

# Practical Placements Supported by European Programs

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**Abstract** - The educational programs of the European Union (EU) are linked to its budget periods of 7 years. This paper considers the practical placements of higher educational students, young graduates. Year 2007 is the end of EU Leonardo da Vinci (LdV) II program (which supported industrial internships), and the start of some new programs. In the first part the authors describe and evaluate the results of the past 7 years presenting mainly the participation of Budapest University of Technology and Economics (BME) in the LdV program. BME is the largest Hungarian engineering school (70 % of Msc level diplomas, 25% of beneficiaries of Hungarian LdV practical placements). More than 400 students received scholarships for long LdV placements (3-5 months) abroad in the framework of 19 mobility projects (one of them was selected into the 5 best European higher educational mobility projects). Second part is devoted to the questions of the next 7 year term. The new EU Erasmus program will support both academic and practical placements of higher education students. The new EU Leonardo da Vinci III program is open for the young graduates. The work on the adaptation of the previous experiences to the current situation is discussed.

*Index Terms* - Practical placements, European Union, Leonardo - Erasmus mobility programs.

## INTRODUCTION

The European Union recognized more than 15 years ago that

- The practical placements play an important role in the higher education.
- The globalization of economy requires more and more international experience.

These facts (among others) led the EU to the creation and regular increase of programs, to facilitate, to support the professional cooperation of economy – education. This paper concentrates on foreign higher educational mobility of engineers, and the related European programs. Two of these (Erasmus, Leonardo) were selected into the best 50 achievements of the European Union published for the 50<sup>th</sup> anniversary of the EU in March 2007. However the objective (strengthening the enterprise – university cooperation) has been clear, the methods used to obtain these goals are in a continuous development.

In the 20th century the higher educational internships were supported by the EU Leonardo da Vinci I program. The activities were carried out in the framework of projects. Each

project had its special objective, target population, managed both outgoing and incoming students.

The Leonardo da Vinci II program (application period 2000-2006) preserved the project structure. The acceptance was decentralized (decision in the member country, not in Brussels). A typical mobility project supported only outgoing beneficiaries (students, young graduates). The applicants (mainly higher educational institutions, or intermediary organizations) presented once a year several projects of maximal duration 2 years.

Nowadays (early 2007) the new principles for years 2007-2013 are announced, the transition period has been started. These activities have become the part of the EU Lifelong Learning Program with budget EUR 784 million. The total students' foreign mobility (academic and practical placements) is included into the new Erasmus program. The Leonardo da Vinci III program will support practical placements of all target groups (vocational training, young workers etc) except higher educational students.

The paper is organized as follows. The next 2 paragraphs present and evaluate in more detail the participation of Budapest University of Technology and Economics (BME, www.bme.hu) in the 2 passed periods of EU Leonardo da Vinci program. The 4<sup>th</sup> paragraph is devoted to the plans for years 2007-2013.

Some similar aspects were presented at ICEE2005, and published in [1].

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## PLACEMENTS BEFORE 2000

Hungary, that time a candidate state for the European Union membership, became eligible for the participation in LdV I program from its second half. Budapest University of Technology and Economics presented its first (experimental) project in 1999. 15 summer internships (8 outgoing and 7 incoming) of length 3 months were asked in French-Hungarian relation.

The Hungarian beneficiaries belonged to the French Division of BME (engineering training in French language, which contains a compulsory summer “blue collar”

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internship after the 2<sup>nd</sup> semester). This part of the project was a success. In the LdV II program another 7 similar projects were accepted (among others the Hungarian award winning, and decorated on European level one mentioned in the abstract). 128 students carried out their practical placement in France. The next section will analyze in detail these projects.

There were more problems with the incoming students. Following the political changes in Central-Eastern Europe the economy was in the process of transition. It was not simple to find enterprises ready to accept French students. The university was not prepared for the administrative task related to the project (legal conditions, assurance, accommodation etc.). In this sense it was good news for the organizers that in LdV II program they had to deal only with outgoing students.

### PLACEMENTS IN 2000-2006

This section of the paper starts with a short historical summary of the development of activities related to foreign practical placements. It is followed by presentation of methodology, basic elements of organization used nowadays. The following 2 tables give a quantitative summary of the Leonardo da Vinci mobility projects coordinated by Budapest University of Technology and Economics in the given period.

TABLE I  
BME LEONARDO DA VINCI PROJECTS

Year	Number of the contract	To which country; students (S)/graduates (G)	Placements		EU support EURO
			pers	weeks	
00-02	HU/00/PL/205	Germany (S)	30	600	136782
01-01	HU/01/PL/202	France (S)	24	312	54840
01-03	HU/01/PL/217	Germany (S)	10	200	41777
02-03	HU/02/PL/201	France (S)	15	195	36667
02-04	HU/02/PL/210	Europe (S)	15	315	47917
03-05	HU/03/PL/204	France (S)	22	308	55760
03-05	HU/03/PL/203	Europe (S)	18	360	57720
04-06	HU/04/PL/308	Europe (G)	15	300	46350
04-06	HU/04/PL/202	France (S)	22	308	35600
04-06	HU/04/PL/210	Europe (S)	25	500	77250
05-06	HU/05/PL/205	Europe (S)	33	660	109825
05-06	HU/05/PL/213	Spain (S)	10	150	27110
05-07	HU/05/PL/302	Europe (G)	35	700	107045
05-07	HU/05/PL/206	France (S)	25	350	62875
06-08	HU/06/PL/202	Europe (S)	33	643	101175
06-08	HU/06/PL/204	France (S)	20	280	49600
06-08	HU/06/PL/217	Spain (S)	15	225	42416
06-08	HU/06/PL/302	Europe (G)	18	360	56185
Sum	18 projects		385	6766	1146894

#### Remarks.

All basic information related to these projects (applications, reports etc.), and the Leonardo program can be reached on the internet from the page [www.tutor.nok.bme.hu](http://www.tutor.nok.bme.hu).

The last column in Table 1 indicates the EU support. The real budget of these projects was higher as participants (university – intermediary organizations, beneficiaries and especially the enterprises) contribute additionally to their realization.

TABLE 2

PLACEMENTS AND COUNTRIES IN BME PROJECTS

Number of placements	Countries
142	France
126	Germany
36	Spain
19	Italy
11	Austria
5-10	Belgium, Denmark, Finland, Greece
<5	Ireland, Sweden, The Netherlands, United Kingdom

*Historical summary.* Based on the success of the 1<sup>st</sup> LdV I project besides the French summer placements the university decided to widen its foreign internship activity. Year 2000 was characterized in Germany by a boom in informatics (green cards for foreigners etc.). 2 intermediary organizations (IBISTRA, BITKOM) proposed the cooperation in practical placements of 30 students in informatics. This second parallel project was carried out with success as well. A similar one was presented in 2001. However in 2002 there was a crisis in informatics in Germany (bankruptcy of an important part of ITT enterprises, decrease of demands in workers), which caused problems in the realization of the 2<sup>nd</sup> project. This fact and the limitation of LdV mobility projects (the support for a Hungarian institution could not exceed 300.000 EURO / year) lead to a new project management structure and the creation of a Leonardo Office (institutional coordinator, financed by the management cost of the projects) of BME. By 2005 the structure stabilized. The university presented each year 4 projects with the following objectives: summer placements in France, summer placements in Spain, engineer level placements in any European country, young graduates' internships in EU. All projects were accepted, but with some decrease of the support and consequently the number of beneficiaries. The development can be followed in Table 1.

*Application procedure.* Mid February was the deadline in each year to present applications for Leonardo mobility projects. The duration of projects could vary between 1 and 2 years. The start of activities (of the accepted projects in the given year) was June 1. Normally BME asked 2 years for the realization of its projects, but most of them were finished in the first year. For activities with different objectives the applicants had to present individual projects. The length of the application form (which slightly varied annually) was about 30 pages. In case of 2 year long projects after 1 year an intermediate report was asked. There was a final report (in a given format) for all projects. The applications, reports of BME projects are available on the internet ([www.nemzig.bme.hu](http://www.nemzig.bme.hu), Leonardo).

*Management structure.* As it was described above during these 7 years altogether 18 projects were implemented. Each project had its own application, contract, target group, time line, independent budget, relevant reports and naturally project manager. Such a large scale activity couldn't have been possible without some central management structure, which was formed in an evolutionary way, as the need naturally arose. The project method itself does not require central management, but it turned out that all these projects have many similarities, they have joint effects and they are undersigned by the same institution,

therefore coordination is necessary. The result of this evolution was the nomination of an institutional coordinator, and the creation of the so called Leonardo Office, which is physically not in an office, but has permanent staff, although working only part time. Some functions became centralized, for example a common financial management was created, which was responsible for the financial reports of all projects and it assisted in the budget planning and financial administration as well. The writing of the applications was assisted by the office, which ensured the outstanding efficiency of BME. The vice-rector of the university was informed about the applications by the institutional coordinator before he signed it in the name of the institution. Smaller project plans were integrated into bigger projects, and this way it became unnecessary to write more project applications, to carry out some special activity. All these functions of the Leonardo Office were created as a part of a development process, and not strategically. If we now look at the development of the EU LdV Program we can see that what happened at BME is a very good model for the global LdV Program development. By the end of the Leonardo II Program the project based structure of the Leonardo activity had developed into a more or less permanent, structured, everyday operation at BME, instinctively anticipating the coming changes in the global LdV program.

*Consortium.* Apart from the general management unit, each practical placement is carried out in the cooperation of a sending institution –represented by a department, a research group or simply one university professor, as a mentor - a host company – from multinational to medium or small size enterprises – and sometime an intermediary organization is also involved, mostly helping in finding host companies, or participating in the language and cultural preparation of the students. Intermediary organizations make the implementation easier, but there is a very high additional cost related to it.

*Identification of host enterprises.* Several channels were used, such as

- Existing higher education – enterprise partnership (based on earlier cooperation of professors, previous projects).
- The Leo-Net network, which gathers more than one hundred institutions from 26 countries to help each other in the foreign internship activity ([www.leo-net.org](http://www.leo-net.org)).
- Individual activity of the students (this type is more and more stimulated, as to find a placement can be considered a model for their future job search).

*Preparation, logistics, monitoring.* The modern information technology - Internet, email, electronic documents and presentations - are widely used during the whole process. The preparation needs (cultural, professional, linguistic and administrative) are determined and carried out individually for all participating students. Some of the projects have special elements, for example within the French summer placement project French voluntary workers helped the beneficiaries' cultural preparation and the organization of their placements each year. (We listed their names in the acknowledgement). Another interesting solution was the psychological training of the beneficiaries of the Spanish summer placement project. The main legal

document of the training is a trilateral contract (sending institution, receiving institution and beneficiary), which has the following compulsory elements: double tutorship, the existence of a written working plan and a partnership quality commitment statement.

*Problems:* The nature of such a large scale activity is that some problems happen. We mention here some that are typical of an engineering practical training: Small companies often take trainees when they have a big project, in which they need helping hands. This is very beneficial for the student, since the job involves independent work with professional responsibility. However, once the project work is done the student is sometimes out of meaningful work. Final year students are required to write a thesis. When this diploma work is done at a company, based on the actual tasks given by the company, a serious concern is the copyright issue. The host company needs assurance that the student's paper will be handled confidentially by the university. This question is especially sensitive for IT companies. Sometimes students do not follow the company rules; do not behave as responsible employees (e.g. late from work, using the company's infrastructure for personal purposes). These cases were primarily handled by the company, but in serious cases they were followed by disciplinary action on behalf of the university as well. We are happy to say that such problems were very few. A successful training might be followed by a job offer. This can be viewed as a positive effect, but there is another possible opinion, namely, that a foreign practical training has a brain drain effect, which is not beneficial for the country. These concerns were more often raised before Hungary joined the EU (common job market). When a practical training was done at a company, which besides production, focuses on research and development as well there was a conflict between the rules of the LdV program and the content (research) of the training. The renewed LdV program (see next section) has solved this problem by allowing research type of training as well, which we consider a very useful change since the participation of engineering students in company researches were of the highest quality with much added value.

*Positive effects:* Engineering training seems impossible without practical training, although some training programs still lack the practical element. Here we only mention some additional positive effects of engineering training abroad. The first and most obvious result is the improvement of the foreign language and communication skills of the prospective engineers. This very often means not only one but two foreign languages since the working language tends to become English at many companies (internationalization), regardless of the host country. Students will also encounter a different company culture, which makes them more adoptable in their professional career regardless of the country of their work place. A practical training at a foreign company could also initiate a new, international working relationship between the university and the company, enriching the primary training program (e.g. new training module was introduced about a mechanical engineering design software, joint research was started in the field of industrial design). Long term commitments were made on

continuing the joint training activity, so the LdV program initiated something which will continue to exist, without EU support too. Naturally these long standing commitments were based on the mutual satisfaction of the company and the university. Whenever a BME student proves to be outstanding (and it happened quite often) one can see its marketing value, the BME diploma will get a good evaluation, improving the job market position of future graduates of BME. This was specifically stated by some companies. Let us close the listing of added values by stating again, that the main objective of a practical training is to provide the prospective engineers with professional experience, without which no training program should exist, therefore the quality control is a main concern.

*Finances.* The budget of LdV projects includes the following budget lines (EU support): management cost, max. 200 EURO/beneficiary, preparation costs, between 200-300 EURO/beneficiary, travel support for the beneficiaries, max.400 EURO, insurance cost, about 200 EURO/ training, and subsistence cost, 115 EURO /week for the first 13 weeks and 100 EURO/week for the remaining weeks. These amounts are in many cases supplemented by payments by the companies directly to the students as well. The EU budget for the management is only enough for the personal costs, all other direct cost (office space, infrastructure, supplies and communication) is covered by the university.

### **PLANS FOR 2007-2013**

The new budgetary period introduces significant changes in the organization of higher educational level internships. The international mobility of higher educational students will be part of the EU Erasmus Program including the academic exchanges abroad and also the vocational practical trainings starting from September 2007. To make sustainable plans for the required new management system we have to understand the reasoning of the law makers introducing this change and we need to list the new elements:

The main reason for the changes was to lower the costs of the implementation of foreign practical trainings. The yearly budgets of the national Erasmus and LdV programs clearly showed that the costs related to one practical placement were significantly higher than that of one academic exchange. Creating a unified management system might decrease the additional management costs, but what is more significant for the budget is that the individual vocational mobility grants were cut, and the amount for language and cultural preparation was eliminated or rather became combined with the management budget. One of the challenges is now to create a new organization at the university which is competent in organizing both the academic and the vocational trainings, combining the former two separate management groups with lower overall management costs. The other challenge is to find additional financing to supplement the lower grants for the practical placements - very likely this will be requested from the receiving companies - and to find resources – probably taken away from the management costs - for the language and cultural preparation costs, which was an important part of LdV projects, but did not exist in Erasmus.

Another important reason for creating this new system is that the former LdV Program was project based, which made it very difficult for outsiders to participate. Every year detailed project applications had to be prepared with well defined goals, following strict rules, contractual and reporting requirements. This project logic made this activity temporary and ever changing and it could easily become the task of some enthusiastic, isolated units of the universities. Within the new Erasmus Program the application for foreign practical training is a lot easier, it does not differ from the application for academic exchanges and therefore all institutions, which had been active in Erasmus can apply for it and start the activities. The number of applying institutions is therefore expected to grow significantly. The big question is, how can an institution, which is new to this program manage this task requiring so different expertise and experiences. The short history of the development of the Leonardo Office at BME, described in the previous part of our paper shows that the road to success was not without difficulties. The participation of BME in the new Erasmus program will be greatly helped by the 10 years of gathered experience. The Hungarian national agency, the Tempus Public Foundation, organizing these European programs in Hungary started a series of informational meetings, disseminating the results of the previous LdV Program, and the authors play an active role in these events.

Another desired effect of the changes is to integrate the practical training as a concept into the normal operation of an academic higher educational institution. The Erasmus Program dealt with only academic exchanges abroad, but at the beginning even this was an alien body in the traditionally conservative, value protecting system of the higher educational institutions. After almost one decade we can say that the Erasmus exchanges became accepted at BME, the credits earned abroad are recognized and the academic programs are able to integrate the courses taken abroad [2]. Some say that even the Bologna process couldn't have succeeded without the Erasmus Program. The challenge is now to initiate similar changes with the integration of foreign practical training into the Erasmus Program. The lack of practical training requirements, which is still a reality, even in some engineering educational programs, is something which must change. The industry and all other players of the economy need closer cooperation with the higher educational sector, which is protecting its autonomy and is slow in initiating changes. Combining Erasmus and LdV Programs, representing the academic and the vocational training areas is a declaration of the fact that they must go together, forming one integrated unit. Theoretically, in the new Erasmus program no practical training can be financed if the beneficiary student's academic program does not include an option or requirement of practical training. The time spent abroad must be an integrated part of the student's training, recognized and documented by the university. The authors feel that this change will not be easy, but the new system will help in initiating it.

The authors listed the main reasons behind the changes and the desired consequences. The next question the institutions face is how to implement the new Erasmus program, how to integrate the former LdV activities into the

daily operation of the Erasmus Offices. The LdV at BME, as we showed, was moving away from the project method, developing into a more stabilized operation, something similar to the Erasmus Office. It is now time to join forces. Nevertheless, organizing practical training for university students requires more flexibility and presents more uncertainty than organizing semesters abroad. Finding receiving companies, negotiating supplementary support for the trainees, preparing the students for their first work experiences, helping them in finding accommodation are just some of the tasks which are new for the Erasmus Offices. Application procedures which are very well defined for academic exchanges will have to be altered, and an outsider, the company will have to be involved in it as well. Quality management becomes more complex. Joining the management units, without changing their previous tasks will not bring the desired effect of reducing the management costs. Therefore some common tasks will have to be identified – financial administration for example - , but at the same time the differences must be recognized too. This is a process that needs a number of consultations, which has been started at BME. It is the definite will of the university to continue its participation in organizing foreign practical training within the new Erasmus Program. The relevant application has been handed in for the 2007 application round, including a request for support for 70 practical training places. BME has also handed in a project application for 30 new graduates of BME within the Leonardo III Program.

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