

A study in EU member states on the added value generated by joint/double degree programmes on the life and career of graduate students with a focus on the employability and personal development. The results provide students with a clear picture on the kind of post-graduation scenario they can expect, and the guidelines support the Programme Directors in creating effective and attractive double degree programmes. The project has been co-funded by the European Commission – Erasmus+ Programme

## REDEEM

Reforming Dual Degree Programmes for Employability and Enhanced Academic Cooperation

Emmanuelle Brun  
Anne-Laure Cadji  
Ricardo De La Vega  
Joao Fernandes  
Alessandro Gamalero  
Susanne Kaliwe  
Ana Agante Lucas  
Madeleine Hagemeister

Berenice Martin  
Rui Mendes  
Emilia Parisi  
Joao Patricio  
Mirko Varano  
Torkel Werge  
Andreas Winkler

## Executive Summary

### Background and Objectives

What is the impact of double degree-studies on the graduates' life and career and what lessons can universities in science and technology learn from the stakeholders to develop more efficient international programmes leading to enhanced employability?

Many surveys on Double/Joint/Multiple Degrees have been carried out over the years, but little if no attention has been devoted to the impact that these programmes have on the students' career path and the development of their competences. Other surveys in this sense have been performed but their focus was on credit mobility in general, on comprehensive universities, on specific regions and often didn't deliver any concrete tools to support the creating of better programmes.

The members of the CLUSTER network ([www.cluster.org](http://www.cluster.org)) have been cooperating since the early 1990s in the development and management of joint educational programmes and agreed that the time had come to collect feedback from all the involved stakeholders (current students, alumni, programme developers and employers) on the existing programmes and identify the potential for improvement. A subset of seven members of the consortium embarked in September 2015 in a two-year project supported by the Erasmus+ Strategic Partnerships programme to provide the network and the partner universities with answers and innovative tools in this sense.

The two main objectives of the project were to:

1. Provide tools to technical universities to reform the existing Double Degree Programmes and create new ones in the light of a better understanding of what works and what doesn't in terms of structure, content, employability, student and employer expectations and perceptions, national and scientific field-specific differences, etc.
2. Improve the attractiveness of the reformed/newly created programmes both from the students and the employers' perspective by enhancing the employability and satisfaction rates of the STEM graduates participating in these programmes.
3. Boosting the internationalization and recruitment strategies at the Higher Education Institutions that will implement the final recommendations and make use of the quantitative and qualitative analysis results in this sense.

### Methodology

The project is structured in the following main work-packages:

- State of the art.

- Quantitative analysis through a survey collecting feedback from the graduates.
- Qualitative analysis through focus groups and interviews involving the four target groups.
- Development of a set of tools for the reforming and development of more relevant and efficient Double Degree programmes.
- Creation of a repository on existing Double Degree programmes with a concrete participation of the employers.

### State of the Art

Activity 1: The state of the art on the existing national and EU policies on Double Degrees and existing literature has been reviewed and assembled in a comprehensive report.

Activity 2: Comparative study of the existing double degree programs at the participating universities, their structure, framing conditions and performance. Analysis of the definitions currently in use for the different formats of double degree programs has been used to define an internal glossary.

### Quantitative analysis

Activity 1: Structuring of the questionnaires to define what indicators to include in the survey, how to formulate the questions and how to reach the target groups.

Activity 2: Collection of quantitative data by sending the online questionnaires to the Double Degree graduates and a control group from the involved universities.

Activity 3: Elaboration of the data and statistical analysis.

### Qualitative Analysis

Activity 1: definition of the format for the focus groups and interviews for each target group

Activity 2: focus groups and interviews are performed at each partner university to collect in-depth feedback from Double Degree students, current students, employers, staff involved in the development and design of the programmes.

Activity 3: Feedback analysis and descriptive report on the finding.

### Reforming the DD Programmes

Activity 1: A workshop involving all the different stakeholders has been organized to discuss the findings of the analysis and the suggested recommendations.

Activity 2: Development of a set of guidelines based on the collected material and feedback received by the stakeholders.

Activity 3: Training event for professionals involved in the development and implementation of double degree programmes at the partner universities and beyond.

### Double Degree Repository

A repository collecting best practices in Double Degree development and management (with focus on joint industry/academia programmes) has been created and will be regularly updated beyond the project lifetime.

### Results and Recommendations

From the performed activities it's clear that the surveyed Double Degree programmes, no matter the structure and content, have an added value for the graduates and are highly appreciated if compared with the national Master programmes. Moreover, the quality of



this type of programmes has been stable over the 10-year time span covered by the project. Double Degree graduates earn in average more than their peers holding the national degree only, but this is more evident in the short period among graduates from Southern Europe while the added value in this sense among graduates from Northern Europe is more noticeable in the long period.

Several misperceptions are still in place that came evident when comparing the expectations of the alumni, their perceived impact after graduation and the hard facts collected. For instance, the alumni do not choose to enrol in a Double Degree programme with the expectation of a higher salary and even after graduation they don't list a better pay among the impacts on their career although the collected data confirm that this is the case. A misperception is also existing on the interpretation of the concept of employability which is perceived in a somewhat negative way by many of the interviewed academics in charge of designing the programmes. Employers have a clear picture of the characteristics they are looking for in the ideal graduates which match the profile of Double Degree graduates. Nevertheless, the positive impact of Double Degree programmes on the skills and maturity of the graduates are still generally ignored by the companies that have a somewhat negative perception of academic mobility and don't see a big difference between short credit mobility and longer stays abroad within a more structured and integrated programme. A better and more focused communication towards all the actors is needed and the collected data will allow universities to address this issue consistently.

Both students and employers favour an active involvement of companies in all phases (curriculum design, teaching with credits, the definition of research topics, hosting mandatory

internships, etc.) to guarantee a higher level of employability.

Double Degree programmes should be marketed as a specific product to shift the attention of the potential applicants from the mobility component to the real added value and benefits. In the same way, double degree students should be addressed as a specific group that has different needs from the credit mobility students on one hand and from the regular local students on the other hand.

An objective impact analysis is often missing when universities design new Double Degree programmes or, when this is carried out, it's often biased and/or incomplete. In terms of employability, the first step should be for the universities to be more transparent about the nature of the Master programme in the recruitment phase so to ensure a match between the expected outcomes and the expectations of the applicants.

## Exploitation of Results

The exploitation of the obtained results will cover the following three areas:

1. The quantitative analysis will be used to provide a general picture what a DD graduate is, and this will be used for marketing and recruitment to allow the students to make an informed decision. The goal should, in fact, be not necessarily to recruit more students to Double Degree programmes but the right ones. A side result would then be to prevent students from applying to the right programme for the wrong reasons. This new set of data and evidence will also help all the actors to eliminate the existing misperceptions.
2. Improve the communication towards employers, address their misperceptions

about the profile and skills of Double Degree graduates.

3. Support the programme developers in creating products that better satisfy the expectations of the students and the needs of the companies through the evidence collected and by making a systematic use of the DD guidelines.

A follow-up project will be carried out by the consortium to:

1. Extend the geographical coverage to a higher number of European countries.
2. Allow a more comparative analysis of the graduate perceptions, added value and performance of the programme by country, field of study and type of programme.
3. Evaluate the results of REDEEM and related tools by developing several pilot Joint Programmes in the different countries with a direct involvement of the employers in all the phases from curriculum and structure design, throughout recruitment, teaching delivery, joint master thesis, mandatory internships and possibly recruitment of the graduates.

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## 1 State of the Art

Whereas most studies analyse the general importance of various student mobility programs to employability, the present state of the art focuses on a special type of student mobility programs – Joint Programs. Joint Programs represent a major effort for the universities and students involved and are far more resource-intensive and demanding than other student mobility programs. The present report describes Joint Programs of the participating higher education institutions (HEI) and places them in the national and European contexts of HEI policies. The state of the art highlights current situations of Joint Programs in the respective countries and the ways they are embedded in their national and university strategies. Moreover, an overview of the Joint Programs of the project partners is given and common definitions of the terms used for this type of students' mobility are suggested.

It is widely agreed on international mobility having a positive impact on skills and competencies as well as on personal development, which leads to better employability and facilitates the transition to the labour market. Joint Programs enjoy a high reputation due to their high complexity and quality level. However, employability of Joint Program students has hardly been studied so far. Due to the lack of studies focusing on this special type of students' mobility, this report compiles the few existing findings on the impact of Joint Programs on students' employability. As Joint Programs stand for student mobility "par excellence", the impact on students' employment opportunities are assumed to be outstanding. This hypothesis will be tested by the following quantitative and qualitative survey of the project.

To analyse the current situation, all project partners contributed literature, information about their Joint Programs and their own university strategy as well as their national perspective.

The analysis as an introduction to the topic will be completed by the results of the quantitative survey and qualitative interviews made during the project.

### 1.1 Joint Programs

#### 1.1.1 Joint Programs and EU Policy

The trend to collaborate on curricula began in the 1990s when these programs were of vanguard character (Goodman, Rüland: 2013). Since the Bologna process started in 1999, Joint Programs have been on the agenda. To strengthen the European dimension of higher education (HE) and graduate employability, the demand for modules and courses with "European" content and curricula offered by partner institutions from different countries and leading to a recognized joint degree was constantly renewed (Prague Communiqué 2001: 2). Whether Bergen (2005), London (2007), or Bucharest (2012), Joint Programs (JP) were on the agendas of all Bologna conferences referring to student mobility, curriculum development, recognition, and quality assurance supported by several EU-funded programs. The link between higher education and employability is prominent throughout the Bologna process, as can be seen in Table 1, which retraces the Bologna conference and its topics (JDAZ 2015: 14; Bologna Process Implementation Report 2015: 2).

Especially the ERASMUS MUNDUS (2005)/Atlantis experience shows that the EU gives



high priority to Joint Programs and encourages their establishment and joint degrees in the European Higher Education Area (EHEA) (Reichert/Tauch 2005). In 2007, 60% of institutions in the EHEA offered Joint Programs and 66.3% of the countries had legislation allowing and encouraging the establishment of Joint Programs and joint degrees. In 2009, 2,500 Joint Programs existed in the EHEA and in 2011, 84% of universities worldwide offered Joint Programs (Obst et al. 2011: 10; Raugvargers et al. 2007; 2009; Croisier et al. 2007). The impetus given at the European level is enhanced on the national level, where legislative obstacles are removed to encourage the establishment of integrated curricula that lead to joint degrees. The EHEA has shaped Joint Programs and vice versa (Monné, Morel, 2013:102).

Today, the concept of Joint Programs has spread globally, including HE systems on other continents. This development may also be considered a response to the European developments (JDAZ 2105: 15; Obst et al. 2011).

Joint Programs represent an essential means to broaden the scope of education offered, advance internationalization of HEI, reach international reputation and visibility, and to strengthen partnerships of academic and research institutions with strategic partners (Goodman, Rüländ: 2013; Obst et al. 2011: 28). Although Joint Programs enjoy a high reputation, they are still not in the centre of international activities of HEI because of their complexity and their costs. Comprehensive development, sustainable funding, and marketing strategies are needed by the universities to maintain the high standard of Joint Programs (Obst et al. 2011: 39ff.). Although Joint Programs have become a global trend by now, it is too early to assess their impact, as the number of participating students still is very small (Tauch 2009). Student mobility rates have increased slightly since the 2012

Bologna Implementation Report, but still only a minority of students' benefits from such experience (Bologna Process Implementation Report 2015). Joint Programs may not lead to the substantial increase in mobility that was expected by Bologna reformers. However, it is not possible now to assess precisely whether the EHEA collective target of 20% mobility by 2020 will be reached or not, as comprehensive and harmonized data collections are still lacking – particularly for credit mobility, such as Joint Programs (Bologna Process Implementation Report 2015: 23).

The trend to develop joint and double-degree<sup>1</sup> partnerships started in the 1990s in Europe and is now global, with emerging countries being the new focus (Obst et al. 2011: 39ff.). New developments, especially those resulting from ERASMUS+, the Europe 2020 strategy, and EU education and training programs for 2014-2020, will show how Joint Programs will develop within EHEA and beyond (Monné, Morel: 2013).

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<sup>1</sup> Joint Program – JP; Double Degree – DD as one possibility of JP

Table 1: The Bologna Process: from Sorbonne to Bucharest, 1998-2012

### The Bologna Process: from Sorbonne to Bucharest, 1998-2012

<b>Mobility of students and teachers</b>	Mobility of students, teachers, researchers and administrative staff	Social dimension of mobility	Portability of loans and grants Improvement of mobility data	Attention to visa and work permits	Challenges of visa and work permits, pension systems and recognition	Benchmark of 20 % by 2020 for student mobility	Explore ways to achieve automatic recognition of academic qualifications
<b>A common two-cycle degree system</b>	Easily readable and comparable degrees	Fair recognition Development of recognised Joint degrees	Inclusion of doctoral level as third cycle	QF-EHEA adopted National Qualifications Frameworks launched	National Qualifications Frameworks by 2010	National Qualifications Frameworks by 2012	New roadmaps for countries that have not established a national qualifications framework
		<b>Social dimension</b>	Equal access	Reinforcement of the social dimension	Commitment to produce national action plans with effective monitoring	National targets for the social dimension to be measured by 2020	Strengthen policies of widening access and raising completion rates
		<b>Lifelong learning (LLL)</b>	Alignment of national LLL policies Recognition of Prior Learning (RPL)	Flexible learning paths in higher education	Role of higher education in LLL Partnerships to improve employability	LLL as a public responsibility requiring strong partnerships Call to work on employability	Enhance employability, lifelong learning and entrepreneurial skills through improved cooperation with employers
<b>Use of credits</b>	A system of credits (ECTS)	ECTS and Diploma Supplement (DS)	ECTS for credit accumulation		Need for coherent use of tools and recognition practices	Continuing implementation of Bologna tools	Ensure that Bologna tools are based on learning outcomes
	<b>European cooperation in quality assurance</b>	Cooperation between quality assurance and recognition professionals	Quality assurance at institutional, national and European level	European Standards and Guidelines for quality assurance adopted	Creation of the European Quality Assurance Register (EQAR)	Quality as an overarching focus for EHEA	Allow EQAR registered agencies to perform their activities across the EHEA
<b>Europe of Knowledge</b>	European dimensions in higher education	Attractiveness of the European Higher Education Area	Links between higher education and research areas	International cooperation on the basis of values and sustainable development	Strategy to improve the global dimension of the Bologna process adopted	Enhance global policy dialogue through Bologna Policy Fora	Evaluate implementation of 2007 global dimension strategy with aim to provide guidelines for further developments
<b>1998 Sorbonne Declaration</b>	<b>1999 Bologna Declaration</b>	<b>2001 Prague Communiqué</b>	<b>2003 Berlin Communiqué</b>	<b>2005 Bergen Communiqué</b>	<b>2007 London Communiqué</b>	<b>2009 Leuven/ Louvain-la-Neuve Communiqué</b>	<b>2012 Bucharest Communiqué</b>

### 1.1.2 Joint Programs and National Policy

The European Union influences national higher education policy through political cooperation and the provision of several important transparency tools to facilitate processes:

- The European Qualifications Framework applies to all types of education, training, and qualification and acts as a translation device to make national qualifications better readable across Europe. It is based on learning outcomes and competencies as well as on credit ranges in the first and second cycles (JDAZ 2015: 19).
- The application of the ECTS credit transfer and accumulation system goes without saying in HEI offering JP, although difficulties may arise when using the ECTS grading scheme for the conversion of grades within a JP.
- ENIC-NARIC centres, several guidelines, such as the *European Area of Recognition Manual for Higher Education Institutions*, and the *Multilateral Agreement on the Mutual Recognition of Accreditation Results* for Joint Programs enable HEI to check the legal status and accreditation of degrees awarded by JP partners.
- The Lisbon Recognition Convention – LRC and Diploma Supplement for mutual recognition of educational qualifications and degrees.
- ENQA standards and guidelines for quality assurance in HE.

“Even though Joint Programs have an international character, it is important to bear in mind that the legal power related to higher education policy and the implementation of Joint Programs lies within the national or sub-national legislation and applies also to

international cooperation activities. It is therefore important to first and foremost carefully check national regulations and not only European regulations. Higher education policy is developed and implemented at the national level by the relevant ministry of education or science.” (JDAZ 2015: 20)

The following paragraph will outline the national strategies of the REDEEM partners about Joint Programs.

**Belgium (French-speaking region):** In September 2013, a decree, “Décret Paysage” (“Landscape Decree”), entered into force, which profoundly changed the landscape of higher education in French-speaking Belgium. When it comes to mobility and, more precisely, to Joint Programs, the new decree is rather accommodating and does not introduce extra requirements compared to the previous Bologna Decree that governed higher education after March 2004. Under Bologna, for example, 20 credits for a first-cycle joint degree and 15 credits for a 2nd-cycle joint degree had to be obtained in the Belgian institutions of the Communauté française. Under the currently valid decree, each institution of the Communauté française involved in a joint degree program must ensure a minimum of 15% of all teaching activities. This percentage is lower than 25% initially proposed in the draft version of the decree. However, this restriction does not apply to joint study programs organized within the framework of the EU, such as the Erasmus Mundus programs. The institutions are given flexibility about the type of degrees awarded: A single degree conferred jointly by all institutions taking part in the program or several degrees issued by the different partner institutions according to their own laws and competencies.

**Germany:** In April 2013, the German Federal Government and the sixteen states

adopted a joint strategy to further promote the internationalization of German universities. Federal and state governments defined nine areas of activity. The activity area 5 aims at increasing students' mobility through better recognition of study achievements reached abroad and in international study programs also leading to a double degree. The aim is to exceed the European target of 20% of all graduates experiencing mobility until 2020 (Strategiepapier 2013:16f.). Since the implementation of the Bologna process, the German Academic Exchange Service (DAAD) and the Federal Ministry of Education and Research (BMBF) have provided the HEI with funding to integrate structured mobility into internationally oriented degree programs (Thimme: 2013). DAAD and BMBF started funding study programs that lead to a recognized joint or double degree in 2005 and latest figures reveal more than 500 JP/DD with a strong focus on German-French partnerships which are funded through the Franco-German University (FGU). Due to the exceptional and well-institutionalized partnership between France and Germany, FGU DD programs have an outstanding position. Most of the JP in Germany are offered on the master's level and confer two national degrees rather than one joint degree. JPs in Germany are typically offered with European partner institutions, followed by institutions in Asia and North/South America. DAAD and BMBF are convinced that JPs contribute to the prestige of a university and provide students with intercultural competencies and dual qualifications which are highly valued on the labour market, which is why the development of JP remains one of the top funding priorities of DAAD and BMBF (Thimme:2013).

**Italy:** An important turning point for the development of joint degrees was the approval of the Regulation on University Autonomy in

1999. It completed the process of university independence, also in view of the process of convergence of the policies of the European countries proclaimed by their ministers for education in the Sorbonne and Bologna declarations. The reform was also motivated by the need for the universities to open internationally. Several provisions in the Decree no. 270 of October 22, 2004, that substituted the previous Regulation no. 509/99 allow universities to engage more intensively in the international arena: Bsc., M.Sc. and PhD. classification, the introduction of "university master" programs (60 ECTS), the possibility to award joint degrees with foreign universities; the recognition of study periods abroad, of credits and qualifications awarded in other countries for the purpose of pursuing further studies; the obligatory study of another language of the European Union and the awarding of credits for such studies; the possibility to pass the final degree examination in a foreign language; the introduction of the Diploma Supplement based on the model agreed at the European level...

With specific reference to inter-university cooperation and the award of joint degrees, Article 3 of Decree n. 270/2004 provides that "further to agreements in this regard", Italian universities may award first and second degrees "also in conjunction with other Italian or foreign universities." The rules governing "the procedures for the award of joint qualifications" are delegated to the general academic regulations of the university (Article 11, paragraph 7, subparagraph o). In the case of joint degrees with foreign universities, the procedures for imparting the qualification concerned should be expressly regulated in the respective inter-university agreements, given the differences in the national rules among the various countries.

**Portugal:** The Portuguese Education Ministry has no official policies for the creation or offer of double degree programs. The absence of active policies is because double degree programs are financed by the EU or by private entities. Since there is no Portuguese public funding of double degrees, the Portuguese government opted to follow only the EU policies regarding the creation or offer of double degree programs.

**Sweden:** The latest national strategic document directly dealing with internationalization was set up in 2004 by the Swedish parliament, *Ny värld – ny högskola* (Proposition 2004/05:162). This document was meant to support the introduction of Bsc., M.Sc., and PhD. qualifications and to support a credit system that harmonizes well with ECTS. It was triggered an investigation of how Sweden could adopt joint degrees. This investigation was completed in 2008 with recommendations for how to establish joint degrees for Swedish institutions (Ds 2008:80). Joint degrees were added as an option for Swedish institutions in January 2010. The purpose of Joint Programs leading to joint degrees was seen, to cite the inquiry, “to gain profits of cooperation for the institutions and to strengthen the international dimension in education.” (Johansson, L: *Gemensam examen*, p 74. Ministry of Education, Ds 2008:80). Swedish legislation understands a joint degree to be a degree that is reached after completing a program run by two or more institutions with a joint curriculum, and with the institutions being responsible for separate defined parts constituting the program. The national degrees conferred must be on the same academic level. The degree certificate must be one joint document or separate documents that are referring to each other. The joint degree must be regulated in a written agreement that must be signed by the cooperating institutions before

admission to the education program. The joint degree does not mean that the Swedish HEI can award degrees other than the nationally accredited degrees. The degrees each institution is entitled to award and the learning outcomes are the same. The inference of tuition fees was an even bigger change for the higher education sector. Starting in 2011, the Swedish HEI had to charge tuition fees from non-European students to cover the full cost of the education, while no tuition fees had to be paid by European students. This is for first- and second-cycle education, while third-cycle studies still are cost-free. Previously, university education in Sweden had been free of charge by law. This reform obviously is a challenge for Swedish HEI when it comes to cooperating in joint European programs.

### 1.1.3 Joint Programs and University Strategies in REDEEM Consortium

The latest study underlines the importance of integrating JP into the institutional strategy to maintain them in the long term (Obst, Kuder et al.: 2011, pp. 32-39). “Even though joint degree programs are most often initiated by university professors and are largely motivated by the academic interests of their respective departments, such programs require the support of the university overall to provide financing, academic and administrative resources, and marketing measures for the degree programs.” (Thimme 2013: 118). JP require a high involvement and are often only one part of the internationalization strategies. In the following paragraph, the university strategies of the REDEEM partners are outlined.

**Université Catholique de Louvain (UCL)/École Polytechnique de Louvain (EPL):** The UCL School of Engineering (EPL) has been managing double degrees since the mid-1990s. Initially, this work was accomplished within the Top Industrial Managers Europe (T.I.M.E.)

network. In the early 2000s, EPL belonged to the small group of universities that designed the canvas for the CLUSTER dual master scheme. In more recent years, internationalization has become a priority in which the school is willing to invest even more time and resources. The development of JP is an important part of this internationalization strategy. EPL has been strongly involved in both phases of the Erasmus Mundus programs and it is currently managing 19 double degree agreements (the EU countries involved are France, Germany, Italy, Spain, and Sweden; the non-EU countries are Brazil, Canada, Japan, and Turkey). Initiatives to develop new JP result from the partners' shared interest.

**Instituto Superior Técnico (IST):** IST's internationalization strategies are aimed at increasing the number and diversity of international students by revising the curriculum offered, focusing it on specific international audiences, and promoting partnerships with international companies. Regarding the creation of double degrees, there is no strategy. Elaboration of new programs depends on the common interest in a specific area of knowledge or on the proposal of one of the partners. Currently, the networks joined by IST undertake considerable efforts to obtain double degree programs. Countries that are emerging countries in terms of student mobility, such as China or Australia, are IST priorities for the next years.

**Karlsruhe Institute of Technology (KIT):** KIT has 24 international double degree programs on the Bsc. and M.Sc. levels and a clear preference for double degree programs, as real joint degrees are too difficult to establish from an administrative point of view and do not represent any real advantage for the students (labour market recognition, legislation, accreditation of JP) (Obst et al. 2011: 6). The JP (DD) strategy is embedded in the general

internationalization strategy of the university to broaden the institution's portfolio, adapt to the globalized labour market demands, and enhance international visibility to attract international talents. The JP's clearly contribute to the attractiveness of KIT. For this reason, their development is supported by internal guidelines and the German-French Initiative that has rich experience in German-French double degrees. (More than half of the international DDs at KIT are programs with French partner HEI.) Double degrees at KIT are based on strong partnerships and integrated into existing study programs. The development of new JP is to be based on already existing strong partnerships and to be of strategic interest for KIT. Each department is supposed to offer a high-quality international JP in the future.

**Politecnico di Torino (PT):** PT has 112 double/joint degree agreements and offers 4 joint programs at Bachelor and Master of Science levels. Even if national legislation has made it possible to implement integrated curricula at an international level and to award joint degrees, Politecnico di Torino, considering the complex procedures for awarding joint degrees, prefers double or multiple degrees that generally do not meet with any obstacles in the national legislation of the partner university country.

The oldest joint program (Diploma Universitario Europeo in Produzione Industriale - European university diploma in industrial production) was launched in 1985 together with the University of Brighton. The originality of this program lies in the innovative nature of the professional it creates as well as in the new educational model adopted: The studies must be planned and organized symmetrically in Italy and in another country. This means that agreements between the universities concerned must be signed, which specify the



resources for realizing the integrated project, the study periods to be spent by students at the home and host universities, and the mutual recognition of examinations and teaching modules. Also, the internship is to be done in two periods at companies located in two different countries. At the end of the study and training period, students are awarded two qualifications: The Italian diploma Universitario Europeo in Produzione Industriale and the corresponding foreign qualification from the partner university. Recently, the joint program was turned into a bachelor's degree program (according to the Bologna process) together with Universitat Internacional de Catalunya UIC, Barcelona (Spain), Athlone Institute of Technology – AIT, Athlone (Ireland), and École Supérieure de Commerce – IPAG, Nice (France).

**KTH Royal Institute of Technology (KTH):** KTH's development plan for 2013-2017 states that the development of structures for dual and joint degrees for the education programs on all levels should be intensified (p. 12). Joint programs are intended mainly to give rise to international collaborations. A guideline for joint degrees in the first, second, and third cycles was established in 2014 to outline the aims and requirements KTH has for establishing joint degree programs. Based on the concept of joint degrees, this guideline was inferred by the Swedish government in the Higher Education Ordinance in 2010. Currently, a guideline is being developed for the initiation of *Cotutelle* cooperation that is for the joint supervision of doctoral students.

KTH started to develop double degree exchange in the 1980s already within the T.I.M.E. Association, a network of engineering schools in Europe established in 1989. Realizing that the member institutions' alumni normally become leaders in companies and other organizations and that these positions more and more require or at least benefit from

intercultural and linguistic competencies, KTH wanted to encourage its engineering students (students studying for the 5-year engineering diploma) to pass a longer time of studies abroad, the objective being to develop an extra home working market. The development of the double degree concept within T.I.M.E. was instrumental for accepting the idea to encourage students to do a very substantial part of their program at a partner institution and to award the engineering diploma to students who would come to KTH for the latter part of the programs only. The T.I.M.E. double degree cooperation also proved a good way of attracting very good students to KTH, who contributed to the student body, as PhD candidates, and as alumni. This model of mobility was also used with institutions outside of the T.I.M.E. Association. In parallel, KTH decided to support student exchange and have directors of studies in place on school level to oversee the study plans and validation of studies. These professors were given a comprehensive view of their respective education programs and together with administrative staff, they created a "one-stop shop" that made it easier for the students to discuss and get approved their study plans. At this stage, internationalization was still mainly driven on school level and, hence, was dependent on motivated individuals and other local factors. The central international office was only staffed with three persons. One person oversaw central coordination of the T.I.M.E. cooperation, but the involvement in the schools varied. Later, KTH also developed cooperation centrally for the two-year masters' programs within the CLUSTER network. A convention was signed in 2007. With the signing of the convention, KTH supported free mobility between the members' masters' programs in principle. But mobility turned out to be smaller than hoped. A template for the bilateral agreements was developed. Within this

framework, the students study one year at each of the two cooperating institutions to be eligible for both institutions' masters' degrees. This mobility scheme needed a very good match of the two programs and consequently also motivated program directors to work on the mapping of the two curricula. The CLUSTER dual master turned out to be a good preparation for developing consortia to apply for Erasmus Mundus master's courses. Mundus was launched in 2004. KTH has been very active in Erasmus Mundus programs on the masters and PhD levels. This was an effort to strengthen KTH's position as an international university and as a strategy to counteract the decline in non-European students following the introduction of tuition fees in Sweden. A part of this transition of the student body into a very international one was the development of teaching programs in the English language. In retrospect, this was a prerequisite for participation in the European Mundus programs. This basically bottom-up process was started by masters' programs that were not satisfied with their recruitment of national students and, hence, wanted to attract international students. The first master's program offered completely in English started in 1994 in environmental engineering and planning. After this, more and more programs switched into English. Today, it is standard. 60 of the 63 master's programs offered in 2016 were taught in English.

#### **Technische Universität Darmstadt (TUDa):**

**TUDa** is further developing its double degree strategy and recently, started to plan an official formalization of academic objectives of its double degree programs. In addition, the TUD's double degree strategy is embedded in the overall internationalization strategy of the institution. Through double degree programs, TUDa offers a variety of international and high-quality studies, with which the institution wants

to be highly attractive for selected students. Cooperation with universities having a different focus in engineering education adds value in professional terms. Moreover, such programs are a tool to continuously maintain and deepen relations with partner universities. TU Darmstadt aims at the development of selected double degree programs (focus on the master's level) with excellent international partner universities assuming an expected corresponding demand.

#### **1.1.4 Joint Programs and Terminology in the REDEEM Consortium**

The REDEEM project members agree on the added values of JP, as is outlined in the literature (Goodman, Rüland:2013):

Reach international reputation and visibility.

Strengthen academic and research partnerships.

Broaden the academic scope of offers and increasing enrolments of foreign students.

Students gain intercultural competencies and language skills.

Students obtain a dual qualification.

The consortium members of REDEEM have a special interest in joint programs and similar experiences that agree with the general findings about JP (Obst et al. 2011: 6, 29f.). Moreover, joint programs within REDEEM have common characteristics:

- Minimum of 1-semester prolongation of studies to obtain a DD.
- High involvement of the partner institutions (choice of partner is important).
- Collaboratively built complementary curricula.
- Min. number of ECTS at the home/partner university ranges from 15 to 60 ECTS.

- JP is much more demanding than a simple Erasmus stay, and selection requires a high score.
- Most of the reported joint programs are offered at the master's level.
- Most of the joint programs are funded publicly.
- Traditional partners are European countries.
- Joint programs are most common in engineering, business, and natural sciences.
- Double degrees are much more common than joint degrees. Most joint programs involve two HEI rather than multiple partners. But there are also large HEI consortia.
- The participation rate in joint programs is rather small (5-25 students per group).
- Main motivations for developing joint programs are to increase internationalization, improve and broaden educational offers and quality, strengthen research collaboration, offer innovative solutions to students and meet the demand of the global labour market, increase visibility and prestige gain for HEI, European identity and citizenship, two diplomas for the price of one, intercultural learning and understanding, added value in academic and political terms.

Main challenges for JP are funding and sustainability as well as accreditation. In the REDEEM consortium, also recruitment, legislative systems, recognition, tuition and scholarship schemes, mobility balance<sup>2</sup>,

<sup>2</sup> "The concept of 'balanced' mobility is increasingly discussed, yet hardly any country can claim to have genuinely balanced degree mobility. Even when flows reach similar numbers, the countries of origin/destination differ significantly." (Bologna Process Implementation Report 2015: 23)

accreditation, language requirements, costs, and certification play a role (Knight 2011; Obst et al. 2011: 32f.). REDEEM partners already have vast experience about joint programs and confirm what is generally said: Joint programs are an important component of the universities' internationalization strategies. As joint programs are significantly resource-intensive for a relatively small number of students and complex, clear strategies for joint programs as well as procedures, marketing and recruitment tools, and, most importantly, funding for sustainability are important to further establish joint programs (Obst et al 2011: 39).

There is general confusion about the right terminology, as the terms might have different meanings depending on the country or region. For this reason, we propose common definitions for use by the REDEEM consortium during the project.

**As working definition, we should concentrate on the term "Joint Programs (JP)" to concentrate the focus on the joint development of the program rather than the final certification (cf. JOIMAN-JOI.CON). As shown above, the JP within the REDEEM consortium fit most of the characteristics of JP defined by Joint Programs from A to Z (JDAZ). A reference guide for practitioners 2015.**

**"A Joint Program is a program offered jointly by several higher education institutions. These institutions can be located either in the same country or in different countries (the focus of this guide). A Joint Program does not necessarily lead to a joint degree. It is only one of the possible awards. After completion of a Joint Program, a graduate may be awarded a single national qualification, a double (or other multiple) qualification, or a joint qualification."**

**REDEEM focuses on international joint programs.**

**REDEEM also adopts the suggested working definitions by Aerden/Lokhoff 2013:**

**Degree:** Any degree, diploma or other certificate issued by a competent authority attesting the successful completion of a higher education program.

**Joint Program:** An integrated curriculum coordinated and offered jointly by different higher education institutions and leading to a (double/multiple or joint) degree.

**Joint degree:** A single document awarded by higher education institutions offering the Joint Program and nationally acknowledged as the recognized award of the Joint Program.

**Multiple degree:** Separate degrees awarded by higher education institutions offering the Joint Program attesting the successful completion of this program.

**Double degree:** Two degrees awarded by higher education institutions offering the Joint Program attesting the successful completion of this program.  
→ A double degree is a specific type of multiple degree.

**Dual degree:** Two degrees awarded individually, attesting the successful completion of two separate curricula, with potential overlap and efficiencies in course-taking, and, if more than one institution is involved, each institution is primarily responsible for its own degree.  
→ A dual degree is not awarded for a Joint Program.

**Awarding institution:** A higher education institution issuing qualifications, i.e. degrees, diplomas or other certificates. In the case of joint degrees, an awarding institution is one of

the two or more institutions involved in conferring the joint degree, thus formally recognizing the achievements of a student enrolled in the Joint Program.

**(Joint Program) consortium:** A group of two or more higher education institutions and potentially other contributors (e.g. research centres) with the objective of integrating teaching and learning activities for providing a Joint Program, although not all participants necessarily award a (joint) degree.

The table below shows the general setting of Joint Programs at the REDEEM partner universities.

Table 2: Joint Programs JD/DD in the REDEEM Consortium

	KTH	PT	UPC	IST	UCL	TUDa	KIT
<b>Agreements</b>		112	57	51	19	38	26
<b>Min. ECTS</b>		60	60	60			60
<b>In/out balance</b>	In>out	Balanced	In<out	Balanced	In>out for Erasmus Mundus In<out for other JPs	In>out	Balanced
<b>Set up of JP</b>	Development of JP is mainly initiated and driven by the departments and the professors. The IRD supports the JP at an administrative level	a) Proposal from Polito professors related to a specific program, with the support of International Relations Office; b) Approval of Vice-Rectors for International Affairs and Education; c) Approval of Polito departments involved in the agreement; d) Elaboration of the agreement	Development of JP is mainly initiated and driven by the departments and the professors. The IRD supports the JP at an administrative level		Development of JP is mainly initiated and driven by the departments and the professors. The IRD supports the JP at an administrative level	Development of JP is mainly initiated and driven by the departments and the professors. The IRD supports the JP at an administrative level. Master's contracts on the executive level, with some department/profession-specific annexes	
<b>Management of</b>	Management of	The	Decentralized.		Decentralized,	Decentralized	Management of

<b>JP</b>	JP is mainly on the department level. Administrative support by centralized institutions concerning: Setting up the agreement, accommodation , enrolment, advising of students ...	management of the program is centralized: a) the International Relations Office manages the agreement b) the Incoming and Outgoing Mobility Offices implement the activities	International Relations (and board of school) at school/faculty level		as the IR is also decentralized. So mainly on the department level	selection of the students by the departments. Centralized administration of the exchange and contract management with the partner universities (Unit for International Relations and Mobility) Joint elaboration of new contracts	JP is mainly on the department level. Administrative support by centralized institutions concerning: Setting up the agreement, accommodation , enrolment, advising of students
<b>Traditional partners</b>	Traditional partners are, of course, in Europe, but also cooperations with other non-European countries	Traditional partners are European universities and Latin American universities. In recent years, Politecnico promoted collaboration with non-EU universities, mainly Chinese.	Europe (CLUSTER), China	Europe CLUSTER T.I.M.E. KIC InnoEnergy	Traditional partners are European (CLUSTER), but also non-European countries	France and USA	Europe
<b>Future plans</b>	KTH	a) Simplify the proposal and	30 JP under development.		Transfer of all master's	Strengthening DD programs	Strengthen existing



management is working on deepening cooperation with selected partners and networks.  Work to be more efficient and to have better quality assurance by the university administration for joint programs	development process b) Increase the follow-up activities to have better quality exchange c) Increase the number of double degree programs in Latin America	See next internationalization plan	courses to English. Allow JP in a wider range of fields. Conversion of MERIT into CLUSTER Dual Master (in progress). To encourage registration in JP by awarding merit-based master's scholarships	within a newly formulated DD university strategy	partnerships. Develop JP with non-European countries
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## 1.2 Employability

### 1.2.1 Definitions of Employability

Employability is one of the main ideas behind a harmonized higher education system in Europe as declared in Paris in 1998 (Sorbonne Declaration 1998). From the very beginning, the Bologna process was linked to the intention “to promote European citizens’ employability and the international competitiveness of the European higher education system” (Bologna Declaration, 1999). The Prague Higher Education Summit focused on “graduate employability” (Prague Communiqué 2001: 2) and the Bucharest Communiqué highlighted the importance of “cooperation between employers, students, and higher education institutions, especially in the development of study programs” in order to augment employability (Bucharest Communiqué 2012: 2). The European Ministerial Conference in Yerevan in 2015 defined employability as a major goal for the European Higher Education Area and underlined the importance of mobility to enlarge competences and career options for graduates. Erasmus+ also pursues the promotion of mobility to enhance personal development and employability (Erasmus + Programme Guide, 2016).

Despite the agreed high importance of the concept “employability,” there is no universally accepted definition. The definitions depend on the context. In Anglo-Saxon countries, the term of employability is linked to social-political questions of being able to participate in the labour market. Others define employability in terms of skills. But employability is more complex and should not be defined in such a narrow way.

In the European Higher Education Area, the learning process, the graduate’s achievement and potential to acquire a job are

emphasized. Employability is not only about the acquisition of a job, it rather is “[...] the ability to gain initial employment, to maintain employment and to be able to move around within the labour market,” as stated by the [Bologna Follow-up group](#).

According to Yorke (2006: 8), employability involves a complex and continuous process of learning. For him, “employability goes well beyond the simplistic notion of key skills and is evidenced in the application of a mix of personal qualities and beliefs, understandings, skilful practices and the ability to reflect productively on experience” (Yorke 2006: 13). He underlines the importance of “a set of achievements – skills, understandings and personal attributes – that make graduates more likely to gain employment and be successful in their chosen occupations, which benefits themselves, the workforce, the community and the economy” (Yorke 2006: 8). Brown et al. (2002) also stress external circumstances.

The students’ point of view is shown by the Student Advancement of Graduates’ Employability project (SAGE). The European Students’ Union has developed the following definition of employability: “Employability is a broad concept which includes subject-specific, methodological, social and individual competencies which enable graduates to successfully take up and pursue a profession/employment and empower their life-long learning. Employability is also about making graduates more likely to gain employment in their chosen field(s), being able to create/start new businesses, and being able to develop and succeed in their occupations.” (SAGE 2014: 4).

Consequently, employability designates a set of internal knowledge, skills, competencies, and attitudes that have to be maintained, reflected, and redefined according to external factors, such as new environments and requirements in order to find, fulfil, and keep work during working life (EHEA; SAGE 2014; Knight/Yorke: 2006).

The definition given by the Council of the European Union seems to take all items into account: “Employability - that is the combination of factors which enable individuals to progress towards or enter employment, to stay in employment and to progress during their career - is a complex concept, involving not only each individual's characteristics, skills, attitudes and motivation, but also other external factors which lie beyond the scope of education and training policy, such as labour market regulations, demography, the structure of the economy and the overall economic situation (Council of the European Union. 2012a: 10).

### 1.3 Joint Programs and Employability in the REDEEM Consortium

#### 1.3.1 First Survey Results

It is widely accepted that international mobility has a positive impact on the development of competencies, which leads to better chances on the labour market and more generally to a better employability. Still, employability is an issue which is often addressed, but not yet sufficiently studied, especially when it comes to joint programs (Knight 2011). Due to the juvenility of joint programs and small study groups, very few generations of joint program students have entered the labour market so far. Research on these programs is limited, especially as far as employability is concerned. The consortium members do not have any results from internal

studies on double degrees. More general studies about the effects of mobility on skills and employability provide an insight into the topic (EIS 2014; DAAD: 2016). Against the background of the EU's economic crisis, data show that higher education graduates have suffered from the crisis, but still the unemployment rates are the lowest for young people with a high education in most countries (Bologna Implementation Report 2016: 208). It can be assumed that this holds for graduates having two national degrees, even more. Although almost all EHEA countries identify employability as a policy concern, the tools and efforts change from country to country. HEI have great autonomy and an important role to play: Including work placements in the curriculum (preferably abroad), improving career guidance services, monitoring performance with established feedback mechanisms, but also encouraging student mobility or the implementation of Bologna tools (Bologna Implementation Report 2015: 208).

Most of the national and international studies use a mix of quantitative and qualitative methods and define employability by a set of skills and competencies. It is striking that there is no consensus on the description of these skills. Apart from empirical factors, the **Erasmus Impact Study 2014** used the six memos© factors developed by CHE Consult: Acceptance of other people's culture and attitudes and adaptability, openness to new experiences, trust in own competence, awareness of own strengths and weaknesses, ability to make decisions and ability to solve problems. These characteristics of personality traits which are most closely related to employability are used to measure real developments in the skills of students after an international experience (DAAD 2016:38; EIS 2014:68).

Empirical, perceptual, and attitudinal items were combined to explore the effects of

Erasmus mobility and intensive programs (IP) by EIS. It focused on the effects of different types of mobility on the development of individual competencies and skills of students (which have an impact on employability). One of the most important findings is employer's importance attached to international experience about employability. In comparison to 2006 where only 37% of the employers included in the study considered international experience important for employability, 61% of the employers did so in 2014 (EIS 2014: 136). Employers and alumni confirmed the memo © factors as relevant to employability. More than half of the students (51-52%) who had experienced Erasmus mobility activities (study, work placement, and IP) increased their memo© values. In addition, the findings of the qualitative study strongly supported the quantitative findings: Students had better soft skills and could also develop their professional skills. Complete immersion and work placements seem to be most effective for the development of skills (EIS 2014: 138). The Erasmus Impact Study also revealed that employers value graduates with international experience and assign them greater responsibilities as well as tasks of an international character. Mobility proved to have a positive influence on employment, especially for graduates from Southern Europe, and on salary. EIS also pointed out long-term employability due to mobility experience (EIS 2014: 140).<sup>3</sup>

The most recent study in Germany was ordered by the **German Academic Exchange Service (DAAD)** and conducted by the **Cologne Institute for Economic Research (2016)**. Based on a quantitative survey of 1,008 HR managers from all sectors and company sizes and six qualitative in-depth interviews with employers, the study explored the acceptance of graduates

with study-related international experience on the German labour market.<sup>4</sup> The key findings of the study show that in the process of globalization, international activities are crucial to a company's success. Employers estimate that graduates with international experience perform better in general and are more qualified for international tasks, such as the use of foreign languages, international contacts, and work in international teams. Although employers pay most attention to technical knowledge, social skills, and personal attitudes, the international experience can make a difference in the recruitment process (DAAD 2016: 52, 69, 101). Employers see international experience as an important way for personal development in general and intercultural competence, which becomes increasingly important to a company's success (ex: productivity of international teams). Moreover, employers prefer international sojourns from three to six months that integrate work experiences and allow contacts to the culture and social relationships. Employers also stress the fact that HEI need to support students in the reflection process of their international experience so that the student can value his/her experience and "sell" the mobility experience appropriately to the employer (DAAD 2016). The DAAD survey shows that international mobility can be a "plus" in the recruitment process but does not necessarily need to have a positive impact on income or career. Micro- and macroeconomic factors have more weight. It is concluded that international mobility contributes to long-term employability. Still, the study underlines that international mobility is important and especially internationally active companies search for international profiles (DAAD 2016:134).

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<sup>3</sup> Interesting to note is that graduates mentioned a greater European identity – "being Erasmus" (EIS 2014: 138).

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<sup>4</sup> The focus of the study was the employer's perspective in 2015.

As international activities become increasingly important to companies, JP students should be their perfect target group for jobs of international orientation. In comparison to the above-mentioned Erasmus mobility students, JP students experience study periods with integrated working placement, contact to the country's culture and other local and international students. This immersion is associated with an even greater impact of their JP mobility on employability (DAAD 2016:112). Moreover, JP's are based on solid partnerships and offer good structures, sometimes even preparation and reflection seminars which help the students value their experience (DAAD 2016: 126). Important to note for joint program alumni is that employers accept an extension of studies which often is the case for joint programs due to different academic calendars and a challenging curriculum (DAAD 2016:109). The rather "neutral" position of employers about JP in the DAAD survey shows that joint programs are not very well known to employers and that there is need to improve the marketing of JP's (DAAD 2016:121, 125). It is evident that international mobility can facilitate the entry on the labour market, but it cannot outweigh formal selection criteria, such as technical knowledge, cognitive skills, social competence, personal attitude, and practical experience. There is still a long way to go for JP's to obtain more recognition from the employers and to reveal their quality about academic, intercultural, and practical education.

Two surveys have focused on JP so far: The German-French University's employability study (2014) and IW consult for DAAD study in 2003.

The German-French University's employability study (2014) is an example of one of the few regularly conducted surveys on students who passed a joint program. The survey (2014) addressing the alumni of German-French double-degree programs revealed very

positive results. 60% of the participants considered the double degree an advantage in finding a job. Particularly engineering students reached a high satisfaction rate. 70% of the alumni needed less than 3 months to find an adequate job. More than two-thirds of those working in an international environment estimated that the double degree had a positive impact on their professional mobility. "Only" 38% agreed that a double degree improved their career options. 90% would recommend their double degree, which is extremely high and a positive feedback for the German-French double degrees (DFH 2014).

The IW consult for DAAD study (2003) showed that 50% of the employers recognized double degrees and found them attractive. Business and engineering double degrees were in high demand. Employers recognized the intercultural experience and language skills gained through international mobility. For 60%, a double degree made a difference concerning hiring and especially language skills were deemed important because they are needed for working abroad.

### 1.3.2 Interest of the Project

The Bologna process was meant to strengthen the competitiveness and attractiveness of European higher education and to foster student mobility and employability through easily readable programs and degrees. Throughout the Bologna process, its agenda was broadened and topics, such as quality assurance, employability, industry-academia partnerships, lifelong learning, student-centered learning, international openness, mobility, education, research & innovation, as well as data collection, funding of HE, ... were introduced (Bergen Communiqué 2005, Leuven/Louvain-la-Neuve Communiqué 2009). With the official launch of EHEA in 2010, the initial topics of the Bologna process were

given a new quality: Besides the consolidation of the Bologna process, the Bucharest Ministerial Conference (2012) clearly identified higher education as a “help to get Europe back on track and generate sustainable growth and jobs”

(<http://www.ehea.info/pid34248/history.html>).

In view of the economic crisis, the Ministers agreed to focus on three main goals: Providing higher-quality education to more students, better equipping students with employable skills, and increasing student mobility. The Bucharest Conference defined two important objectives according to the present thematic: “**Employability** and personal and professional development of graduates throughout their careers by improving cooperation between employers, students, and higher education institutions, especially in the development of study programs that help increase the innovation, entrepreneurial, and research potential of graduates” (Bucharest Communiqué 2012: 2) and the further development of **joint programs and degrees** as part of a wider EHEA approach. To reach these goals, national rules and practices relating to joint programs and degrees will be examined to dismantle obstacles to cooperation and mobility embedded in national contexts (Bucharest Communiqué 2012: 4).

It was clear to all stakeholders that Europe needs to create jobs and prosperity and HEI with their key tasks of education, research, and innovation were identified to be crucial actors in producing economic growth by providing the highly qualified people Europe needs. But as the employability of graduates cannot be increased without a dialogue between employers and higher education, the European Union, through its Modernisation Agenda (2011), fostered cooperation between HEI and business to continuously shape and develop study

programs to meet the students’ and the labour market’s demands.<sup>5</sup>

**International mobility to enhance the employability of graduates also is the main topic of the Reforming Dual Degree Programs for Employability and Enhanced Academic Cooperation (REDEEM) project.**

The impact of international mobility experience on the graduates’ skills and competencies is not doubted. Transversal skills cherished by employers besides technical knowledge in the respective discipline and work experience are gained during mobility periods abroad. Recent studies (DAAD 2016) show that employers consider international experience an important way to develop personally in general and to acquire intercultural competence. Moreover, international experience can make the difference in the recruitment process, as employers think that graduates having international experience perform better in general and are more qualified for international tasks. **As employers prefer international sojourns from three to six months with integrated work experiences, contacts to the culture, and social relationships the focus on the link between Joint Programs, as a special form of international student mobility and employability of graduates becomes interesting. But although the recent Erasmus Impact Study (2014:14) shows that 64% of employers consider an international experience important for recruitment, most of the stakeholders also underline the importance of the quality of mobility (DAAD 2016). Given the fact that JP’s offer a long-term stay in a foreign country that often**

<sup>5</sup> Moreover, the knowledge triangle of education, research, and innovation is at stake to improve the continuum between basic and applied research and transfer knowledge to the market (Modernization Agenda of Europe’s higher education systems 2011: 18).



**combines a study experience with a work placement, it is also more likely that students increasingly meet other local and international students and familiarize with the country's culture. Moreover, well-framed JP's are based on strong institutional and personal partnership so that students are more likely to have a high-quality international experience. It can well be assumed that international experience through a JP has more impact on the employability of graduates than conventional Erasmus+ mobility.**

The REDEEM universities that are members of the CLUSTER network, which regroups leading universities in the field of sciences and technology, all have a substantial experience with JP and are keen on examining their impact. They consider the quality of their JP central to maintain a competitive advantage in the global education market, as students look for international competency offered by joint programs to fit best into the global labour market (Faethe, Brenn-White 2013).

Like other impact studies of mobility, the REDEEM project quantitatively analyses empirical data and perceptions of mobility effects on students of all REDEEM partner universities, who have attended JP. The results of the quantitative analysis will then provide the basis for the qualitative approach which will consist of focus group meetings with all stakeholders from the REDEEM countries. During these focus group meetings, the perceptions and needs of employers concerning the JP curriculum, students, and their skills as well as employability will be explored. Moreover, academics and alumni will be interviewed as well. **The innovative character of REDEEM results from its focus on JP in six different countries.** Within the project, the impact of joint programs (the term includes all possible variants according to the definition used here) in science and technology will be

studied from the point of view of the main actors: Academics, students, and employers in all participating countries.

**Does a joint program matter? Do students with two diplomas have better employability chances? Do JP students have better employability chances than non-mobile students?**

Finally, this approach will also give information about the academic validity of JP. This information will be incorporated in guidelines to improve the JP at the REDEEM partner universities and to make them more suitable for students and adjust them to the employer's needs.

## 1.4 Implementation and Constraints

The table below shows the different contact strategies of the REDEEM partners in the alumni survey.

### 1.4.1 Alumni Contact Strategy

**Table 3: Alumni Contact Strategy**

Response rate 30%	KTH	PT	UPC	IST	UCL	TUDa	KIT
<b>Management of alumni relation</b>	Alumni relation office	ALUMNI POLITO is an external non-profit association, 11000 members, agreement with Polito concerning collaboration on networking with former students (annual meeting), scholarships, training for the practical architectural professional examination, cultural activities	Schools/faculties UPC Unit: "UPC Alumni"	Alumni organization that collects and manages alumni data. Employability observatory (OEIST) asks alumni after 12-18 months, 5 and 10 years. Transfer and Technology Office (TT) organizes activities with alumni	Alumni Association: <a href="http://www.aילוuvain.be/page/homepage">http://www.aילוuvain.be/page/homepage</a>	TU Darmstadt Alumni Network (www.tu-darmstadt.de/alumni)	Alumni network. Alumni networks of French partners

<b>Available data</b>	Alumni database	ALMALAUREA: Consortium of Italian universities: <b>Yearly report on graduates' employment situation</b> No specific analysis on, but the possibility to improve and deepen the report.	UPC Alumni From the application that manages registrations, transcripts, etc.	OEIST survey results available (no specific feedback on JP, but some JP are included in the survey)	Approximately 8,000 alumni records go back beyond the mid-1990s when DD were introduced	Students' reports MoveOn database TU Darmstadt Alumni Survey	German-French JP, the study of German-French University, REDEEM questions were integrated into KIT graduate survey 2016. Main challenge is to reach a sufficient proportion of alumni for statistical validity
<b>Contact procedure</b>	Email, phone	Newsletter, FB page, direct mailing and website <a href="https://www.alumni.polito.it">https://www.alumni.polito.it</a> , online surveys + phone interviews + g+, twitter, LinkedIn	Email, search on the internet, through social networks, filter form all alumni	Email, internal online survey platform LimeSurvey installed	Email and phone	Email and phone	Email, JP question was included in general alumni survey
<b>Response rate</b>		80%	Low	40-50%	30%		
<b>Alumni records</b>		Few activities concerning employability. No specific focus on DD.		250			

## 1.5 Conclusion and Outlook

National and international studies made over the past years show that a key profile consisting of cognitive, communicational, social, and personal competencies as well as technical know-how prevails in the recruitment process. Moreover, practical experience of the student plays an important role in the recruitment procedure. Although international experience is highly valued by employers and gaining importance with increasing internationalization of the economy, it does not substitute the key profile or practical experience. International mobility experiences rather are a factor of long-term employability and enable international working fields and access to special trainee programs, as employers think that they have positive effects on personal competencies and development. Moreover, employers underline that the stay abroad must enable close contact with people and the country's culture to unfold positive effects on the personal development. According to employers, however, students are not able to positively present their experience.

**The discrepancy between the perception of employers and the reality of joint programs is striking. Joint programs enable studies and (mostly) also internships abroad in a well-structured context, which means that the length and quality of the stays differ very much from those of conventional Erasmus programs. Hence, JPs offer the close relations to the countries and people that are required by employers. However, communication must have failed, as employers are not aware of JP. HEI must outline the benefits of this high-quality mobility program to employers. International offices and career services must be integrated into the preparation and reflection of JP (DAAD 2016:143ff.).**

Even if higher education institutions are crucial partners in realizing the European Union's strategy to maintain economic growth and achieve prosperity by developing highly qualified European citizens for a globalized and complex labour market, there are hardly any empirical studies and data on the impact of mobility (EIS 2014:21).

By analysing the perspectives of students and employers, REDEEM wants to complement already existing studies of mobility effects on the employability of young graduates. REDEEM focuses on the impact of joint programs of leading universities in science and technology. We expect this analysis to confirm the findings of earlier studies, according to which students with international experience are more likely to work in international companies and execute activities of international characters, such as using foreign languages, handling international contacts, and working in internationally mixed teams. Although the literature on the mobility's impact on job opportunities and income is limited, we expect the joint program experience to be a boost for the first job and the income level (EIS 2014:140). It will be interesting to compare the impacts of different mobility programs and see whether joint programs have a higher impact on employability than conventional mobility programs. Such a study might be made at regular intervals to maintain the quality of joint programs and improve their implementation in accordance with the development of the international labour market. Determination of the impact of JP on employability, personal development, attitudes, and life pattern will provide useful information to reform, enhance, and promote JP within the EHEA. A set of recommendations of how to improve existing JP and how program directors can create new effective and attractive

programs for both students and employers will be derived. Moreover, the output will be used as an information and marketing tool to increase the number of JP students.

**Having launched this project, the REDEEM universities as Europe's leading higher education institutions in science and technology accept the challenge and want to contribute to achieving smart, sustainable, and inclusive growth through knowledge.**

## 2 Quantitative Analysis

### 2.1 Framework

A major objective of the REDEEM project consists in providing a multi-stakeholder perspective of Double Degrees (DD). In line with that objective, the findings presented in this report focus on the reality and perceptions of DD graduates. This group perhaps plays a larger role in that it accumulates both the experience of the academic context and entry to the labour market. Graduates are, so to speak, direct beneficiaries of DD programmes and those who carry the idea and concept of a double degree from an academic context to the industrial/entrepreneurial milieu. In addition, they act as a bridge between universities and companies to build on and adjust curricula and educational offers.

The purport of Double Degrees is to be “a means to broaden educational offer, advance internationalisation of Higher Education Institutions (HEIs), reach international reputation and visibility, strengthen academic and research partnerships with strategic partners based on a strong institutional partnership” (Goodman, Rüland: 2013; Obst et al. 2011: 28). Since the 1990s, the trend has been to implement programmes that explore ways of establishing new collaborations and partnerships in this field. Nevertheless, according to the 2015 Bologna Process Implementation Report, the number of students who benefit from this experience has been considerably low. The REDEEM project is in line with the European strategy to enhance and expand the breadth of DD programmes.

The work focuses on two key aspects: the first is more objective in nature, which offers a view of how matters stand at present in view of the labour market. This aspect makes it possible

to characterise employment integration and status standards of DD graduates. The second is more subjective, which addresses not only the graduates’ perceptions of the impact that a Double Degree had on their career but also the major motivational factors that led them to embark on a Double Degree.

We must bear in mind the diversity of realities with respect to the universe of DD graduates. We cannot speak of a Double Degree without considering academic mobility, not only in terms of partner universities but also of students who took Double Degrees in the framework of a programme and originated from third countries. The fact that graduates from 66 nationalities spread around 75 countries who concluded their programme between 2005 and 2015 materialises in a huge difference of realities. Global results should be read carefully because they end up being more indicative than conclusive, with respect to employment status characterisation, in which factors like seniority and location seem to be very important.

### 2.2 Methodology and Analytical Dimensions

The universe surveyed includes all graduates of each partner institution who participated and earned a Double Degree between 2004/05 and 2014/15. By choosing this period the purpose was to understand realities of graduates who experienced double degree programmes in different periods. An online questionnaire was conducted to garner information through a LimeSurvey platform. The global response rate was 25.2% against a

universe of 6546 graduates. Table 4 shows the response rates per partner.

**Table 4: Response rates**

	N	n	Response rate
IST	235	90	38.3%
KIT	400	119	29.8%
KTH	1862	552	29.6%
POLITO	2461	477	19.4%
TUD	392	114	29.1%
UCL	201	52	25.9%
UPC	900	246	27.3%
<b>Redeem Consortium</b>	<b>6546</b>	<b>1650</b>	<b>25.6%</b>

To facilitate analysis graduates were divided into categories according to graduation year:

**Table 5: Graduate categories according to graduation year**

Type of graduate	Graduation year
Recent Graduates	2013/14, 2014/15
Medium Graduates	2011/12, 2012/13
Older Graduates	2009/10, 2010/11
Much Older Graduates	2004/05, 2008/09

Findings were presented based on global indicators which reflect the consortium reality. Nevertheless, we should bear in mind that the findings cluster together different contexts and realities and, in some cases, are considerable disparate. Moreover, one should note the considerable disparities in the proposed dimensions with respect to the double degree graduate population among the partner institutions, which varies from the smallest universe of UCL, with 201 graduates, to the largest of POLITO, with 2461 graduates, for the same reference period. Given this situation, we also chose to provide specific information per partner institution, but it does not need to be read with the same sort of care. Moreover, it allows us to perceive the specific realities of each “school/country” pair in terms of double degrees.

### 2.2.1 Analytical Dimensions

As already indicated above, the survey focuses on two key dimensions. The objective dimension consists of several indicators that characterise the current graduate employment status whereas the subjective dimension encompasses the motives that led them to take a DD and their perceptions of the skills gained and competitive advantages, if any, for the labour market. An objective and a short number of indicators were chosen, such as:

- Current employment status
- Employment
- Place of residence
- Salary
- Type of contract
- Duties performed (whether in the area of study or not)
- Employer’s field of activity

The subjective dimension was basically drawn on the partners’ accumulated experience to build up several indicators, which is divided into 3 large groups:

- Motivational factors for taking a double degree.
- Perception of the role of double degrees with respect to learning/gain of certain skills.
- Competitive advantages for the labour market that a double degree may offer.

When collecting information, graduates were given the opportunity to submit suggestions for improvement and general comments on the global experience of conferring a more exploratory nature on the information collection process.



## 2.3 Characterisation of Surveyed Graduates

- An overwhelming majority of surveyed graduates are male, 76.6%. The male to female ratio is 4 to 1.
- The average age is 28,5.
- Recent graduates are the most represented group, 36.4%. Not surprisingly, much older graduates are the less represented group, 17.0%.
- Most graduates are 2<sup>nd</sup> cycle graduates, 91.0%, while only 6.1% are 1<sup>st</sup> cycle graduates.
- 49.3% of surveyed graduates are working outside their home country.

Graduate characterisation is based on the fact that the partner institutions are different in size and reality, with respect to the number of programmes and the number of students, among other aspects. Location and geographical origin are the most affected indicators by the Consortium heterogeneity. The largest percentage of surveyed graduates resides in Western and Southern Europe, with respectively 39.8% and 20.8%. Nevertheless, the geographical origin gives us a different scenario, with 55.8% of surveyed graduates originating from Southern Europe. The marked differences in the distribution of surveyed graduates in these two indicators (place of residence and origin) suggest that we are faced with a significant scenario of professional/post-academic mobility, which is confirmed when the percentage of surveyed graduates, who are currently residing abroad is identified, which is 49.3%.

**Table 6: Current location/place of residence**

Current location / Residence	%
Western Europe	39.8
Southern Europe	20.8
Northern Europe	15.2
South America	7.5
North America	5.6
South Asia	1.7
East Asia	1.5
Western Asia	1.1
Southeast Asia	1.0
Oceania	0.8
Central America	0.8
Eastern Europe	0.8
East Africa	0.7
North Africa	0.1
West Africa	0.1
Central Asia	0.1
N/A	2.4

**Table 7: Geographical Origin**

Geographical origin	%
Southern Europe	55.8
South America	16.3
Western Europe	13.6
South Asia	4.2
East Asia	1.9
North America	1.4
Eastern Europe	1.3
North Africa	1.1
East Africa	0.9
Central America	0.8
Western Asia	0.6
Double nationality	0.5
Central Africa	0.4
Southeast Asia	0.3
Northern Europe	0.2
N/A	0.5

**Table 8: Sex**

Sex	%
Female	19.3
Male	76.6
N/A	4.0

Graduation seniority is a relevant indicator in that one cannot compare the employment situation of graduates who are at very different stages of their personal and professional life. It is also necessary to consider that Double Degrees have been an evolving reality and that there are less “older and much older graduates” than “recent and medium”. According to table 9, the data ultimately emphasises the reality of more recent graduates and, as a result, the labour market of more recent years.

**Table 9: Graduation seniority**

Seniority	%
Recent Graduates	36.4
Medium Graduates	23.8
Older Graduates	16.9
Much Older Graduates	17.0
N/A	5.7

## 2.4 Current Employment Status of Surveyed Graduates

**Table 10: Employment status**

Current situation	%
Paid activity	86.2
Grant holder	4.8
Unemployed	7.2
N/A	1.7

Globally speaking, 91.1% of graduates currently perform a paid activity (Grant holders and employees<sup>6</sup>). Taking a closer look, the current graduate situation shows that “employee” is the most common category, with 79.8% of graduates (Table 11). There is a low percentage of self-employment, as only 3.7% of graduates are self-employed. It can also be stressed that only 1.5% of self-employed people have employees.

**Table 11: Current situation in detail**

Current situation in details	%
Employee	79.8
Grant holder	4.8
Paid trainee	2.8
Self-employed person with employees	1.5
Self-employed person without employees	2.2
Unemployed	7.2
N/A	1.7

Despite the relevance of global indicators, these cannot be read without tapping into the effect of graduation seniority because these are considerably different employment integration contexts and realities. Table 12 shows the current situation in terms of graduation seniority. Unsurprisingly, it is possible to identify that recent graduates are the largest contributors to the percentage of global unemployment. These graduates are at an early stage of their career.

<sup>6</sup> An employed person means the graduates who are in one of the following situations: Employee, self-employed with and without employees, intern and taking a paid internship.

Table 12: Professional situation Vs. Graduation seniority

Current situation in detail	Recent Graduates	Medium Graduates	Older Graduates	Much Older Graduates
Employee	73.5%	78.8%	85.1%	88.3%
Grant holder	6.7%	6.4%	2.5%	2.3%
Paid trainee	4.3%	3.1%	0.7%	0.7%
Self-employed person (employees)	0.5%	1.5%	2.9%	2.7%
Self-employed person (no employees)	1.9%	0.8%	4.7%	2.3%
Unemployed	10.8%	7.7%	2.5%	2.7%
N/A	2.4%	1.8%	1.4%	1.0%

As far as salary is concerned, we can observe that graduates globally earn, on average, €3618. But, once again, considering that the Consortium is heterogeneous, and the realities and contexts of each partner institution are different, this is a merely indicative value. Nevertheless, one interesting point to be stressed is that the latest OECD figures should be used for a term of reference/comparison. In OECD countries the monthly salary is, on average, €3376<sup>7</sup> (value for 2015). Factors such as seniority and location must be considered to obtain a more suitable interpretation of average salary for graduate jobs. About seniority (Table 13), it is not surprising to observe the pattern, because those graduates who already concluded their studies longer ago earn, on average, a higher salary.

Table 13: Remuneration Vs. Seniority

Seniority	Gross average monthly income
Recent Graduates	€3.067
Medium Graduates	€3.301
Older Graduates	€3.986
Much Older Graduates	€4.630

About current location, there are also marked differences which result from the specific features of the different economic contexts in each area. The purpose is not to compare these values, but to provide information as it is and to better understand global remuneration levels.

Table 14: Remuneration Vs. Location

Residence	Gross average monthly income
Central America	€3.796
Central Asia	€500
East Africa	€1.612
East Asia	€2.578
Eastern Europe	€1.415
North America	€6.607
Northern Europe	€3.805
Oceania	€4.840
South America	€2.472
South Asia	€1.740
Southeast Asia	€4.785
Southern Europe	€2.728
Western Asia	€2.295
Western Europe	€3.917
<b>GLOBAL</b>	<b>€3.618</b>

By establishing a relationship between location with seniority, the previously observed average remuneration pattern (much older graduates with higher remuneration) is again the rule, albeit with a few exceptions.

<sup>7</sup> OECD figure concern annual remuneration. The value was obtained by dividing the annual average by 12.

Table 15: Remuneration Vs. Seniority Vs. Location

Residence	Recent Graduates	Medium Graduates	Older Graduates	Much Older Graduates
Central America	€3.946	€6.186	-	€2.849
East Africa	€2.765	€691	€1.600	-
East Asia	€1.969	€2.832	€2.975	€5.000
Eastern Europe	€1.133	€1.265	€966	€2.278
North America	€4.897	€5.794	€7.954	€6.814
Northern Europe	€3.440	€3.635	€4.352	€4.649
Oceania	-	-	€4.278	€7.650
South America	€2.299	€1.990	€2.902	€3.242
South Asia	€1.309	€2.604	-	€715
Southeast Asia	€3.950	€2.194	€10.200	€16.500
Southern Europe	€2.484	€2.539	€2.578	€3.505
Western Asia	€2.526	€1.156	€3.000	€3.350
Western Europe	€3.258	€3.623	€4.383	€5.045

## 2.5 Motivational Factors

Table 16: Motivational Factors - Global

Motivation (1 -Not Important; 5- Extremely Important)	Average (Global)
Living in a different country during my studies	4.6
Interacting with new cultures	4.4
Having access to more job opportunities	4.2
Increasing the opportunities for a professional career in a country other than my own	4.2
Experiencing a different education environment	4.2
Stepping out my comfort zone to improve my ability to work independently	4.1
Learning a new language	4.0
A perspective of getting the job or jobs I aspire to	4.0
Having two academic degrees conferred by two different higher education institutions	4.0
Increasing the possibility to live in a different country permanently	3.8
Studying in a certain identified higher education institution	3.7
A perspective of getting better paid than graduates with a single degree	3.0

All motivational aspects are, at different levels, important. Aside from the potential income growths which, while not being totally not important, has a considerably smaller amount of importance, all other aspects were important for DD graduates. A more in-depth analysis is necessary, but it is noticeable that "Living in a different country during my studies" is/was the most important aspect. "Interacting with new cultures" ranks second. It is interesting to observe that cultural/social related motivations are considered more important than more "corporate" or "Labour

market" ones. This is the pattern observed in the group and in the graduation period breakdown where the "Living in a different country during my studies" and "Interacting with new cultures" are always the major motives.

As previously mentioned, nearly half of the surveyed graduates are working outside their home country. Among these graduates, a slightly different pattern in terms of motivational factors is observed. While the key motive for taking a DD is the same as in the overall results, the top 3 is different when

compared with graduates who are working in their home country. Aspects related to professional mobility and labour market rank higher than the "cultural/social" aspects, which are present on the top 3 of graduates who are not in a professional mobility situation. This issue should be noted and addressed in upcoming projects/works as it suggests that

people who were in a current mobility experience had more career/professional motives than those who were not.

**Table 17: Motivational factors – graduates working in their home country**

<b>Motivation (1 -Not Important; 5- Extremely Important)</b>	<b>Average (Working in home country)</b>
Living in a different country during my studies	4.6
Interacting with new cultures	4.5
Experiencing a different education environment	4.3
Having access to more job opportunities	4.3
Stepping out my comfort zone to improve my ability to work independently	4.3
Learning a new language	4.2
Increasing the opportunities for a professional career in a country other than my own	4.1
A perspective of getting the job or jobs I aspire to	4.1
Having two academic degrees conferred by two different higher education institutions	4.1
Increasing the possibility to live in a different country permanently	3.8
Studying in a certain identified higher education institution	3.6
A perspective of getting better paid than graduates with a single degree	3.2

**Table 18: Motivational factors – graduates working outside their home country**

<b>Motivation (1 -Not Important; 5- Extremely Important)</b>	<b>Average (Working outside home country)</b>
Living in a different country during my studies	4.5
Increasing the opportunities for a professional career in a country other than my own	4.4
Having access to more job opportunities	4.4
Interacting with new cultures	4.3
Experiencing a different education environment	4.2
Stepping out my comfort zone to improve my ability to work independently	4.1
Having two academic degrees conferred by two different higher education institutions	4.1
A perspective of getting the job or jobs I aspire to	4.0
Learning a new language	4.0
Increasing the possibility to live in a different country permanently	3.9
Studying in a certain identified higher education institution	3.8
A perspective of getting better paid than graduates with a single degree	3.1

To facilitate analysis of motivational aspects, 3 main factors were built from the larger list of motivation variables<sup>8</sup>. A factorial analysis was carried out, which allowed their

large motivational dimensions to be built: cultural, professional and academic. It is confirmed that, on average, the cultural dimension takes on greater importance in relation to other dimensions (professional and

<sup>8</sup> Annex ... – Factorial analysis

academic), which share the same level of importance (table 19).

The same trend is found when variables 'location' and 'seniority' are included in the analysis (tables 20 and 21). Cultural aspects continue to be assumed as the most relevant for the decision of taking a DD, and academic and professional motives are very close to each other.

**Table 19: General motivational factors**

Dimension	Average
Cultural	4.2
Professional	3.9
Academic	3.9

**Table 20: General motivational factors by location**

Location	Cultural	Professional	Academic
In home country	4.3	3.9	4.0
Outside home country	4.2	4.0	4.0

**Table 21: General motivational factors by seniority**

Seniority	Cultural	Professional	Academic
Recent Graduates	4.2	3.9	4.0
Medium Graduates	4.2	3.9	3.9
Older Graduates	4.2	3.8	3.9
Much older Graduates	4.2	3.8	3.9

## 2.6 Impact – Skills Gained

**Table 22: % of agreement with skills gained**

Skills gained	% agreement <sup>9</sup>
gave me the ability to work in an international context	93.5
advanced my personal development	93.4
gave me a better understanding of a culture other than mine	91.2

<sup>9</sup> The scale used is: "strongly disagree, disagree, agree, strongly agree". The percentage of "Agree" responses consists in adding the percentage of "Agree" and "Strongly Agree".

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improved my ability to adapt to the work habits of different countries	88.4
improved my ability to adapt and act in new situations	86.3
helped me to improve/gain second language skills	86.0
made me feel more comfortable socializing with people from different cultural backgrounds	85.3
made me feel more self-motivated	71.1
improved my ability to take initiatives	71.0
developed my team-working skills	70.1
improved my ability to work autonomously	65.0
gave me a better understanding of the professional activity in my area of expertise	60.2
improved my ability to use theoretical knowledge to solve practical challenges	52.6
improved my ability to the use of information and communications technologies	46.9

---

It is relevant to measure the graduate perception of the role played by the DD in the development of additional academic skills. The very nature of a DD requires that the distinguishing experience will also potentially result in a diverse or at least unique number of skills that a single degree cannot provide.

Unsurprisingly, most graduates consider that the DD experience gave them the ability to work in an international context. While "International context" might be a quite vague concept and can encompass several different understandings, the main idea is to get a hint of how an international academic experience potentially gives graduates an ability to perform a job which addresses the challenges of a global labour market, both mobility wise and global connectivity wise. This would suggest that the skills that are directly or indirectly linked to the mobility experience have a larger percentage of agreement. It is conspicuous that the percentage of agreement steadily decreases in skills that are not necessarily associated with a mobility experience and may be acquired in an equally efficient manner in a programme without mobility. Nevertheless, agreement percentages are considerably high, and only skills in information and communication technologies fall short of 50%.

About the differences in context/environment between those who graduated recently and those who graduated

before, there is not a pattern or a clear trend. In some items, a more striking difference stands out between Recent Graduates and Much Older Graduates (Figure 1), in terms of "better understanding of the professional activity in my area of expertise" where the percentage of 'agree' responses among much older graduates is about 10% smaller than recent graduates. A similar difference is observed in item "Helped me improve/gain second language skills" but in the opposite direction, which means that there is a lower percentage of graduates who agree that a DD has helped them with new skills in a new language. The other item which shows the most obvious difference is "ability to use theoretical knowledge to solve practical challenges" where recent graduates have a larger percentage of 'agree' responses.

In other items, there are less marked differences. One can even say that apart from the abovementioned exceptions there are no big differences in terms of perceptions of skills acquired between recent and older graduates. In addition, considering that the most striking differences are around 10% and only occur in 3 items, one can suggest that over the 20 years covered by the batch of surveyed graduates, the perceptions of acquired skills are similar.

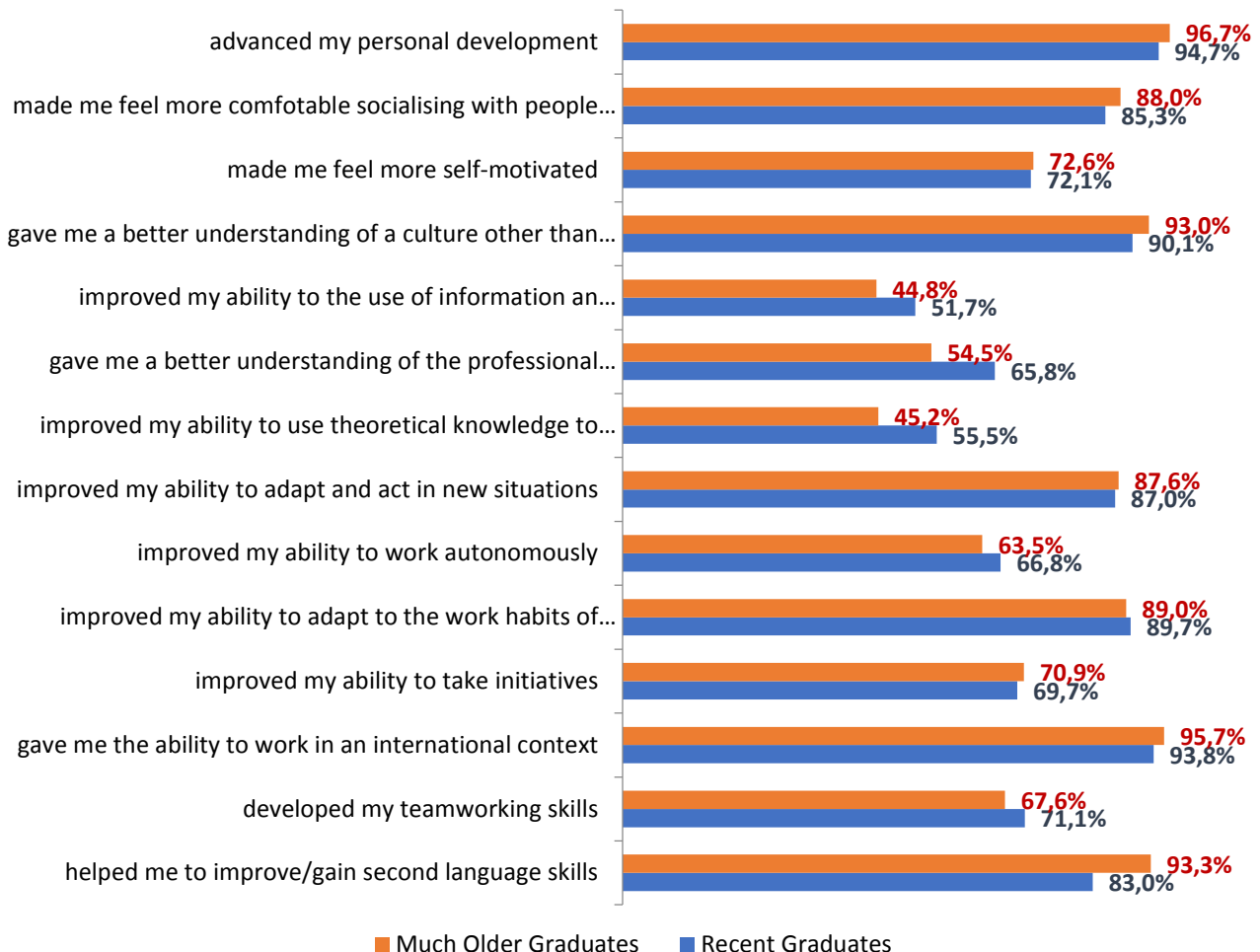
There are some constraints in measuring skills based on perceptions to the detriment of an objective measurement through a certain number of performance evaluation metrics



because these graduates do not have the perception of a “single degree” in building up skills. In this regard, the analysis of acquired

skills will be later compared with the perception of several students who did not take a Double Degree.

Figure 1: % ‘agree’ responses - Recent Graduate Vs. Much Older Graduates



## 2.7 Impact – Competitive Advantages in the Labour Market

The third analysed dimension, which also relies on graduate perceptions, consists of the potential competitive advantages for the labour market that Double Degrees may offer (Table 23).

About the fact that a Double Degree is an advantage in the labour market, graduates have disparate opinions concerning acquired skills. The contribution of the Double Degree to more

job opportunities and offers, with a percentage of agreement of 72.7% is the category where there is a considerable majority of agreement while only 38.4% of respondents agree that the Double Degree allowed them to earn more. In other categories, graduates share disparate opinions, with several variables moving towards a relative majority of agreement: ‘to progress further in my career’, ‘to make the most of the

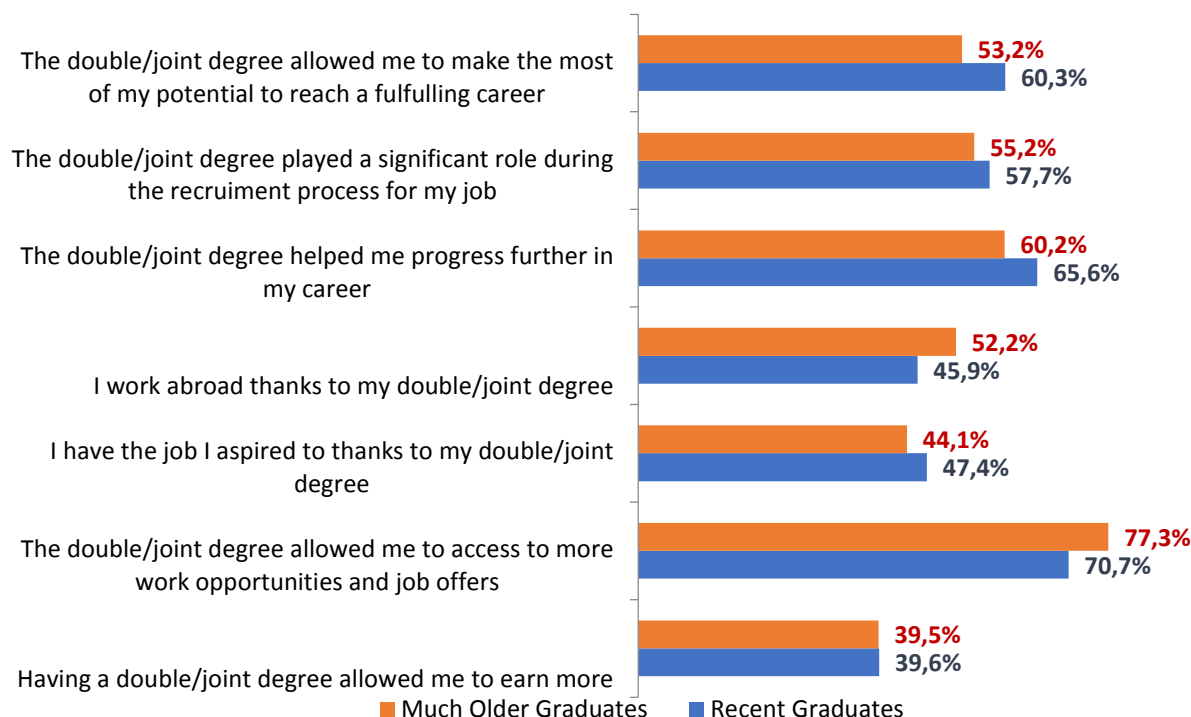
potential to reach a fulfilling career’ and a ‘significant role during the recruitment process’ and another one towards a relative majority of disagreement: ‘work abroad’ and ‘having the aspired job’.

The graduation time issue is particularly relevant when examining this analysis dimension in that professional integration and career development of DD graduates took place in considerably different contexts and the comparison between much more recent graduate perceptions and those of much older graduates may give out an idea of the relationship between these graduates with the labour market (Graph 2).

**Table 23: percentage of agreement with competitive advantages**

<b>Labour Market Gain</b>	<b>% of agreement</b>
The double/joint degree allowed me to access to more work opportunities and job offers	72.7
The double/joint degree helped me progress further in my career	63.1
The double/joint degree allowed me to make the most of my potential to reach a fulfilling career	58.4
The double/joint degree played a significant role during the recruitment process for my job	58.1
I work abroad thanks to my double/joint degree	48.8
I have the job I aspired to thanks to my double/joint degree	45.4
Having a double/joint degree allowed me to earn more	38.4

Figure 2: % of 'agree' responses - Recent Graduate Vs. Much Older Graduates



## 2.8 Satisfaction and Recommendation

Overall, the recommendation levels are quite positive. An overwhelming majority of 96.7% of graduates recommend a DD to a higher education student or candidate (Table 24). The recommendation percentages are very positive irrespective of the time context of graduation. Despite very close values, much older graduates show slightly higher values. Considering the performance of the “recommendation” indicator, it is no surprise that DD graduates also showed high satisfaction levels with their programme (Table 25).

Table 24: Average level of satisfaction

Overall satisfaction (1 - Not satisfied; 5 - Extremely satisfied)	4.3
Medium Graduates	4.2
Older Graduates	4.3
Pre-Historic Graduates	4.3
Recent Graduates	4.3

Table 25: Recommendation of double degree

% of graduates who recommend a DD to an HE student/Candidate	96.7%
Recent Graduates	96.1%
Medium Graduates	95.9%
Older Graduates	98.6%
Much Older Graduates	97.3%

## 2.9 Framework, Methodology and Analytical Dimensions

A separate analysis of DD graduates is important in that it provides a characterisation and a notion of their reality. Nevertheless, it does not allow for drawing a conclusion whether a DD brings any added-value. Because one of the major REDEEM objectives is to identify DD added-value, a decision was made to conduct a control group survey. This control group includes graduates of the same programmes as those analysed in the first survey but with only a single degree awarded by one institution. Through the differences found between both groups, it is possible to obtain a picture whether it is an advantage to get a DD or not.

The findings of the control group are provided basically in comparison with the findings of the previous survey while stressing the major differences.

The analysis dimensions and the respective questionnaire remained the same except for the necessary semantic (and not merely semantic) adaptations to the characteristics of the new population. An objective dimension remained unchanged to identify current employment status, where objectively one can confirm whether there are advantages or not, and the subjective dimensions in terms of obtained skills and advantages in tackling the labour market. The motivational dimension remained only for single degree graduates who participated in any type of academic mobility with the purpose of identifying whether the motives for this type of programme are different from those which led students to enter Double Degrees. These two subjective dimensions have also a limitation in that each group is unaware of the reality of the other group.

**Table 26: Response rates**

	<b>N</b>	<b>n</b>	<b>Response rate</b>
IST	191	14	7.3%
KTH	500	61	12,2%
POLITO	13678	634	4,6%
TUD	1099	174	15,8%
UCL	2448	239	9,8%
<b>Redeem Consortium</b>	<b>17916</b>	<b>1122</b>	<b>6,3%</b>

## 2.10 Characterisation of Surveyed Graduates

The group of single degree graduates is rather like the group of double degree graduates. It mostly includes individuals of the male sex (79.5%) and more recent graduates account for the largest percentage of responses. In terms of average age, this group presents a slightly larger average, 29.3 years of age against 28.5 observed in the group of double degree graduates. With respect to age and gender, a comparison between two similar groups was ensured.

**Table 27: Sex**

Gender	%
Female	18.5
Male	79.4
N/A	2.1

**Table 28: Graduation seniority**

Seniority	%
Recent Graduates	42
Medium Graduates	30
Older Graduates	15
Much Older Graduates	10
N/R	3

With respect to current location, Southern Europe and Western Europe continue to be the most represented locations. Whereas the percentage of graduates residing in Western Europe is like that observed in double degrees, the percentage of graduates residing in Southern Europe is considerably higher: respectively 38.3% Vs. 39.8% and 43.4% Vs. 20.8%. In both groups, the location should be read carefully because there are some partners with a larger representation in absolute terms in surveyed population. Findings became somewhat biased because POLITO is, in absolute terms, the institution that contributed with the largest number of graduates. Nevertheless, it is appropriate to introduce the professional/post-academic mobility indicator,

in the case of single degree graduates, the percentage of mobility is 28.1%, well below the percentage of 49.3% observed in the group of double degree graduates. Leaving biases aside, it is a fact that two of the surveyed groups, the one which did not have a DD experience much lower mobility percentage than the group that had that experience.

**Table 29: Current location/place of residence**

Current location/residence	%
Southern Europe	43.4
Western Europe	38.3
Northern Europe	7.2
North America	3.8
East Asia	1.3
South America	1.3
Western Asia	0.8
South Asia	0.7
Southeast Asia	0.5
Oceania	0.4
Eastern Europe	0.3
Central America	0.2
East Africa	0.2
North Africa	0.1
N/A	1.4

It is important to stress that despite being single degree graduates, this does not mean that there are not mobility experiences. 37.6% of respondents participated in academic mobility programmes. The motivational facts to participate in this type of programmes will be discussed below.

**Table 30: Academic mobility programmes**

Participation in academic mobility programmes	n	%
No	579	61.1
Yes	356	37.6
N/A	12	1.3

## 2.11 Employment Status of Surveyed Graduates and Comparison

Employment status does not vary much. Only a few variations are found but it is nothing much visible. We can say that with respect to the current situation, there are no marked differences between single and double degree graduates. This is found both in the aggregate analysis and in the more detailed analysis.

**Table 31: Current situation**

<b>Current situation</b>	<b>% Single Degree</b>	<b>% Double Degree</b>
Employed	88.1%	86.3%
Grant holder	4.5%	4.8%
Unemployed	6.7%	7.2%
N/R	0.7%	1.7%

The patterns found above in the relationship between the current situation and graduation seniority are recurrent. The decreasing trend in the percentage of unemployed people is also recurrent among single degree graduates. Some details may be referred, namely, the largest percentage of “Self-Employment” in all seniority categories in the group of single degree graduates and similar percentages of unemployed graduates in the categories “Medium Graduates” and “Older graduates” when compared with the largest

difference, respectively 7.7% and 2.5% in the case of double degree graduates.

With respect to salary, the previously made observation regarding the reading constraints of the global value is recurrent. For single degree graduates, the global average of monthly salary is €3146, considerably lower than €3618 of double degree graduates. The location issue should be highlighted, in that the largest percentage of respondents was working abroad, in Southern Europe, where salaries are lower than those in Western and Northern Europe. Against this background, it becomes more pertinent the analysis and comparison of remuneration by location. The comparison is limited to Southern, Northern and Western Europe where the largest percentage of graduates is concentrated. There is a small number of graduates in some of the other areas that make the use of average as a good indicator unfeasible.

**Table 32: Detailed current situation**

<b>Detailed current situation</b>	<b>% Single Degree</b>	<b>% Double Degree</b>
Employee	81.8%	79.8%
Grant holder	4.5%	4.8%
Paid trainee	1.4%	2.8%
Self-employed person with employees	1.7%	1.5%
Self-employed person without employees	3.2%	2.2%
Unemployed	6.7%	7.2%
N/R	0.7%	1.7%

Table 33: Current situation Vs. Seniority

Detailed current situation	Recent Graduates	Medium Graduates	Older Graduates	Much Older Graduates
Employee	77.8%	84.5%	84.1%	86.7%
Grant holder	6.5%	3.5%	4.3%	1.0%
Paid trainee	2.5%	0.7%	0.0%	0.0%
Self-employed person (with employees)	0.7%	1.4%	2.9%	5.1%
Self-employed person (with no employees)	3.0%	3.2%	2.9%	5.1%
Unemployed	8.7%	5.6%	5.1%	2.0%
N/R	0.7%	1.1%	0.7%	0.0%

Table 34: Average gross monthly income

Current location	Single Degree	Double Degree
Western Europe	€4.037	€3.917
Southern Europe	€2.092	€2.728
Northern Europe	€3.891	€3.805

There is not a clear pattern in Western and Northern Europe with respect to graduates, where the average is slightly higher than in single degree graduates. Nevertheless, in the case of graduates in Southern Europe, there is not only a reverse situation but also the difference is considerably marked, € 2,092 against € 2,278.

Considering seniority, the more senior a graduate is the higher his or her average salary. In almost all groups, double degree graduates have a higher average salary than single degree graduates. Nevertheless, the only case this is not found is in the group of much older graduates.

Table 35: Average gross monthly income Vs Graduate seniority

Seniority	Single Degree	Double Degree
Recent Graduates	€2.669	€3.067
Medium Graduates	€3.000	€3.301
Older Graduates	€3.465	€3.986
Much Older Graduates	€4.763	€4.630

The relationship between seniority and location in terms of average salary does not show a clear pattern either. It is necessary to consider the specific features of the “Location” + “Seniority” pair to find some characteristics to be worth stressing. One of the cases that stand out is that recent graduates in Southern Europe show the largest average difference between SD and DD, and the latter have the largest figure. Besides, only geographical area shows us a clear pattern, in which all DD graduates have a higher average salary than SD.

With respect to employment status, their behaviour is very similar irrespective of location and the time that elapsed from graduation. Nevertheless, some marked differences appear but without an obvious pattern or trend in terms of salary. It is safe to say that it is at the level of salary that there are differences between SD and DD, but salary is a variable, which depends a lot on the context, the period in the labour market and geographical location. It is premature to say whether there is a cause/effect relationship



Table 36: Income / Graduate Seniority / Location

Current Location	Recent Graduates		Medium Graduates		Older Graduates		Much Older Graduates	
	SD	DD	SD	DD	SD	DD	SD	DD
Western Europe	€3.511	€3.258	€3.919	€3.623	€4.364	€4.383	€4.931	€5.045
Southern Europe	€1.826	€2.484	€2.272	€2.539	€2.395	€2.578	€3.028	€3.505
Northern Europe	€3.557	€3.440	€3.042	€3.635	€4.183	€4.352	€4.128	€4.649

between having a DD and earning a higher salary, but, in the specific case of Southern Europe, it can be said that it is true that DD graduates always account for higher averages. In the other two regions, there is not a clear pattern.

agreement with “Having the job I aspired to” and “Work Abroad” have a higher percentage of agreement in the group of single degree graduates. It is interesting to note that single degree graduates agree more with the statement that their simple degree empowers them to work abroad.

## 2.12 Impact – Competitive Advantages in the Labour Market

It is important to contextualize the perception that each group of graduates had before the questions they responded. Double degree graduates face the advantages listed by assuming a comparison of having a DD with what would be without it. The same exercise is made for single degree graduates by taking on a comparison between having and not having a degree. This fact may partly explain why all these categories have a level of much higher agreement among single degree graduates. Nevertheless, it is possible to make some interesting interpretations, the level of

Table 37: Labour market gain

Labour market gain	Single degree	Double Degree	% Difference
Have a higher salary/income	57.3%	38.4%	18.9%
Access to more work opportunities and job offers	77.2%	72.7%	4.5%
Having the job you aspired to	59.9%	45.4%	14.5%
Work abroad	57.3%	48.8%	8.5%
Progress further in your career	67.2%	63.1%	4.1%
Make the most of your potential to reach a fulfilling career	62.9%	58.4%	4.5%

### 2.13 Impact – Skills Gained

It comes as no surprise that the items that have the biggest difference in terms of % of agreement are the ones that relate to experiences with other countries in terms of cultural understanding and socialising and work habits. Still, in these sorts of skills, the % of single degree graduates who claim to have gained these skills is considerable. All the skills where the single degree graduate has a higher % of agreement are not at all associated with mobility and deal with skills that concern directly with the performance of the job.

**Table 38: Skills gained - % of agreement**

Skills gained	Single Degree	Double Degree	% Difference
advanced your personal development	86.2%	93.4%	-7.2%
improved your ability to work autonomously	83.7%	65.0%	18.7%
improved your ability to adapt and act in new situations	82.5%	86.3%	-3.8%
developed your teamworking skills	77.9%	70.1%	7.8%
improved your ability to use theoretical knowledge to solve practical challenges	76.2%	52.6%	23.6%
improved your ability to the use of information and communications technologies	68.2%	46.9%	21.3%
improved your ability to take initiatives	67.7%	71.0%	-3.3%
gave you the ability to work in an international context	63.9%	93.5%	-29.6%
made you feel more self-motivated	60.3%	71.1%	-10.8%
helped you to improve/gain new language skills	58.8%	86.0%	-27.2%
made you feel more comfortable socialising with people from different cultural backgrounds	53.4%	85.3%	-31.9%
gave you a better understanding of the professional activity in your area of expertise	52.1%	60.2%	-8.1%
improved your ability to adapt to the work habits of different countries	44.5%	88.4%	-43.9%
gave you a better understanding of a culture other than yours	41.1%	91.2%	-50.1%

Higher percentage of agreement in double degree graduates

Higher percentage of agreement in single degree graduates



## 2.14 Motivational Factors for Participating in Mobility Programmes

**Table 39: Academic mobility programmes motivations**

<b>Motivation (1 -Not Important; 5- Extremely Important)</b>	<b>Single Degree</b>	<b>Double Degree</b>
Living in a different country during my studies	4.5	4.6
Interacting with new cultures	4.4	4.4
Stepping out my comfort zone to improve my ability to work independently	4.3	4.1
Learning a new language	4.1	4.0
Experiencing a different education environment	4.1	4.2
Having access to more job opportunities	3.9	4.2
Increasing the opportunities for a professional career in a country other than my own	3.8	4.2
Increasing the possibility to live in a different country permanently	3.8	3.8
A perspective of getting the job or jobs I aspire to	3.4	4.0
Studying in a certain identified higher education institution	3.3	3.7

As mentioned above, 37,6% of the single degree graduates participated in academic mobility programmes which is a considerably different experience from entering double degree programmes. It, therefore, appears reasonable to consider that the perception of each graduate group of the motives is different. Nevertheless, it is relevant to compare the level of importance attached by each group to this. There are no striking differences in the importance attached. The average values are very close in several motivates, but somewhat marked differences appear in two items, i.e. the perspective of getting a job or jobs that the graduate aspires to and studying in a higher education institution. The former clearly implies concerns with career while the latter refers to academic concerns. Access to more job opportunities is somewhat more important for double degree graduates.

It is also important to mention that 37,6% of these graduates are working outside their country of origin. It is a smaller percentage than the mobility observer among the double degree graduates (49,3%). This could hint that student exchange programmes lead to less professional

mobility than double degrees, however, such claim needs further investigation because the number of different nationalities is smaller than the single degree group (46) than on the double degree group (65).

## 2.15 Satisfaction with Single Degree Programmes and Awareness of Double Degree Programmes

Satisfaction with attendance of a double degree is high and remains almost unchanged, regardless of graduation seniority. Nevertheless, it is somewhat lower than that of double degree graduates with their degree (Table 40).

As for the awareness single degree graduates have of double degree programmes, 80.9% have indicated that they are aware of the existence of double degree programmes. Of this group, 51.4% stated that they would consider entering a double degree. Considering this, it is possible to identify a good potential for recruitment and/or promotion of double degrees given that the scenario is neither unknown nor totally denied. The major motives, among numerous other motives, for not entering a double degree, even though they have considered to take it and the reason is the lack of programmes that students want to attend and the fact that they do not want to go into a mobility programme for so much time, the lack of financial resources and the fact the curriculum is not sufficient to fill a vacancy.

degree and those that did not, however, some differences exist and are worth being addressed to in future studies and investigation. First, there is a slightly higher average satisfaction levels among double degree graduates, 4,3 against 3,9 among single degree graduates. The remaining differences are not as global and are observed only in certain subgroups, such as the graduates currently located in southern Europe in which double degree graduates earn more than single degree graduates no matter how long ago they graduated. In Northern and Western Europe there is no such pattern.

We suspect that graduate seniority might not be a key variable in terms of understanding the added value of a double degree as there is no apparent influence, the professional situation and perceptions are similar in each graduate seniority group which hints that little has changed in terms of how graduates face their double degree in the last ten years. The current location on the other side would be a very relevant issue by itself in any analysis concerning labour market and professional situation and the REDEEM project is no exception, some of the major differences were observed in current location breakdown.

## 2.16 Final Remarks

Considering two similar groups in terms of age, gender and graduation seniority, we can say that there are no marked differences between the groups that obtained a double

Table 40: Satisfaction

Seniority	Single Degree	Double Degree
<b>Overall satisfaction (1 – Not Satisfied; 5 – Extremely Satisfied)</b>	<b>3.9</b>	<b>4.3</b>
Recent Graduates	3.9	4.3
Medium Graduates	3.9	4.2
Older Graduates	4.0	4.3
Much Older Graduates	3.9	4.3

### 3 Qualitative analysis

#### 3.1 Introduction

To gather a different input compared to the written survey the project also had decided to run Focus Group-sessions and interviews. Focus Group-sessions were performed with the three stakeholder groups Designers, Alumni and Current Students. In the Focus Group-sessions, a free and open exchange of views were encouraged. The aim was not to reach a majority opinion or to convince others of one's opinion, but rather to share personal reflections on joint master programmes. The leaders of the sessions had a passive role in order not to steer the discussion. With the stakeholder group Employers, interviews were performed instead of Focus Group-sessions since it was not possible to gather several representatives from employers in one room at one time.

Generally, invitations were sent to ask representatives to attend. For example, for the session with Designers, the members of faculty and university administrators who were known to be or to have been active with dual master programmes were invited to attend. At TUD in Darmstadt, it was not possible to get together a group of alumni for a Focus Group-session, and instead, individual (face-to-face or telephone) interviews were performed. UCL in Louvain-la-Neuve did not have funding for this work package but conducted interviews with employers.

In all universities, the sessions were done with one stakeholder group at a time, except at Politecnico di Torino where all groups were gathered at the same time and in the same venue but seated separately.

**Table 41: Survey participation**

Stakeholders	IST	KIT	KTH	POLITO	TUD	UCL	UPC	Total
Employees	2	1	2	7	1	5	5	23
Designers	4	3	8	7	6	0	5	33
Alumni	5	13	9	8	7	0	3	45
Students	7	6	12	5	6	0	4	40
Total	18	23	31	27	20	5	17	141

### 3.2 Designers

The feedback by designers is mixed with some designers underlining more the life experience that the graduates have obtained in an international program, and others valuing the DD for their contribution to the internationalization of the institution, its visibility, and recruitment benefits.

Attention is still focused a lot on the mobility component and on the complementarity or compatibility of the programmes (much more than in the case of the graduates) and curricula and the heavy administrative burden to create and manage DD-programmes seems to be a deterrent on the academic side.

Some academics seem to be not that much concerned about the employability component of their programmes and knowledge related to the profession of the academic researcher is still valued more than soft skills. As a hypothesis

this is so in a gradual scale from the most theoretical and research-oriented programmes over to the most applied programmes, that is programmes that aim towards an already existing and mature industry as their working market. Moreover, academics seem to consider the reputation of the university as the discriminating factor for students to be more employable.



### Keynotes from the Designers

**VALUE** personal experience vs internationalization of the institution

**FOCUS** on mobility and compatibility with the partner university

**ADMINISTRATIVE BRUDEN** is the main deterrent

**EMPLOYABILITY ASPECT** often neglected and seen as short-sighted

**MAIN KEY** for employability is represented by the university reputation

### FUTURE FEATURES OF DD PROGRAMMES

- ✓ EXTENSION OF NOMINAL DURATION
- ✓ MULTIDISCIPLINARITY
- ✓ COMBINATION OF LOCAL PROGRAMMES
- ✓ ACCOUNTING AND MANAGEMENT AS MANDATORY
- ✓ MORE COURSES IN NATIONAL LANGUAGE

Employability is one of the components of the provided education but not the main one and often expressed as being not the primary duty for the Research Universities that need to avoid focusing too much on applied knowledge. The notion of employability is too focused on the student landing her or his first job. This view was expressed by several designers. In second cycle education, according to this objection, students develop skills and knowledge that will serve them and develop over their careers. According to many developers, focusing too much on the companies' needs would lead to a very short-sighted approach to education in a specific field and would end up in providing a limited number of heavily applied skills that are currently needed. DDs have an impact on the employability of the graduates because they carry a higher level of adaptability, show initiative and drive and the extra national degree should give added value. In this sense the point of view of the developers on this topic is very similar to the perspective of the students. Incorporating internships and other features together with industry is widely seen

as attractive and sought after but also as very difficult to achieve in practice. This difference in time perspectives between developers and employers – the world of business being short term and the world of academia long term - is often mentioned as something problematic. The internships are a case in point. The designers often express frustration that employers suggest that the education should be more connected to the working life, while at the same time they are not so willing to offer the internships that would provide just that.

Many academics feel that future DD-programmes will need to include a nominal extension because it's difficult to provide all the needed contents in one academic year only. This shows that the academics don't see DD as integrated products and this point of view goes against the opinion of most of the graduates on this topic. Other relevant elements to take into consideration for the coming years are multidisciplinary, for example introduction of accounting and management as mandatory disciplines, as well as learning the national language or languages.

Better communication of the added value of DDs seems to be a priority for the academics as well as the introduction of mandatory internships in the DD-programmes. Finally, slow and heavy administrative procedures and lack of harmonization of the DD-policies in Europe are mentioned by the academics as negative elements to correct in the future.

### 3.3 Alumni

The alumni in all countries underlined both the added value of the double degrees in terms of personal development and the fact that often universities develop them for their own purpose of visibility.

The longer duration of the study abroad period is seen by most of the students as an added value as well as the complementarity of the study pattern and the possibility of accessing specializations not available at the home university.

Little if no importance has the fact of holding two degrees when applying for a job abroad but for all the students who did this in the hosting country, holding the national degree was a positive discriminating factor.

Specific support and information material should be made available for DD students that are instead mistakenly treated either as exchange students or as regular local students.

The perception of employability is perceived as very different in different countries: in some countries, the focus is on the hard skills gained, in others on the university that issued the degree, in others on the soft skills gained. It is in these latter countries that the DD experience with the consequent personal development is highly appreciated by the employers.

In terms of trends the graduates underline the fact that partnerships with “new” countries outside Europe will probably be needed, that DDs will become more and more common which will help the companies to get more familiar with this category of students and their real value, and that more soft skills will be introduced in the curricula.

Some potentially negative aspects in terms of impact of DDs on employability are the partially negative reputation that studies abroad (and in particular Erasmus) have for employers, the fact that a joint degree is considered as of a lower value than the national degree or rather a higher degree of uncertainty, and that the extension of the studies might mean missing opportunities for students from countries with a strong economy and fluid labour market especially when the studies are prolonged.

In general, most alumni have not selected a DD-programme for being more employable in the future and after graduation they do not feel that the DD gave them a clear advantage in this sense except for students coming from countries with weaker economies who were very focused on finding a job in the country or region of destination. An exception in Europe seems to be France where DD is more known nationally as giving an advantage in the job hunting.

Alumni feel that no further focus on employability is needed when designing DD-programmes since the real value is in the experience itself and it would be wrong for companies to dictate the contents according to their immediate needs since the labour market structure changes rapidly and the competence and expertise of the available teaching staff also needs to be taken into consideration.

The missing elements to be introduced (or the weak ones to be strengthened) are according to the alumni the following: closer cooperation industry-academia and in terms of participation of experts from companies in the teaching and extra-curricular activities bringing the companies to the students and the students to the companies. Specific career days for the DD students should be organized to give visibility to these programmes and their added value. Other elements that should be introduced according to most of the alumni are: cross programme collaborations, better information of the host country and its professional values, structures, ethics, how to apply for work etc., more flexibility in the study path, making the proficiency in the local language mandatory and by a large

majority the introduction of mandatory internships in the hosting country as recognized curricular activity.

When asked what they would modify in the existing DD-programmes, most of the alumni seemed to be generally very satisfied by the followed programmes but a large majority of them mentioned that the extension of the studies has not been of any concrete help and that the last semester, if really needed, should have been replaced by an activity bringing them closer to the employer instead of insisting on theoretical knowledge.

### Keynotes from the Alumni

**FOCUS** Personal Development vs University Prestige

**ADDED VALUE** Deeper experience abroad + Complementarity

#### EMPLOYABILITY

- ✓ Holding two degrees vs holding a national degree
- ✓ Employability of DD perceived differently in different countries
- ✓ Decision to enroll not linked to employability objectives (few exceptions)

**SPECIFICITY OF THE CATEGORY** no local and no exchange

**TRENDS** More agreements with non-EU partners + soft skills

#### NEGATIVE ASPECTS

- ✓ Prolongation of the nominal duration
- ✓ Value of the joint degree
- ✓ Reputation of study abroad for employers seen as often negative

**IMPROVEMENTS** Direct involvement of companies, specific career days, real life cases, practical info on local work environment, local language, more flexibility, mandatory internships as part of the curriculum

In conclusion, three key elements have been underlined by the graduates about the added value of DD in terms of impact and employability: development of soft skills, being fluent in the local language, holding the national degree from a respected university. It is remarkable that almost none of the interviewed alumni mentioned the hard skills acquired at the hosting institution as relevant.

All the interviewed alumni would recommend their DD-programmes to other students but many of them underlined the fact that they would not do this with employability in focus, not because DDs do not lead to more employability but because the main added value is represented by the acquired soft skills and personal development.

### 3.4 Current Students

The students indicate the cultural aspects of the experience (mind opener, understanding a new culture, discovering, challenging oneself, etc.) as the key element of the double degree experience while learning a new language or getting a second diploma are not seen as very relevant.

The vision of the students on the future trends to keep into consideration when it comes to joint programmes is very diverse ranging from higher integration of the curricula to learning how to develop a company, involvement of international companies.

#### Keynotes from Current Student

**SIMILAR ATTITUDE** as the graduates with few exceptions

**VALUE** personal development more than language and two diplomas

**MORE CRITICAL** on employability as a focus when designing DD

Getting a **BROADER PERSPECTIVE** more relevant than higher specialization

**SECOND SPECIALIZATION VS BEST EDUCATION** from the two universities

**FUTURE** extra-curricular activities involving companies + local language

**NEGATIVE ASPECTS:**

**QUALITY ISSUES DUE TO POOR ENGLISH PROFICIENCY**

Students seem to be quite critical about the concept of employability as a key factor in the double degree programmes in the sense that they think the focus should be more on getting the best possible education from the two universities and the personal development

aspects related to the experience. Many students stated that too much focus on the employability would be harmful and counterproductive. Many respondents stated a too high level of specialization demanded by the employers in the curriculum would harm

the basic and general knowledge that is as important for an engineer to have a broader understanding of the field.

When asked how double degrees are supposed to improve employability, most of the students answered that the soft skills developed through these kinds of programmes are the most valuable factor (better understanding of different cultures, capacity to adapt quickly). Obtaining a degree from a local university is the discriminating factor for those planning to look for a job in the hosting country. Technical expertise, holding two degrees and learning a new language are mentioned but don't seem to represent discriminating factors. Surprisingly, very few students mentioned the second specialization obtained at the hosting institution as crucial for better employment opportunities but it's not clear whether this is since most double degree programmes seek for compatibility instead for complementarity or for other reasons.

The answers of this group to the question on how employability can be improved by reforming double degree programmes are very similar to the ones provided by the alumni with an emphasis on more extra-curricular activities bringing experts from companies to the classroom and bringing the students to the companies also through internships and master thesis topics developed jointly by industry and academia. Students mentioned also the fact that offering mandatory language courses to learn the language of the hosting country should be included in double degree programmes taught in English.

A problem mentioned by many respondents on the negative elements identified in the DD programmes is the poor English proficiency of some professors who are excellent in their field but cannot properly

transmit their knowledge in a second language. The result is a lower quality of the programme.

Double degrees should be promoted internally as specific "products" not to be mixed with the shorter credit mobility programmes. The extra specialization offered by the hosting university and not available at the home university seems to be the real added value of Double degrees for most of the current students.

Students would recommend these programmes to other students willing to self-develop as individuals or those seeking access opportunities to foreign labour markets but not to those looking for a clear advantage in terms of employability or specialization.

### 3.5 Employers

*"The two key elements that you need are: Sharing the risk, and this is something lacking in many people, and the capability to present yourself "on a stage" in front of the external world. Indeed, these two elements will allow you to work as a team with people who do not know you and perhaps will even never see you."*

-Bruno Schröder, National Technology Officer at Microsoft Belux

Most companies ignore the real value of double degree programmes and the national degrees are still the main factor while the second degree is usually neglected during the recruitment process. Nevertheless, those employers who are aware of double degrees value the fact that those graduates adapt easily to new situations, are not scared of change, have acquired personal skills that will facilitate teamwork with people from different cultures and are generally more versatile.

The value of holding two degrees is for the employers in most cases not crucial and limited to the soft skills that the graduates have

probably developed during their stay abroad (more flexibility, stronger will, independent thinking, showing curiosity, language skills etc.).

Despite these considerations, when asked about the definition of employability, the employers mentioned skills and competencies typical of students who have graduated from a double degree programme. Innovation is also mentioned as a key element that is not properly covered by master programmes.

This is also true when it comes to the trends to keep in mind when designing future double degrees. Multidisciplinary, broad knowledge, basic engineering skills, soft skills, teamwork, foreign languages are mentioned by the employers much more than specialized skills which are perhaps taken for granted.

Unsurprisingly, the companies see no harm in double degree programmes focusing on employability, but they stress again the fact that by this they mean that the soft skills mentioned above should be addressed as much as the technical skills needed to perform a specific job. Better language and social skills are mentioned by the employers as the elements acquired during the double degree programmes that will improve the graduates' employability.

For future double degree programmes to be more effective in terms of employability, universities should consider introducing more practical applications in the curriculum, mandatory internships, project-based work simulating real-life scenarios and lectures by experts from industry as part of the curriculum.

### Keywords from Employers

Real **ADDED VALUE OF DD** still not perceived

**EXPECTED SKILLS** are the one typical of DD graduates but not directly linked by the employers to these programmes

**FOCUS** personal development + reputation of the local university

**DD** Second diploma still largely neglected

**EMPLOYABILITY CONCEPT** very different from the one of the developers

**IMPROVEMENTS** multidisciplinary, broad knowledge, basic engineering skills, soft skills, teamwork, foreign languages (not specialized skills)

**TRENDS** more hands on activities in the curriculum, mandatory internships, project-based work simulating real life scenarios and lectures by experts from industry as part of the curriculum.

There is a strikingly huge discrepancy between the designer's view on the value of their DD-students on one hand and the employers' view on the other. The designers typically view the DD-students as a very select, ambitious, energetic and academically strong group of students, and on the other hand the

employers' generally untroubled view of finding the students who are best prepared for what they describe as demanding positions in their companies.

Although company representatives don't seem to be aware of the real outputs of double degree programmes, after having listened to

the main structures and components they wish they had more students with such a profile applying to their jobs since they would have an immediate advantage on the other applicants due to their soft skills, proficiency in at least one foreign language and possibly a specialization that is not offered by the home university and having shown a willingness to accept to be stationed abroad. For these reasons, they would recommend double degree programmes to the prospective students.

Several employers also express frustration over the perceived ever-increasing speed of change in the world of education. Universities, in this view, overestimate the knowledge and interest outside their own organisations about what is going on in terms of new programmes

and collaborations. Representatives of corporations that handle large numbers of applicant often expressed uncertainty in their capacity to value a master's degree from a university that is outside their usual circle of providers of employees. "I know KTH and the academic areas they have, but when applicants come with a degree from a university in Italy or Spain... how should I be able to value the quality of all those universities?"

## 4 Guidelines

### 4.1 Output Description

The creation of a manual for the restructuring and development new double degree programmes is one of the key products of the project. These guidelines seek to assist administrative and scientific staff at HEIs in creating new joint programmes and reforming existing ones. The manual contains checklists with questions and recommendations that one should both consider when developing or improving a joint programme.

The manual was developed according to the results of IO1 (state of the art), IO2 (online survey), IO3 (interviews) and thematic workshops at open events (mid-term, staff training). In these different project phases between all project target groups (students, alumni, employers, joint programme designers, and joint programme coordinators) provided input to the creation and revision of the manual. Thus, the creation of the manual was

clearly driven and influenced by all relevant stakeholders.

This sort of manual is a clear novelty for the project members and for European HEIs in general, since it has a special focus to enhance student employability. This makes this manual novel regarding all other existing papers or materials documented in IO1 "state of the art". Moreover, the manual seeks to bridge management gaps between administrative/supporting units and academic/scientific units at HEIs while planning and reforming a joint programme. In addition, it also enhances academic cooperation of these units between the involved international HEI partners.

The manual has already been tested in a staff training week with supporting and scientific HEI staff from different European universities (including universities beyond the



project consortium). We strongly believe that this openly shared IO will have a broad impact on the management of European joint programmes. It is, thus, one sustainable key element of the project.

## 4.2 Division of Work

TU Darmstadt led the output with all partners providing information. The IO is based on all other IOs and implies input and ideas that came up at different activities or events during the whole project term. For example, at the mid-term event in Barcelona different stakeholders had been asked in workshop groups to provide suggestions for categories or topics to be addressed in a manual. The final work on the IO was then divided into the following activities:

**Activity 1:** A workshop involving different local and regional stakeholders was organized in Darmstadt to discuss actual data of previous IOs and consequential checklists and recommendations for the guidelines.

**Activity 2:** The guidelines were developed based on the collected material and feedback received throughout the project term. The project team was discussing the results of IO1-3 and the subsequent impact on management topics, recommendation and checklists to be addressed in a manual.

**Activity 3:** A training event for professionals involved in the development and implementation of joint programmes at the partner universities and beyond was organized in June 2017 in Turin, Italy. The event brought together 32 participants from 10 universities and contained:

- Presentation of the REDEEM project and its preliminary results.

- Parallel workshops to work with the manual/guidelines.
- Best practice presentations by keynote speakers.
- Case studies (JP real cases) working groups: discussion and a poster session.

This training event provided further information about the usability of the manual and was a helpful activity to include additional expert feedback to the final version of the manual.

**Activity 4:** Including all the different input from the above-mentioned activities and external experts, who had been additionally asked for feedback, the Manual was revised and composed as a final IO.



## 5 Conclusions

To sum up what we have learned through the REDEEM-project we like to structure our findings into three tempi; past, today and the future. We started out investigating definitions for joint programmes, employability and associated concepts. We then searched for the feedback of former students through a survey. We moved on to reflecting on the challenges and opportunities we find today through Focus Group-sessions and interviews with Developers, Employers, current Students and Former students. We finished off with bringing together people in institutions to discuss the future.

### 5.1 Where are we coming from

#### Findings:

**Impact analysis of Double Degrees in the STEM field is mainly lacking, incomplete or biased**

**There are many misconceptions still in place at all levels and from the point of view of all the stakeholders on the real impact and nature of Double Degrees**

**The quality level has been stable over the whole time span covered by the project**

**Double degree programmes analyzed are generally highly appreciated by the graduates**

In general the former Double Degree students are satisfied with their choice of studies and the satisfaction level among Double Degree-graduates is higher than in the control group composed by students with a single degree from the same institutions and the same academic areas. It should also be noted that the single degree alumni compared their situation of not having a university degree at all and not with the one of double degree alumni.

Especially there seem to be an appreciation of having a higher quality of life as a consequence of taking on the extra effort to follow an

international program, which often requires and extension of the nominal duration of the studies, as opposed to following only the regular curriculum in your home country. A higher income is not seen as a direct result as much as more options available. Nevertheless, the survey revealed that Double Degree graduates actually benefit in average of higher salaries.

Actually the national students of the involved institutions in the project did not seem very forward thinking in choosing Double Degree studies. That is to say that life after university was not on top of their minds. They were generally going for an interesting experience. Furthermore three respondents out of four among the former Double Degree-students claimed that the Double Degree had allowed them to access more work opportunities and job offers. One out of two said that they worked abroad thanks to the Double Degree-education. An overwhelming majority of 97 percent of Double Degree graduates would recommend a Double Degree programme to other higher education students or candidates. The survey also shows that there are differences between southern, western and northern Europe, and that there has been a movement of skilled graduates from southern Europe to the north and the west. This is due to the fact that students from southern Europe see Double Degree programmes as a door opener for more job opportunities in other countries, while students from Northern Europe see Double Degree programmes as a self-development opportunity. These results heighten the interest in going deeper into investigating these differences.

### 5.2 Where we are now

Double degree graduates in our survey are more satisfied about their study programme than other groups.

Double Degree-graduates do overall earn more than their peers with single degrees. The difference seems to decrease with the increasing of age. The number of respondents outside of Europe is too small to allow strong conclusions on that variable.

We took on to reach out to graduates up to ten years back in our survey. It seems that graduate seniority is not a key variable in terms of understanding the added value of a double degree as there is no apparent influence, the professional situation and perceptions are fairly similar in each graduate seniority group which hints that little has changed in terms of how graduates face their double degree in the past ten years

#### Need for: Specific support and services for this category of students

The presumption we had when entering this project that employers are generally unaware of what a Double Degree stands for was strengthened through the interviews that were carried out. This is disheartening for institutions and Former students that as a rule see the Double Degree-students as a group that is very ambitious, fearless, borderless and with guaranteed intercultural experience.

The Employers, Developers and Students all mainly share the view of the need for social skills for today's scientists and engineers and a growing need for interdisciplinary understanding to open up for a strong career in many areas. The differences are more in terms of time perspective. Developers generally share a vision of learning for life while Employers have urgent problems to solve. This gulf does not seem too difficult to bridge but especially Developers need to be made aware of this challenge in communicating with Employers.

Companies generally seek to recruit persons with Double Degree-experience without realizing it.

### 5.3 Where we are going

The Guidelines developed within the project can be seen as a testament of hard learned lessons from those who have devoted time and energy to develop Double Degree programmes around in Europe in the past decade. A lot of practical advice has been collected on aspects and elements to avoid and to include. We believe this tool is quite valuable in order to facilitate the communication within a consortium and within institutions in a structured and comprehensive way. The Guidelines show a two-stranded development. On one hand there is a strive towards streamlining the curricula and the administration needed for Double degree programmes. There were for example reflections from some Developers about that they wished they had developed a simpler curriculum. On the other hand there is a continuous strive for creating programmes with unique selling points, that is with content that sets the programmes above the competition by increasing the employability aspect.

One theme that comes up again and again is how to bring together individual Developers with the university administration in the initiation phase. This would both save time by making the process more efficient and would also prevent universities to enter into agreements not compatible with national regulation and institutional policies.

A second theme that is clear is that many institutions which have been active in Double Degree-programmes are moving into a more mature phase of their internationalization activities. It is then not enough to work out the programmes' mobility paths and to meet requirements for learning outcomes. The Developers are asked by the university management what would be the added value of their suggested programmes. Questions on the added value of a proposed programme were also included in the Student Guide.

This development is likely to be a result of a constantly increasing competition for funding that is pushing developers and institutions to present ever more attractive programmes with unique features in order to stand out against the competition. Generally extra funding is needed to support mobility and for other interinstitutional activities. The main competitive factor in the area of STEM is the commitment to offer internships and other activities in collaboration with employers. Internships are seen as enhancing employability among Developers, Employers and former Students alike. It is noted that this has been difficult to scale up since it is very dependent on personal relationships department – company.

**Need for: Both students and employers favor an active involvement of employers in all phases of the programmes - curriculum design, teaching with credits, definition of research topics, hosting mandatory internships, awareness of the world beyond the university**

Internships and projects with Employers are very attractive. The Developers are quite aware of this. Still it is not possible everywhere. For that reason former students suggested to invite representatives of Employers on a regular basis to give an understanding of the working life and the possibility to get contacts.

**Need for: Nature of the programme must be clear when designing and when recruiting.**

Two main categories of Double Degrees of very different nature have in fact been identified: The ones seeking compatibility (combination of two curricula with very similar contents and learning outcomes) and the ones seeking complementarity (combination of compatible curricula that offer nevertheless completely different specializations not available at the home university).

**Need for: Better communication towards all the target groups on the actual impact**

Especially for programmes that are recruiting globally more professional communication methods seem to be needed. The need and possible advantage of having tailor-made information and support for this group of students is clear. The Double Degree-students often feel that they fall between the two major groups of students which are the regular degree seeking students and the exchange students. The Double Degree-students arrive to a new environment where they must immediately be productive and comply with the local regulations while they still have specific needs of counselling because of individual study plans and because of their tight and strict mobility schedule.

On a side note, one of the positive epiphanies in performing the survey and the Focus Group sessions was the enthusiastic response we got from former students. Many alumni are very interested in keeping in contact with their universities and fellow students. Most institutions have here an untapped reservoir of ambassadors and coaches who might help them to develop programmes and activities.

**Need for: Focused Marketing approach for Double Degree-students vs. exchange students by shifting the focus from the mobility component to the real impact of Double Degrees on the life and careers of the graduates**

The studies we made gave insights in the varying interests of different groups of students. It is our understanding that the marketing strategy can be very much developed by identifying and tailoring information to different groups. One general conclusion was that national students who have already entered a prestigious technical university in western Europe do not get that excited about information about the probability of getting slightly higher pay in the future by making the extra effort of studying

for a second diploma in a second university. Recruitment activities should for this group be more focused on the life-enhancing experience of making another university, city and country into your own. On the other hand, students who are driven by a motivation to work in a country or region different from where they grew up should be served solid information about common career paths after studying a certain programme. A student from for example Russia is eager to know what opportunities can open up after studying a certain programme and what are the bureaucratic steps for access. Depending on the university's recruitment policy in terms of target groups, there are lessons to be learned by looking into the response from different groups of students. There is potentially a lot to learn in using the available data and develop even more targeted surveys to separate different groups of students depending on nationality, field of study, type of programme and personal interests. These aspects will be covered in a follow-up project that the consortium intends to carry out in the near future.

The increased pace in development of Double degree programmes within Erasmus has meant that Employers have difficulties in keeping up. Recruiters like to stick to what they know in terms of institutions and academic areas. As one employer exclaimed: "All these new programmes! I want to know is this a mechanical engineering student or is it an electrical engineering student!" Developers have a need to think long term because of the general inertia in the academic world, and simply because it takes many years to make a programme known. This is at odds with the short time perspective of the funding schemes in Europe as well as nationally. Alumni also stated that it can be very unfortunate when you apply for a job showing a master level diploma from a programme that is no longer

running. To Employers that is often seen as a bad sign.

Developers and former students need to address misperceptions of companies by improving communication about the profile and skills of Double Degree-graduates. This should be seen mainly as part of the recruitment process.

More efforts should be made by Developers and institutions in general to communicate externally what Double Degree programmes are about. Generally, the awareness of Erasmus Mundus was non-existent among the Employers who were interviewed. To institutions Double Degree-alumni should be a very attractive and easily identifiable group to recruit. Employers must be convinced about this and made more aware of the development in Europe of Double Degree-programmes. The results of this project suggest that this will happen given enough time and perseverance on behalf of the institutions and hopefully with support from the European Union and national agencies.

*Need for: Create more efficient programmes, or reform the existing ones, in terms of student/industry needs, expectations and employability aspects through full involvement of the employers*

The hard won know-how of the developers involved in Double Degree programmes in handling the demanding task for harmonizing academic requirements and administrative hurdles is a distinct advantage in developing better programmes.

*Need for: DD+ is the next step - creation of newly designed Double Degree-programmes based on the results and recommendations of this project*

We are convinced that internationally oriented institutions for technology and science in Europe now have a very strong tradition in running Double Degree-programmes.

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Double Degrees are best developed and marketed as long term joint programmes with integrated mobility.

Employers as a rule want to see that an applicant has a degree from an institution that is known and trusted. Experience of international education together with transversal skills is seen as big bonus.

Learning how to convince Employers to commit and get involved in planning and running Double Degree-programmes is the next challenge.

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## Appendix

### Qualitative Questionnaire

The following questions were used to get comparative discussions in all groups

1. If I ask you to define (using a single word, image or expression) your DD programme, which one would you use it?
2. Using your own words, how would you define employability?
3. Do you think that your DD programme contributed in improving significantly your employability? If so, can you explain specifically how? (impact on skills and results – earning, stability, opportunities and so on -)
4. Do you believe that focusing on employability could harm the DD programmes?
5. Would you recommend a double degree programme for better employability opportunities? Tell us your reason for yes or no
6. Tell us two actions/elements (be as specific as possible) that if introduced in your DD programme would improve the students' future employability
7. Would you modify/eliminate something to improve the employability of your DD?
8. What trends should a DD programme take into account in order to guarantee the employability of their future students?
9. Is there anything else you would like to add?