

## **Using the Principles for Innovative Doctoral Training as a Tool for Guiding Reforms of Doctoral Education in Europe**

### **1. Introduction**

Research excellence, attractive institutional environment, internal quality assurance, exposure to industry and other relevant employment sectors, interdisciplinary research options, international networking and transferable skills have been defined as the seven “Principles of Innovative Doctoral Training” (IDTP).<sup>1</sup> They have been originally formulated as part of a Mapping Exercise on Doctoral Training in Europe in 2011 by the ERA Steering Group Human Resources and Mobility (ERA SGHRM). The IDTP have then been approved by the EU-Council for Education.<sup>2</sup>

Jointly with the “Salzburg II Recommendations” of the European University Association (EUA) they have been “taken into account” in the Bucharest Ministerial Communiqué of the 48 Bologna signatory states in 2012 as important contributions for the further discussion of doctoral education in the third cycle.<sup>3</sup>

A recent study by IDEA Consult and CHEPS has been sponsored by the EU Commission on the implementation of these principles in Europe based on interviews with university representatives on different levels in a sample of European universities. It concluded that the principles as such are “well accepted and subscribed by all target groups at institutional, doctoral policy and non-academic levels in Europe”.<sup>4</sup> They are, however, “not commonly known in the documented form. Similar ideas or principles, often worded differently, form the basis of doctoral training across Europe”, although the understanding and implementation of the principles varies. The authors stress that the principles were accepted as a “guiding tool” for the further development of doctoral education and research, but

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<sup>1</sup> See Annex 1

<sup>2</sup> Report of Mapping Exercise on Doctoral Training in Europe “Towards a common approach”, 27 June 2011 (49 pages). The “Principles for Innovative Doctoral Training” were part of the Mapping Exercise of 27 June 2011 and have been approved by the Council for Education of the EU stating: “Link where relevant and appropriate, national funding to the Principles for Innovative Doctoral Training”. Council conclusions on the modernisation of higher education, Brussels, 28 and 29 November 2011, p.8.

[http://www.consilium.europa.eu/uedocs/cms\\_data/docs/pressdata/en/educ/126375.pdf](http://www.consilium.europa.eu/uedocs/cms_data/docs/pressdata/en/educ/126375.pdf)

<sup>3</sup> <http://www.ehea.info/Uploads/%281%29/Bucharest%20Communique%202012%281%29.pdf> , p.2-3; The Bologna signatory states will again conclude on the third cycle in Erevan in 2015.

<sup>4</sup> Idea Consult; Center for Higher Education Policy Studies (CHEPS): Exploration of the implementation of the Innovative Doctoral Training Principles in Europe; Final report, European Commission, DG RTD, Reference: ARES (2011) 932978 (IDEA Consult/CHEPS study).

should not be understood as a “checklist for the institutions”.<sup>5</sup> In addition, the principles could be subject to a revisit by the ERA SGHRM.

It is the purpose of this report to show ways for using the IDTP as a tool for guiding the European discussion on doctoral education and its development alongside the Salzburg I and II Recommendations that inspired the IDTP. The report is directed towards universities as the institutions responsible for doctoral education and their partners as well as at funding organisations and political and administrative units on EU, member state and regional level that are interested in supporting doctoral education and its effectiveness.

This report starts with a short introduction recalling the background of the current discussion and explaining the notion of doctoral education and the concept of structured doctoral training. Both terms, “doctoral education” and “doctoral training”, are used interchangeably in this report. This is followed by a presentation of measures for the further spreading of the IDTP in doctoral training. The report ends with political conclusions on further steps to take and a road map for further action.

## **2. Doctoral Education**

Doctoral education is a primary source of new knowledge for the research and innovation systems in Europe. The outcomes of doctoral education are both a) young researchers who proved their skills for a professional life as “creative, critical and autonomous intellectual risk takers”<sup>6</sup>, as well as b) the research output in the form of a doctoral thesis that contributes to the development of world science and the innovation system.

The core of doctoral education is research training by an individual research experience. It cannot be seen as yet another study level. In order to receive a doctoral degree, candidates have to prove their ability to perform original and independent research, on an international quality level within one or several related scientific disciplines, “some of which merits national and international refereed publication”.<sup>7</sup> The term doctoral education therefore signifies a period of individual research experience leading to a university degree that testifies the development of a “research mindset” of the candidate. Doctoral candidates have to prove an entrepreneurial, creative spirit coupled with considerable persistence in following their objectives and must be able to prove and defend their research hypothesis to an expert panel beyond reasonable doubt. The duration of doctoral education varies across Europe according to the national university structures and disciplinary traditions, but requires as a rule a full-time endeavor of three to four years. There are other, shorter or part-time forms of doctoral training in Europe based on special disciplinary traditions or on

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<sup>5</sup> Idea Consult/CHEPS study, p.54.

<sup>6</sup> LERU: Doctoral Degrees beyond 2010. Training talented researchers for society, March 2010, p.3 and 1<sup>st</sup> principle of IDTP.

<sup>7</sup> <http://www.coimbra-group.eu/uploads/2010-2011/DoctoralProgrammesPositionPaper.pdf> and <http://www.ehea.info/Uploads/Documents/QF-EHEA-May2005.pdf>.

more vocationally-oriented concepts. These programmes are not part of this report, but might profit from the recommendations formulated.

### 3. Structured Doctoral Education

Doctoral education was traditionally geared towards the production of a new generation of scientists for universities and the public research system. Here a change has been taking place in recent years. In Europe the number of doctoral candidates is increasing. It will probably continue to do so in future, as the strategic goal of the EU to make all member states spend 3% of the GDP for research and development will, if achieved, increase the demand for well-trained researchers.<sup>8</sup> Thus, the education and recruitment of excellent young scientists to the European universities from within or outside Europe have become a key strategic goal in order to secure Europe's position in the global knowledge economy.

A growing share of PhD candidates, and this is true not only for science, technology, engineering and mathematics (STEM subjects), but also for the social sciences and the humanities, has increasingly found career opportunities outside traditional academic research careers. The PhD graduates are being hired by private and public employers interested in their "research mind set" and skills emanating from it. For example, in France, Germany and the UK more than 50 % of all PhD degree holders take up jobs outside academia and at technical universities in Germany the majority of degree holders leave university for the private sector immediately after having received their doctoral degree.<sup>9</sup>

This increase in scientific production, the growing competition for young talents and the necessary consideration for the job market outside academia have partly triggered and have been accompanied by the development of new forms of doctoral training provision in many European university systems. The traditional "master-apprentice model" of doctoral education, existing in many varieties, is increasingly supplemented, superimposed or replaced by forms of so called structured doctoral education. This process has recently been described as "significant changes" or even a "quiet revolution in doctoral education in Europe".<sup>10</sup>

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<sup>8</sup> Europe 2020 Flagship Initiative Innovation Union, Brussels, 6.10.2010, COM(2010) 546 final, p.8-9.

<sup>9</sup> The Royal Society U.K. 2010, The Scientific Century: Securing our future prosperity, p. 14; Statistisches Bundesamt, Hochqualifizierte in Deutschland. Erhebung zu Karriereverläufen und internationaler Mobilität von Hochqualifizierten in 2011, Wiesbaden 2013.

[https://www.destatis.de/DE/Publikationen/Thematisch/BildungForschungKultur/Hochschulen/Hochqualifiziert/eDeutschland5217205139004.pdf?\\_\\_blob=publicationFile](https://www.destatis.de/DE/Publikationen/Thematisch/BildungForschungKultur/Hochschulen/Hochqualifiziert/eDeutschland5217205139004.pdf?__blob=publicationFile), S. 44, Tab 4A; the French CEREQ survey <http://www.cereq.fr/index.php/publications/Net.Doc/L-insertion-des-docteurs-Interrogation-en-2012-des-docteurs-diplomes-en-2007>; Johann Osel, Europäische Kommission will mehr Doktoranden für die Wirtschaft, *duz-Europa* 05/2011, p. 7 [www.duz.de](http://www.duz.de).

<sup>10</sup> EUA Progress Report (December 2013) on the implementation of the actions agreed in the Memorandum of Understanding (MoU) on the European Research Area, p. 4 <http://www.eua.be/eua-work-and-policy-area/eua-policy-position-and-declarations.aspx>; LERU, Good practice elements in Doctoral Training. Follow on paper to Doctoral degrees beyond 2010: training talented researchers for society, p.4.

There is no common definition for “structured doctoral education” in the diversified European higher education system. Often it is understood as the organization of additional disciplinary or transdisciplinary studies underpinning the research of the candidate as well as possibilities for personal and career development (professional development) via transferable skills. These different forms of supplementary studies are increasingly organized on institutional or departmental level in structures having their own resources at their disposal.

The Salzburg II recommendations, however, define structured doctoral education through the existence of institutional structures that allow universities to take responsibility for doctoral education. These should include procedures that provide transparency, enhance quality and ensure an inclusive research environment for doctoral candidates. It seems useful to distinguish the institutional structures in “doctoral schools”, organizational units with strategic responsibility for doctoral education, from “doctoral programmes” which are an organized set of selected taught courses and of research opportunities within one or more disciplines.

#### **4. Political Measures for the Further Support of the Principles of Innovative Doctoral Training**

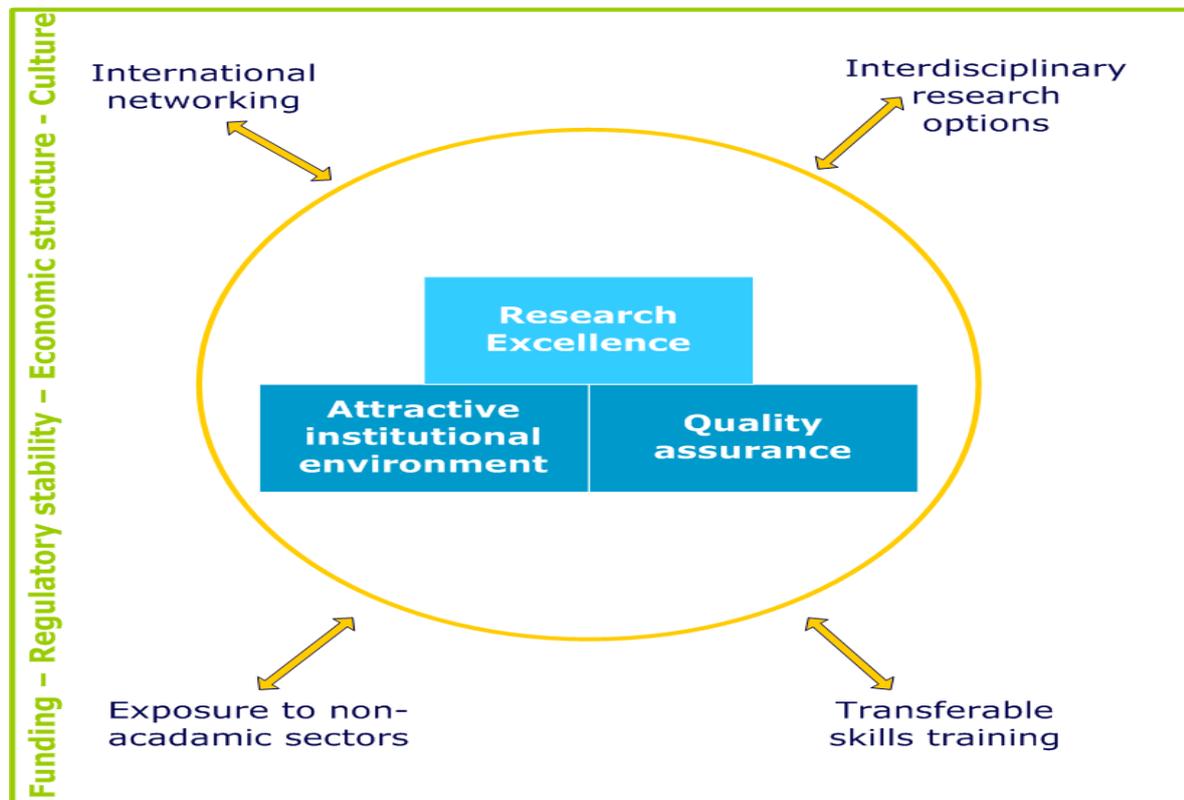
##### **4.1. Implementing the IDTP – Criteria for Establishing a European “Tool Kit” of Good Practice**

The IDEA Consult/CHEPS study of the IDTP has concluded that the European stakeholders of doctoral education consider “research excellence” based on internal “quality assurance” and the “attractiveness of the institutional environment” as core elements that should form the basis for every doctoral training offered.

Exposure to industry and other relevant employment sectors, interdisciplinary research options, international networking and transferable skills are seen as complementary but nonetheless important principles influencing the success of doctoral training and of the future career of doctoral candidates. These principles are linked among other things to disciplinary demands, considerations of the specific research topic of the candidate or special features of the doctoral programme.

In accordance with the conclusions of the Salzburg II Recommendations the study considers the interplay of the seven principles as mainly influenced by the economic condition and structure of the member states, the regulatory stability and legal framework on doctoral education, the academic culture (national traditions, disciplinary cultures etc.) and by the

sustainability of funding provided to the universities. The model provided in the study gives visibility to the interplay of these factors:<sup>11</sup>



In view of the complex situation in Europe, this report recommends the development of a website presenting examples of doctoral education structures and programmes which have used specific measures to implement the objectives being promoted by the IDTP. The examples will be provided by European stakeholders (universities) and selected by a representative group of stakeholders and representatives of the ERA SGHRM with good knowledge of the national university systems. These examples will be chosen on the basis of the following criteria:

- They base their policies on the three core principles of the IDTP and integrate one or more of the complementary principles in an exemplary manner
- They create critical mass in an institution or in cooperation with partners on a regional, national or international basis

On the website examples of measures of universities as well as university funding agencies are considered.

Cross-border co-operations creating European critical mass for research excellence are looked at specifically in the European context of this report as a tool to solve common issues in doctoral education.

<sup>11</sup> IDEA Consult/CHEPS study, p. 60 (figure).

Building critical mass, however, should not be understood in purely quantitative terms, as world class quality research can also be produced by individuals in small scientific communities. Yet, it is considered to be of key relevance for a successful doctoral education that doctoral candidates have access to a sufficiently broad range of inspiration in an inclusive research environment encompassing one or more institutions. The general economic competitiveness of Member States certainly influences the doctoral education provision beyond current economic crisis factors. Most countries with a GDP below the EU average are using Structural funds of the EU to co-finance the new doctoral education structures being installed in many places. Therefore, the report takes the common system of classification of regions in Europe into account and intends to balance examples from more developed regions with examples from transition or less developed regions on the website.<sup>12</sup>

The problems related to the regulatory stability and funding sustainability and national and regional specificities in economic structure and academic culture can be mentioned when reasonable to give an impression on the diversity of conditions of the university systems in Europe.

The measures presented in the examples will contribute to identifying and establishing a European web-based tool kit of good practice which every Member State, region and institution will be able to consider, use and adapt to the situations and needs on the spot.

#### **4.2. Encouraging Cultural Change by Intensifying the European Exchange of Experience on Doctoral Education**

The European dialogue of universities, funding agencies and other partners in doctoral education has to be intensified as a precondition for a joint European understanding of the features of a doctorate in Europe.

A listing of existing bodies and structures for such a dialogue should be carried out by the ERA SGHRM. Important already existing structures, first of all the university driven structures on the European and national or regional level, should be supported in their work by the EU, Members states and regions.

Among the existing structures the Council of Doctoral Education of the European University Association (EUA-CDE) has to be considered which organises regular exchanges of experience of universities, their institutionalised structures for doctoral education as well as thematic doctoral training networks. The EUA-CDE gathers different stakeholders at one table (225 members from the European Higher Education Area – EHEA). The doctoral

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<sup>12</sup> For the new nomenclature and definitions, see “Regulation (EU) No 1303/2013 of the European Parliament and of the Council of 17 December 2013 laying down common provisions on the European Regional Development Fund, the European Social Fund, the Cohesion Fund, the European Agricultural Fund for Rural Development and the European Maritime and Fisheries Fund etc.” p. 11

working groups of other university representations such as COIMBRA, LERU or CESAER and their work on innovative doctoral education also have to be considered.<sup>13</sup>

On the national level there exist structures like the German Association of Advanced Graduate Training (UniWiND/GUAT) focusing on the national and interregional (Länder) exchange of experience. Similar organisations exist or should be founded in the other EHEA states.<sup>14</sup>

This European exchange of experience and partnering has to be intensified also on the international, interregional and regional level. Doctoral schools financed under the Marie-Sklodowska-Curie-actions should have their regular exchange of experience and be part of the activities of other existing bodies to convey their experience to others.

The representations of the scientific and humanities disciplines on the European level and of the main stakeholders such as the doctoral candidates, e.g. the European Council of Doctoral Candidates and Junior Researchers (EURODOC), have to be part of this intensified dialogue.<sup>15</sup>

### **4.3. Creating Sustainable Funding**

Already underlined by the Salzburg II recommendations, it was stressed again by the IDEA/CHEPS study that sustainable funding is the prerequisite for sustainable quality of doctoral education.

This is a particular challenge for many of the new programmes and structures. They have been developed on a project financing basis either with support of research funding organisations in the member States, with MSC-financing or with co-funding of the EU-structural funds. The applicants and the funders should agree on sustainability concepts that permit to maintain the IDTP features of doctoral education after the project funding stops.

Funding should include proper full costing of doctoral education activities. Funding of doctoral candidates should give sufficient support to the full duration (3-4 years). The opening of the doctoral education to the needs of the non-academic sector should also encourage industry and other sectors of the economy and society to consider a stable financial support of doctoral education and doctoral candidates.

### **4.4. Adapting Legal and Regulatory Frameworks**

Member states should safeguard university autonomy while providing appropriate accountability measures which are fit for purpose.

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<sup>13</sup> [www.eua.be/cde/Home.aspx](http://www.eua.be/cde/Home.aspx)

<sup>14</sup> <http://www.uniwind.org/>

<sup>15</sup> [www.eurodoc.net](http://www.eurodoc.net)

Governments and Funding agencies on the national level as well as on the regional level, in particular in case they are using structural funds for doctoral education, should conduct an IDTP compatibility check and review whether legislation and mechanisms sufficiently allow for a flexible use and combination of the principles, as suggested by the authors of the IDEA/CHEPS study.<sup>16</sup>

The European Charter for Researchers and the Code of Conduct for the Recruitment of Researchers (C&C) should also be used as for a compatibility check of the attractiveness of the respective institutional environment for the doctoral candidates and their career development opportunities respecting the voluntary nature of these recommendations.

#### **4.5. “Doing Your Doctorate in Europe”**

Doctorates in Europe have certain characteristics which make them attractive. They follow a quality driven approach using the Principles for Innovative Doctoral Training and the Salzburg II recommendations. Completion times are relatively short as compared to other world regions.

Doctorates in Europe are embedded in a qualitative framework that can and will be implemented in many varieties in Europe. Some doctorates will put emphasis on collaboration with industry and other employment sectors. Other doctorates will put an emphasis on cross border cooperation of universities, sometimes being called “European doctorates”. Some doctorates will put an emphasis on interdisciplinary research. They all should offer research excellence, an attractive institutional environment and internal quality assurance as core elements of the IDTP.

A communication strategy should be developed to explain the advantages of doing a doctorate in Europe.

This could include a doctoral supplement articulating e.g. international experience and internships along with other verifiable information such as institutional websites. The wider use of a doctoral supplement would support the understanding of the doctorate by non-academic parties and foster employability of doctorate holders.

## **5. Conclusions and Road Map for Further Action**

The ERA SGHRM and the Commission

- will spread this report among universities as the institutions responsible for doctoral education and their partners as well as among funding organisations and political and

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<sup>16</sup> IDEA Consult/CHEPS study, p. 63

administrative units on EU, member state and regional level that are interested in supporting doctoral education and its effectiveness.

- will contribute to a listing of European, national and, if applicable, regional structures for the exchange of experience on doctoral training and will come up with proposals to stimulate this exchange at all levels in cooperation with existing stakeholder organisations.

Member States, the Commission and funding agencies

- are asked to assure sustainable funding as the prerequisite for the full implementation of the IDTP. Special care should be given to sustainable funding of programmes using structural funds.
- Funding of doctoral candidates should continue for the whole period of 3 to 4 years of full time doctoral training. The SGHRM will therefore organize a random survey of funding conditions in Europe pertaining to its sustainability for full-time doctoral candidates by summer 2015.
- are advised to conduct a compatibility check, whether legislation and administrative mechanisms sufficiently allow for a flexible use and combination of the Principles of Innovative Doctoral Training.

The ERA SGHRM and the Commission

- will jointly devise a communication strategy for explaining the advantages of doing a doctorate in Europe by spring 2015.

Member States, the Commission and Stakeholders

- will jointly discuss the development of a web-based tool kit on the European Practice of implementing the IDTP based on the criteria formulated in this report. The web-based tool kit will be of service to those looking for guidelines and inspiration on working with the IDTP,
- will jointly examine the feasibility of the concept of a doctoral supplement and come up with conclusions by summer 2015.

**Annex 1: Principles for Innovative Doctoral Training**<sup>17</sup>

**Annex 2: The Salzburg II Recommendations**<sup>18</sup>

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<sup>17</sup> [http://ec.europa.eu/euraxess/pdf/research\\_policies/Principles\\_for\\_Innovative\\_Doctoral\\_Training.pdf](http://ec.europa.eu/euraxess/pdf/research_policies/Principles_for_Innovative_Doctoral_Training.pdf)

<sup>18</sup> <http://www.eua.be/cde/publications.aspx>