking within the academic world to help grow the initiative are great bonuses.

An optimal university relationship for Sun Microsystems is being able to offer as much services, software and certification vouchers to students to help them envision what this company has to offer.

A very superficial organizational structure is built up by having an education & research (E&R) team which is a representative instance of Sun. They assign an ambassador for every university. On the university side this ambassador takes care of the communication to the university and reports back to the E&R division at the company. The ambassador represents the interests of Sun by announcing events related to the cooperation and attract students to take training courses Sun has to offer which lay the foundation for taking certification exams.

Q10. What kind of skills do you expect from a newly graduated student?

Of course, this is depending on the focus and specialization of the student. In general, the IBM expects students to understand the value proposition of System i and to manage and support the servers.

Engineering skills are of high importance. Furthermore, newly graduated students should be able to deal with change as the environment and requirements are always changing.

Q11. What is the annual spending on your academic initiative? Do you think that this is higher or lower than other technology companies?

The IBM representative could not comment on this matter.

Due to their flexible environment, Sun Academic Initiative costs are kept low. Still, the actual figures remain unrevealed.

Q12. How do you measure results of the cooperation?

IBM measures success by the number of new System i administrators as well as the number of students that got jobs thanks to IBM Academic Initiative.

Every time you sign up for a SAI (Sun academic initiative) course it is reported together with the results of eventual exams. The numbers of schools signing up for these courses is also registered. Together with these numbers and the number of downloads of our applications we create statistics. Nevertheless these statistics are confidential.

Q13. Does your company plan to continue the cooperation with universities? Are there any universities that you are planning to drop from your program? Why do you want to drop them?

The IBM's Academic Initiative will continue as planned and there are no plans for dropping any universities from the program.

Sun Microsystems are highly motivated to continue the cooperation. 25 years ago their customers were only students. Nowadays 10% of the worldwide customers are students which still make up revenue of billions of dollars.
Only schools that do not follow agreements concerning the products will be dropped. It could be that they share information with countries which are black-listed. Black lists are made according to American export laws. If a customer buys equipment from Sun Microsystems and ships this equipment to one of the black-listed countries Sun immediately cancels all relations to that customer. Otherwise the risk is to get penalties from the US government.

The questions for the university stakeholders were:

Q1. What kind of contact with the IT companies do you have today?

Mr. Sullivan and Mr. Olsson work closely with large ITC to identify their strategic goals relative to universities and help them to develop effective plans to meet those goals. Many of these companies want to enhance the awareness of students as they move into the work force and also develop new technicians who can support their platforms in the market place.

Mr. Pessi conducts cooperation on both low and high levels, involving company executives and the university dean. Stage one of the collaboration is signing the partnership agreement. Stage two is something ITUG has still never gotten to, which is signing the contracts including resources and funding for the university projects.

Q2. How many IT companies do you cooperate with?

Mr. Sullivan cooperates mostly with IBM and Sun while Mr. Olsson manages contacts with other "big players" like Microsoft, Oracle, VMWare, Unisys and SAP.

Mr. Pessi has connections at Ericsson, Volvo and Semcon.

Q3. What year did the first cooperation with IT companies begin?

Ericsson's involvement began in 2001, Volvo and Semcon joined in 2006. The first contact with IBM was made 2005, while the collaboration with Sun, Microsoft, Oracle, VMWare, Unisys and SAP started in 2007.

Q4. Who initiated the cooperation, the university or the companies?

The initiative was on the university side in all cases.

Q5. What were the first steps?

The first step was usually a phone call followed by a meeting. However, to really move things to a higher level, universities need to show interest on the part of their students and classes and courses on behalf of their platforms and technologies. The more the universities do, the more they support us.

Q6. What benefits do you see of this cooperation?

You need to have technology at the university if you want to teach it. If the cooperation was working correctly the benefits would be enormous. The university would get the amount of software and hardware that it otherwise cannot afford. That way the universities could create better education around it. Another benefit is getting the companies to finance university projects and courses for their employees. For the students, the major gain is the higher competence and attractiveness to the future employer they would achieve.

Q7. Has the cooperation raised any issues?

Yes. It is vital when loading in new technology that the vendor supports the technology effectively. This is especially true when the university does not have any experience with the particular platform. In our case, the machine was configured incorrectly when it was delivered. This caused us tremendous problems as we were trying to teach classes on the platform. Also, the traditionalist hand of the university management does not prefer too much involvement of the industry, afraid they might take over. The industry representatives are often trying to charge universities just like any other customers, due to the lack of acquaintance with the university world.

The issue involved when ITCs finance university projects is that it can take up to one year before the university actually receives the funding, which leads to some of the stakeholders dropping out from the project. The "meeting culture" has to be put to an end. It is very easy to get company representatives to attend meetings and very hard to get them to sign a contract. This often happens because the people sitting in the meetings are not the same people that make decisions at the company.

Q8. How do you measure the results of the cooperation?

Success is measured by the amount of students that are exposed to a certain technology every year. It can be taking the courses, the certifications or both. The goal is to get the students acquainted with the technology, not making experts out of them.

Q9. What do the IT companies get from this cooperation?

ITCs get more students who are proficient in their technologies from the start. The students then directly or indirectly sell and/or market their products in the near future. This helps ITCs to build a complete ecosystem of providers and consumers that are all centered around their technologies and products in a symbiotic way. The ITCs hiring the students would see the interest in saving on training expenses, because the students are already trained at the university.

Q10.How important is it to your university to cooperate with the IT companies?

This is vital. It shows the ITCs that this is a serious university. It shows government and the public that this ITU is relevant to today's job market. It shows potential students that they will have real career opportunities upon graduation and that an education at this university will pay concrete dividends far into the future.

Q11. How do you see an optimal cooperation?

The ITUG sees benefits accruing to both the ITC and to the participating university. First, the ITC enhances their brand image by supporting education. That always makes them look good. Second, they help to support their business partners and customers with qualified new hires who can effectively support their platforms and work with their technologies. This increases their overall market.

Since the industry is a huge potential source of income for the universities, there should be a person at the university with the sole responsibility of developing and managing contacts with the industry. That person should have a university background, does not have to be a PhD but just a good understanding of the how the ITCs function. The more the company invests in the cooperation, the more interested the universities become. I would recommend pre-packaged PowerPoint lecture modules on different levels including exams, as an example of something ITUs would like to get from ITCs. Each larger ITC should have a university advisory board consisted of lecturers or managers from different universities.

On the other side, the people at the ITUs responsible for the industry relations should have an industry background and be familiar with the rules and best practices of the industry world.

A solution to avoid the issue with delayed funding from the industry could be to assure the minimal budget that would be sufficient to start the project.

Q12. Should all IT-related universities have a separate department for handling university-industry relations?

No, it depends upon the size of the university and the scope of the relationships and how much money can be generated by these relationships. In the case of ITUG, information technology is very hot and will stay that way for the foreseeable future. The ITUG can use these relationships to build larger opportunities for their students and the university. Specifically, the ITUG is looking to start a consulting firm that will generate additional revenues for the ITUG and these revenues will also come into the university to support the students who are working to support the platforms. In addition, the ITUG will use these relationships to develop additional research opportunities for the faculty to help move the state of the art in both the academic discipline and in practice forward. There are still a great many challenges and opportunities in IT to pursue. These relationships are vital to moving the discipline forward.

The fact worth mentioning is that the less popular universities, mostly based in smaller communities, tend to be more connected to the industry and "think outside the box" in order to attract students. Smaller universities like Umeå and Borås have tight relations with the industry while the larger ones like Stockholm, Göteborg, Uppsala and Lund are more reluctant to cooperate, more as a matter of principals.

Q13. Does your university plan to continue the cooperation with the IT companies?

Yes, the ITUG will continue to work with the companies that we already have relationships with and with new companies as we continue to expand our capabilities. The fact that has to be taken into consideration is that the key actors that keep the ITCs interested in the university could be making twice as much by working at some company, not mentioning the benefits. In order not to lose them, the university management should secure extra funding for that staff and provide them with permanent contracts, not just 3-year contracts, as it is for now.

DISCUSSION

The topic of this thesis seams very popular and also pretty new to these territories. Of course the UIC in Sweden dates way back but why is it so hard to find records of it? Searching for material in the library was pointless, no books could be found that were closely related to the matter. In the end, the literature backup was completely relying on the articles found on the web.

The interviews have been designed around three target groups, responsible for academic initiatives of major companies, university lecturers and staff of the IT- Management department of the ITUG. All three groups gave different but valuable insights on what they are dealing with on a daily basis. The responsible for academic initiatives of the companies all share a similar opinion about how companies and universities collaborate. They constantly mention that their companies are having academic initiatives in place which offer the students access to course material which can be used in university classes, software to work with and test but also vouchers for certifications on several technologies.

Before we went into the interviews, as part of our research, we performed analyses of the company's academic initiatives. It was web pages which offered schools to sign up for a membership and afterwards make use of the material contained on this webpage. There a user could also find contact information in case of questions which could not be answered by the FAQ section. For all interviewed companies it is vital that their technology in connection with training material is used by students who study at universities. By this they create some kind of relation between their technology and those who practice it. Students who have studied their technology thoroughly will most probably look for employment opportunities which require that particular knowledge.

In conjunction with the outcome of the interviews with the companies it is important to synthesize the findings from our second target group. The interviewees gave us valuable insight into their perspective which concentrates on combining their efforts with external contacts with the necessity to make students of the software engineering program employable at the end of their university career. Furthermore, information on what type of issues and benefits industry face was gathered, as well as their goals with establishing this kind of cooperation with universities. One of the issues faced, mentioned by IBM could be the implementation time and complexity to start up such initiative where SUN sees this as challenges rather than issues.

Nevertheless they did not neglect the fact that there is an important need to create revenue for the university. The reason of the low budget that the universities in Sweden have is that the education is free and they are not of a high priority to the government. Additional funding creates more opportunities for students and staff to intensify their research efforts and eventually do relevant work for collaborating companies. Especially this need was also identified by our third target group which solely deals with relationships and collaborations between faculty and company. The IT- Management goal is to create revenue by generating projects which are solved by students for technology companies.

To sum up our work we have gone through plenty of material concerning this particular topic.

From existing case studies which also dealt with university industry relations to the analysis of academic relations of companies and company relations of universities, especially the ITUG's. This process delivered a broad knowledge base which was used to build up questionnaires which should reveal strategies behind academic initiatives and gather first-hand information about existing UIC at university level. All planned interviews were held except the one with Microsoft. Even though we contacted their responsible by e-mail and telephone we could not get hold of anyone who could answer our questionnaire. It was a disappointing experience considering the fact that Microsoft's academic alliance is one of the largest. Their data would have been a valuable contribution to our empirical data.

CONCLUSIONS AND RECOMMENDATIONS

There is an old rule when doing the sales – you have to know the customer. You cannot sell an expensive car to a poor family with ten children. The companies do not understand the university world; how the universities generate revenue or how many assets they have available so they treat them as they would treat any other customer. For example, a certain company delivered SAP systems to several universities. This system is quite complex, it is very difficult to get it "up and running" as well as to maintain it (it contains a database with ~40000 tables and the system has ~3000 settings windows). That is why the universities are having trouble hosting these systems. The SAP company realized that but they still wanted the universities to continue teaching the system so they established the SAP Academy in Finland which is actually an SAP company hosting the SAP system for the universities. And for that they charge the universities ~150000 SEK per year, which is really cheap compared to what they charge the other customers. But, that is not the point; the point is that the universities do not have that amount of money to invest for these purposes.

It seems that the company's academic initiative representatives got these positions as a punishment for not being able to deal with real customers. It would be better if the company would let a newly graduated student be in charge of the university relations then someone that has been working for twenty or thirty years at the company and maybe never stepped into a university before.

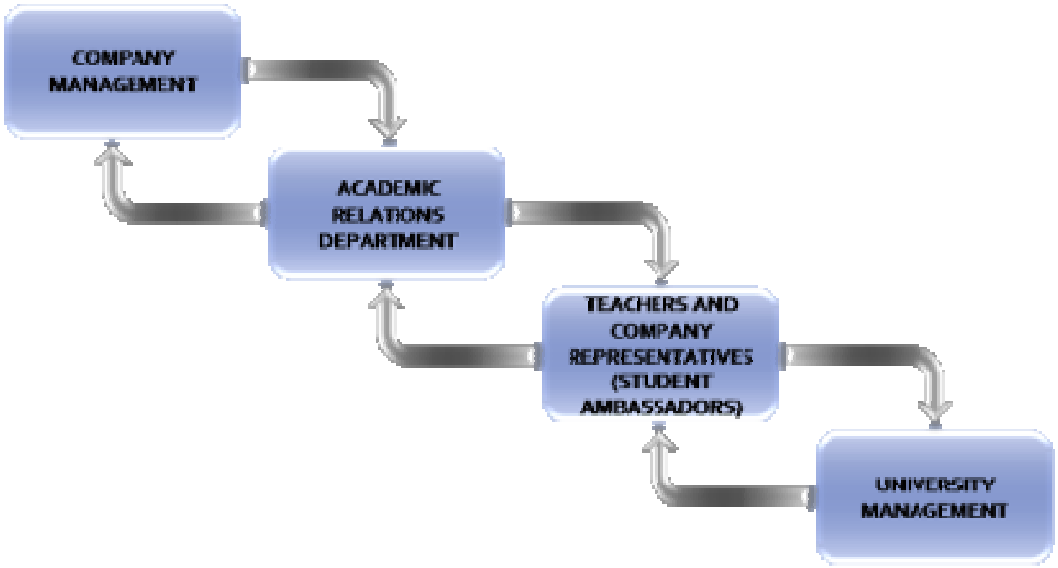

Figure 1 - Proposed Academic Initiative Organizational Chart

There are two approaches to establishing a connection with a university: top-down and bottom-up. The top-down approach would mean you reach the students through faculty management and teachers. The bottom-up approach is when you get to the faculty management through the selected group of students, also called the student ambassadors.

This approach is proven to be more successful because the students are the ones that want to and are going to challenge the current technology and come up with new ideas and solutions on how to improve it. This is a way for the students to put some pressure on the faculty management to start with the academic initiative.

The ITUs management is consisted mostly of traditionalists that are afraid of exposing the universities too much and that the market could take over if they start to teach industry courses at the university. That is contradictory to the Bologna Process that all European universities accepted and which states that employability is of great importance for students and it should be regarded as a high priority when creating university programs and courses. The research related parts of the education should maybe be saved for the master levels of education.

The ITUs today are offering a poor variety of courses in their bachelor programs and the students end up knowing technologies that are irrelevant or unattractive. Therefore, a diversity and mix of technologies is recommended. It is not enough to know only one programming language or one type of database because not all languages or databases are that similar. For example, an employer will not hire you to be a C programmer if you only coded Java before, neither will you get a job managing Oracle databases if you only learned MySQL.

One solution would be that the last two semesters you could be able to specialize in certain industry standards, similar to some doctor's education programs. The reason to specialize in the late stages of the education would be that the technologies change rapidly and the students would not be that attractive on the market if the knowledge they possess is out of date. The universities should not be vendor-specific but they end up teaching Java and MySQL which are brands of the Sun Microsystems.

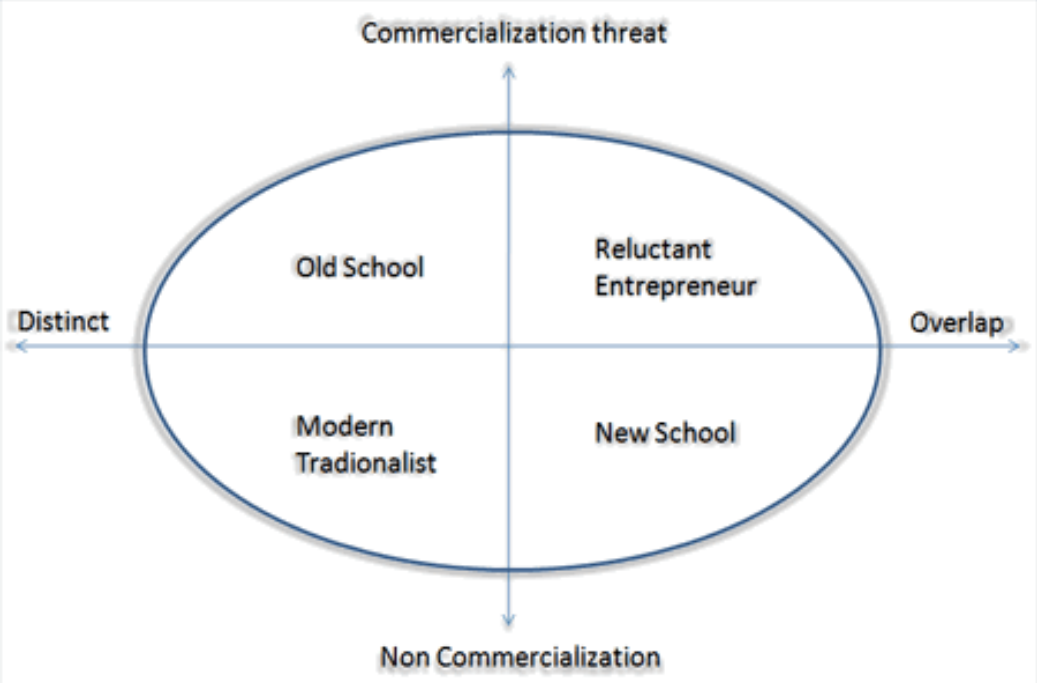

Figure 2 - Ways of thinking at the academia

The companies that have open source software are more welcome in the university world. This is something that the industry partners have to fight.

Competence is vital to the future of the students so the education should synchronize more with the market, not have the same courses for ten years. But, a line must be drawn and the industry-related courses should never replace the standard curriculum. These courses are relevant for getting the first job as soon as possible, but on the long run it is the university degree itself and the work experience that matter.

There are people in academia who take different standpoints when it comes to UIC. As figure 2 illustrates, we show four different directions UIC can take in the eyes of academic people. First, that faculties may or may not be commercialized and second that it remains a distinct institution or overlaps with industry.

The modern traditionalists think that industry and university are, at best, distinct and do independent work. They see universities as special worlds which follow well understood rules to pursue academic reputations which in turn would be translated into commercial gain. An opponent to a modern traditionalist is the “old-schooler” who would never pursue commercial gains e.g. patents and puts academic achievements as his top priority. Unlike him a reluctant entrepreneur has registered one or more patent but dislikes the idea of running his own business. He rather hides behind the university curtain. In order to get the best out of UIC a person who falls into the new-school category is the perfect match for a department which deals with exactly this endeavor. He understands the importance of combining academia and industry and the need to translate academic ideas into industrial outcomes. He also believes that the new overlaps between university and industry open new pathways universities can take.

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http://en.wikipedia.org/wiki/University

Appendix A

There were two groups of questions created for the interviews, one for the industry people and one for the university people.

Interview Questions Industry

The questions for the industry stakeholders were:

1. What is your position in the company?
2. What type of academic initiatives does your company have today?
3. What year did your company's first cooperation with universities begin?
4. How many universities does your company cooperate with?
5. Who does usually initiate the partnership, your company or the university?
6. What were the first steps when you were enrolling the academic initiative?
7. What are the goals and objectives you have with this relationship?
8. Has the cooperation raised any issues?
9. How important is it to your company to cooperate with universities?
10. What is the optimal university relationship for you? How is it managed? What are the in- and outputs?
11. What kind of skills do you expect from a newly graduated student?
12. What is the annual spending on your academic initiative? Do you think that this is higher or lower than other technology companies?
13. How do you measure results of the cooperation?
14. Does your company plan to continue the cooperation with universities? Are there any universities that you are planning to drop from your program? Why do you want to drop them?

Interview Questions University

The questions for the university stakeholders were:

1. What is your position at the university?
2. What kind of contact with the IT companies do you have today?
3. How many IT companies do you cooperate with?
4. What year did the first cooperation with IT companies begin?
5. Who initiated the cooperation, the university or the companies?
6. What were the first steps?
7. What benefits do you see of this cooperation?
8. Has the cooperation raised any issues?
9. How do you measure the results of the cooperation?
10. What do the IT companies get from this cooperation?
11. How important is it to your university to cooperate with the IT companies?
12. How do you see an optimal cooperation?
13. Should all IT-related universities have a separate department for handling university-industry relations?
14. Does your university plan to continue the cooperation with the IT companies?

Appendix B

Abbreviations

ITC	–	IT-company
ITU	–	IT-university
ITUG	–	IT-University of Göteborg
UIC	–	University-industry cooperation