

Description of a

New Danubian Governance Model

Including the

Policy Guide “How to Start – Implementing the New Danubian Governance Model”



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The document is accompanied by:

- the **prezi presentation**, available at:
<https://prezi.com/view/g4EGgFmDWc4PCZTryORH/>;
- the **web-questionnaires** to identify the current state and set the goals:
<http://edulab.fnm.um.si/anketa/>; and
- **e-learning courses**: the links are given in Appendix 7.

Executive Summary

One of the gravest societal problems the Central and Eastern European and Southeastern European countries of the Danube Region face is the emigration of their skilled workforce to Western European countries. The EDU-LAB project consortium developed the New Danubian Governance Model (NDGM) to address specifically the regional problem of skilled-workforce emigration. In a first step, the Model was outlined based on relevant studies and policy recommendations of the International Monetary Fund, OECD, EU Strategy for the Danube Region, Europe 2020. The Model was refined in transnational and intersectoral cooperation of more than 100 experts representing policy makers (ministries of education, municipalities etc.), employers' organizations (Chambers of Commerce and Industry, Business and Industry Associations etc.), institutes of higher education (universities, Danube Rectors Conference) and representatives of the civic society (NGOs). According to the recommendations of relevant policy papers as well as the input of the involved experts the NDGM recommends practical solutions tailored to the needs of the relevant stakeholder groups for making higher education more labour market relevant and praxis-oriented. A more practice based, and labour market relevant education would eliminate skills mismatches and close the gap between the offers of higher education and the demands of the labour market. The proposed model would ensure that:

- 1) graduates have the skills and competencies required in their own region and consequently are employed in the region
- 2) employers find employees with the right skills, raising their competitiveness
- 3) the regional economy is strengthened

The development of the New Danubian Governance Model was a joint effort of policy makers (education ministries and municipalities), higher education institutions, as well as employers' organisations (chambers of commerce and industry) from 10 countries of the Danube region. Developed within such transnational and intersectoral cooperation, the New Danubian Governance Model is regional in its goals and means and is tailored to the specific national contexts. As a result, the new governance model offers a road map of implementation for every key actor/stakeholder on the levels of politics, policies and projects in the Danubian Macroregion.

The overall aim of the New Danubian Governance Model is to facilitate the implementation of a practice-oriented higher education model by linking the theoretical learning outcomes of higher education to practical skills, thereby elevating the direct labour market relevance of tertiary education. It proposes solutions for linking basic knowledge to problem-solving, expertise to systemic understanding, theory to practice, analogue to digital forms of learning, individual learning and independent work to cooperative learning and team work, personal cultural identity to intercultural understanding, and self-reflection to social interaction.

The major goals to be achieved by the New Danubian Governance Model are thus the following:

- A combination of theory and practice is incorporated in the tertiary education.
- A life-long learning system is developed in a systematic and sustainable way.
- A cooperation between universities and companies in the field of teaching and research is enabled by law and stimulated by financial incentives.

- The cooperation is a major stimulus for university research and practice-oriented study programmes.
- In order to combine theory and practice, companies take over a binding and long-lasting commitment and responsibility in the learning partnership with universities.
- The educational system is flexible and sustainable enough to follow the economic and social challenges, and continuous technical development.

The New Danubian Governance Model offers a practical policy guide for

- policy makers (that is, the policy framework),
- higher education institutions (that is, the institutional resources, the needs of students, possibilities of cooperation with business and changes in the curricula),
- business (that is, their needs for knowledge and skills of graduates, the possibilities for cooperation with higher education institutions, contribution to the changes in the curricula).

First, it provides all stakeholders with a check-list of the current state of affairs regarding the possibilities to implement professional/smart study programmes. The questionnaires are available for each stakeholder group. The described situations offer ideas on the possible activities, and each statement can be identified as a current state or a goal.

Policy makers are invited to evaluate the current state regarding:

- the conditions that enable several possible systemic collaborations between the higher education institutions (HEI) and business (legislation, incentives, frameworks, etc.);
- the knowledge of what young people want in relation to what is offered to them (in scope of studies and future employment possibilities); and
- the conditions that can be met through collaboration among several relevant ministries.

The questionnaire contains the following sections: High support to changes, Incentives, and Higher education laws and quality assurance.

Higher education institutions are invited to evaluate the current state regarding:

- conditions required within the HEI to introduce study programmes in collaboration with employers;
- the existing obstacles to reform study programmes or introduce new study programmes;
- systemic possibilities for collaboration between the HEI and the business sector within study programmes;
- flexibility or rigidity of the HEI system.

The questionnaire contains the following sections: Reasons for collaboration between the HEI and business, Possibility for collaboration, Flexibility of the curriculum, Incentives for collaboration between HEIs and business, and Quality assurance.

Stakeholders from the business sector are invited to evaluate the current state regarding:

- the collaboration with HEIs within study programmes;
- the systemic possibilities for collaboration between HEIs and the business sector within study programmes;
- conditions required to enable collaboration with HEIs.

The questionnaire contains the following sections:

- Awareness about the competencies and knowledge of graduates from different study programmes;
- Missing knowledge/competencies of graduates;
- Apart from the in-depth knowledge in the field of study, which competencies/skills are the most important for your company?;
- Types of collaboration with higher education institutions;
- Organization of the internship;
- Incentives for collaboration between HEIs and the business.

After identifying the existing resources, institutional collaborations, and policies, as well as the needs, the policy guide helps every stakeholder to identify the means of change and opportunities both on the level of national policy, higher education institutions and businesses. In short, the major and most important thing that each stakeholder group should be willing to accept in order to implement the professional study programmes is:

- for policy makers: Give high assistance to change!
- for higher education institutions: Change the mindset!
- for employers: Accept a new partnership role!

Finally, the new governance model provides stakeholders with a detailed, step-by-step guide of the different policy, institutional and collaborative initiatives – between the different stakeholders both on the policy and project levels – needed to implement the professional/smart study programmes:

- For policy makers
 - Identification of the situation
 - Building of a legal framework
 - Incentives for the collaboration between higher education institutions and businesses
 - Setting the minimum standards
 - Assistance in the development of study programmes
 - Monitoring and quality assurance
- For higher education institutions
 - Commitment
 - Building the academic capacity
 - Developing the professional/smart study programmes
 - Accreditation
 - Implementation
 - Monitoring and quality assurance
 - Sustainability of collaboration between higher education institutions and businesses
- For businesses and business organisations
 - Commitment

- Building collaboration with higher education institutions
- Developing the professional/smart study programmes
- Accreditation
- Implementation
- Monitoring and quality assurance
- Sustainability of collaboration between higher education institutions and businesses

The policy guide was prepared based on the experience of the partners involved in the project. Every suggested activity has already been performed successfully by at least one of the partners. The steps already taken by the project partner countries, including the timeline, were collected and are given in the appendices. Appendices also include further supporting material, like the answers to frequently asked questions and links to useful e-learning courses related to specific steps of the implementation of the professional study programs.

The document is accompanied by the prezi presentation, available at <https://prezi.com/view/g4EGgFmDWc4PCZTryORH/> and the web-questionnaires to identify the current state and set the goals, available at <http://edulab.fnm.um.si/anketa/>.

1 Introduction

One of the gravest societal problems the Central and Eastern European and Southeastern European countries of the Danube Region face is the emigration of their skilled workforce to Western European countries. According to a July 2016 discussion note of the International Monetary Fund, the scale of emigration from the region since the fall of the Iron Curtain has been almost unparalleled in history. The EU-accession of these countries in 2004 and 2007 exacerbated this process. The people leaving their countries mostly for Germany, Italy, and Spain tend to be younger and better educated – the majority of them being skilled and highly skilled – than the general population both of the country of their origin and of their destination. Emigration thus significantly reduced the supply of skilled workforce and put more pressure on the already stretched social insurance systems of these countries by increasing the dependency ratio. The emigration of the skilled workforce is also among the main impediments before economic convergence between the EU-15 and new member states. Without skilled migration economic growth would have been significantly higher in the region. In the Central and Eastern European countries of the Danube Region the loss in cumulative GDP growth between 1995 and 2012 ratio varies from 7 percentage points in Slovenia to about 3 percentage points in Hungary. Whereas in Croatia, Romania and Bulgaria the lost potential growth output during the same period amounted to approx. 14, 10, and 8 percentage points, respectively.

To remedy the adverse effects of skilled-workforce emigration the IMF among others recommends increasing the quality of the existing workforce. The reduction of skill mismatches, aligning education and vocational training with employers' needs would not only increase labour productivity but help reduce structural and youth unemployment, which are among the main drivers of emigration.

One of the priority areas of the European Union Strategy for the Danube Region (EUSDR) is the Priority Area 9 (PA9) People and Skills, which sets policy goals in education and training, labour market and marginalised communities. The PA9 directly contributes to EU 2020 targets in employment (75% employment rate), education (reduction of school drop-out rates below 10%; at least 40% of 30-34 years-olds attaining tertiary or equivalent education), and poverty and social exclusion (at least 20 million fewer people in or at risk of social exclusion).

As a strategic project within the PA9 priority area, the EDU-LAB project, by developing through transnational and intersectoral cooperation the New Danubian Governance Model in the labour market relevance of higher education addresses PA9 key priorities and directly contributes to the EU 2020 target of increasing the proportion of young adults with a completed tertiary education. The New Danubian Governance Model is also situated at the cross-road of the policy agendas of other EUSDR priority areas: it directly contributes to the development of knowledge society (PA7), it enhances the competitiveness of enterprises (PA8), and as it is based on the collaboration of policy makers, public administration, higher education institutions and businesses, it furthers institutional capacity building and cooperation (PA 10).

The New Danubian Governance Model specifically addresses the macroregional problem of skilled-workforce emigration by offering practical solutions for making higher education more labour market relevant and praxis-oriented. Developed in an interregional co-operation the New Danubian Governance Model is both regional in its goals and means and at the same time tailored to specific

local contexts. Furthermore, the multi-stakeholder nature of its development - being a joint effort of education ministries, higher education institutions, as well as employers and employers' organisations and chambers – the new governance model offers a road map of implementation for every key actor both on the levels politics, policies and projects.

The overall aim of the New Danubian Governance Model is to implement a practice oriented higher education model by linking the theoretical learning outcomes of higher education to practical skills, thereby elevating the direct labour market relevance of tertiary education. It systematically links basic knowledge to problem-solving, expertise to systemic understanding, theory to practice, analogue to digital forms of learning, individual learning and independent work to cooperative learning and team work, personal cultural identity to intercultural understanding, and self-reflection to social interaction. To achieve these learning outcomes an active co-operation between policy makers and the higher education sector with business organisations on a policy level, and higher education institutions and local businesses on a project level is essential. Local firms and regional branches of business organisations are key partners as one of the main priorities of the New Danubian Governance Model is to help students and local businesses find each other. Countries in the Danube Region not only suffer from emigration but also from growing regional disparities. Firms apart from the capital regions and a few highly industrialised regions lack skilled labour force and young people lack perspectives so they emigrate or move to more developed regions. To implement these new professional or smart study programmes the governance model also recommends a change on the level of politics: the higher education acts should be amended in order to enable collaboration between higher education institutions and companies through a combination of financial incentives and regulatory means (by setting the standards of practical competencies to be achieved).

2 Description of the New Danubian Governance Model

2.1 Introduction

Changes brought forth by four megatrends: globalization, digitalization, individualization, and heterogeneity and changes in the educational environment, such as

- the omnipresence of information, global knowledge being available on every smartphone;
- new ways of learning, as for example, e-learning, interactive individual and group learning activities, having no constraints in terms of space and time, growing variety of formal and informal learning spaces;
- the continuous necessity to pedagogically integrate new insights and findings, and mediate them for personal and professional qualification;
- the erosion of the monopoly of classical educational institutes, as information and learning apps are available online;
- the decreasing importance of formal training certificates resulting from the ever-decreasing half-life period of knowledge; and
- the growing significance of lifelong learning for the personal and professional development; pose several challenges for the educational system.

What kind of knowledge, abilities and skills do we need in the 21st century?

The fields of competencies that are regarded as essential by employers are:

- specific professional expertise as basic and orientative knowledge combined with the understanding of the system;
- cognitive abilities, especially analytic and problem-solving skills, combined with the ability to familiarize oneself with new fields of professional activity;
- social and personal skills, above all communication skills, an ability to work individually and in a team, as well as an ability to work under pressure, and flexibility; and
- intercultural competencies, above all openness for other cultures, knowledge of foreign languages, competencies related to foreign countries and familiarity with their everyday culture.

In order to mediate knowledge and competencies, educational and learning process should become dual through systematically linking:

- | | | |
|------------------------------|-------------|----------------------------------|
| • basic knowledge | with | problem-solving skills; |
| • expertise | with | understanding of the system; |
| • theory | with | practice; |
| • analogue | with | digital forms of learning; |
| • individual | with | cooperative learning; |
| • independent | with | team-based work; |
| • personal cultural identity | with | intercultural understanding; and |
| • self-reflection | with | social interaction. |

A systematic linkage can be achieved through an active collaboration between higher education institutions (HEIs) and companies. This can be enabled by appropriate changes in higher education acts to set standards for the knowledge and competencies which are to be achieved (to avoid reducing tertiary education to the pre-tertiary level). Higher education acts should be flexible enough to enable collaboration between HEIs and companies. If universities, which have a wider mission, exercise their autonomy by rejecting the collaboration, these acts should enable the establishment of higher education institutions collaboration with business.

Active collaboration between universities and companies might make the universities face the tension between scientific education and praxis-oriented education, and between scientific freedom and research performed under contracts for companies. However, is this tension really needed? Why not offer both, scientific education and praxis-oriented education? Is it really impossible to combine scientific freedom with research performed under contracts for companies? For sure, this is difficult to achieve for one person, but within one institution it should be possible and feasible to have both types of researchers. The combination of basic and applied research might have a positive effect on both.

This description of the new Danubian governance model focuses on praxis oriented tertiary education in such a way that it does not exclude scientific education. The authors of these documents argue that the autonomy of the universities should not be misinterpreted in the way that universities are not able to introduce praxis-oriented study programmes. It is the autonomy of universities to choose whether they want to develop or enhance professional study programmes in addition to scientific study programmes.

Changing the mindset of universities means also changing the government system. Although financial resources are always an important issue, the change in the mindset is not a question of money but rather a question of political will.

The Danube region is in a transition process which makes changes easier to implement. In this document we offer an idea of a new Danubian governance model to achieve a labour market relevance of higher education. The study programmes in line with these suggestions are called **professional study programmes** or, in line with the smart specializations, also **smart study programmes**.

2.2 The New Danubian Governance Model

The New Danubian Governance Model is formed as a set of 6 goals:

- A combination of theory and practice is incorporated in the tertiary education.
- A life-long learning system is developed in a systematic and sustainable way.
- A cooperation between universities and companies in the field of teaching and research is enabled by law and stimulated by financial incentives.
- The cooperation is a major stimulus for university research and practice-oriented study programmes.
- In order to combine theory and practice, companies take over a binding and long-lasting commitment and responsibility in the learning partnership with universities.
- The educational system is flexible and sustainable enough to follow the economic and social challenges, and continuous technical development.

In the following chapter a practical policy guide is offered on how to achieve the goals of the New Danubian Governance Model. The New Danubian Governance Model offers a practical policy guide for policy makers (that is, the policy framework), higher education institutions (that is, the institutional resources, the needs of students, possibilities of cooperation with business and changes in the curricula), and businesses (that is, their needs for knowledge and skills of graduates, the possibilities for cooperation with higher education institutions, contribution to the changes in the curricula). First, it provides all stakeholders with a check-list of the current state of affairs regarding the possibilities to implement professional/smart study programme, respectively. Second, after identifying the existing resources, institutional collaborations, and policies, as well as the needs, it helps every stakeholder to identify the means of change and opportunities both on the level of national policy, higher education institutions and businesses. Finally, the new governance model provides stakeholders with a detailed, step-by-step guide of the different policy, institutional and collaborative initiatives – between the different stakeholders both on the policy and project levels – needed to implement the professional/smart study programmes:

- For policy makers
 - Identification of the situation
 - Building of a legal framework
 - Incentives for the collaboration between higher education institutions and businesses
 - Setting the minimum standards
 - Assistance in the development of study programmes
 - Monitoring and quality assurance
- For higher education institutions
 - Commitment
 - Building academic capacity
 - Developing professional/smart study programmes
 - Accreditation
 - Implementation

- Monitoring and quality assurance
- Sustainability of collaboration between higher education institutions and businesses

- For businesses and business organisations
 - Commitment
 - Building collaboration with higher education institutions
 - Developing the professional/smart study programmes
 - Accreditation
 - Implementation
 - Monitoring and quality assurance
 - Sustainability of collaboration between higher education institutions and businesses

All of these steps are broken down to well-defined tasks and objectives. The three group of stakeholders need to cooperate within and across the three sectors in order to successfully implement the professional/smart study programmes. However, because of its practical nature, the policy guide also makes the furthering of local or lower scale projects possible between “coalitions of the willing”.

3 Policy Guide “How to Start – Implementing the New Danubian Governance Model”

3.1 Development of the policy guide

The starting point for the development of the policy guide was the determination that the policy guide has to be an operative document that will address specific problems and will offer well-defined specific steps on how to solve them. In order to achieve the intended function of the document, it is essential, that it gives workable advice on the steps that need to be undertaken in order to achieve the labour market relevance of higher education and to give the best knowledge and opportunities to the students in the Danube region. First and foremost, the students have to be attracted to studying in the region which means that they trust in the quality of the study programmes. And secondly, after graduation, the region should be capable of offering competitive employment opportunities?

The policy guide was developed within the EDU-LAB work package 4, led by the University of Maribor (UM), as a result of a joint brainstorming and working process including the experts from the stakeholder groups of

- policy makers: representatives from ministries of higher education, science and technology, labor, human capacities, chambers of commerce and industry, Danube Rectors Conference, municipalities;
- higher education institutions: representatives of university leaderships (vice-rectors for quality and education), university professors, university administration staff, national examination centers, students;
- business: representatives from companies from the field of technology, logistics, communication, electronics, energy supply, automotive industry, finance, representatives from various industry associations, regional development agencies, etc.

Countries involved in the project included experts from all the three stakeholder groups by inviting them to actively participate in the two organized seminars and workshops and by including them in the discussions on the contents of the policy guide within their respective country. The development of the policy guide thus considered the problems from all the included Danubian countries and, moreover, the description of steps for solving them provided by those countries who have already addressed the identified problems in labour market relevance of higher education. The leading partner of the project (European Foundation of Education, Stuttgart, Germany) has a deep insight into the dual system studies in Germany, while the leading partner of the work package 4 (University of Maribor, Maribor, Slovenia) has extensive experience in the implementation of professional study programmes at the bachelor level (approximately 50% of the students enrolled in the bachelor study programmes at University of Maribor are enrolled in the professional study programs).

The structure and the contents was developed through several seminars, workshops and meetings (Maribor: September 2017 and January 2018, Belgrade: November 2017, Bratislava: March 2018, Vratsa: April 2018, Kecskemet: June 2018), through additional web-conferences and e-mail discussions.

Prior to the seminar and workshop in Maribor in September 2017, where the first profound brainstorming on the policy guide was pursued, UM prepared lists of situations that might be applicable for the stakeholders from business, higher education institutions and policy makers. All the partners were encouraged to discuss the points with their stakeholders, so their first input was received already prior to the Maribor event and included in the working material prepared for the seminar and workshops.

The brainstorming on the policy guide at the Maribor meeting was achieved within three thematic workgroups:

1. Identification of the current state and definition of goals.
2. Structure and contents of the workable policy.
3. Steps from a chosen current state to a specific desired goal.

All the attendees were included in the first and the second thematic workgroups while project partners contributed to the third thematic workgroup. The attendees were from all three stakeholder groups (policy makers, higher education institutions, business) and the discussion groups (DG) were formed in the following way: three of them were “pure” (i.e. only policy makers, only higher education institutions, only business) and two of them were mixed. In such a way, we obtained specific views from experts from one type of a stakeholder group as well as combined views from the mixed groups. Indeed, the project goal was to have all three stakeholder groups to exchange their views, but as a start, it was very important to obtain specific views on the topic from specific stakeholders in order to be able to set further activities that would lead to the triple helix actions.

The first thematic discussions were on the drafts of the documents on the identification of the current state and definition of goals. The brainstorming on the identification of the current state and definition of goals was a starting point for the discussion on the structure of the workable policy guide. These discussions confirmed the goal already set prior to the meeting: the policy guide has to be operative, which means that it has to give workable advice on the steps that need to be undertaken in order to achieve the labour market relevance of higher education. It should include the identification of the current state for each stakeholder group, identification of the goals for each stakeholder group and specific steps that have to be undertaken as a triple action of all the three stakeholder groups in order to achieve the defined goal in connection to different starting points. In such a way the policy guide would be useful for the whole region, namely the major goal is the same (labour market relevance of higher education), but the starting points differ significantly between the Danubian countries.

In the third thematic discussion, each discussion group addressed a different combination of a specific starting point (A) and desired goal (B), and drafted specific steps (actions) by considering all the stakeholders that have to be included in order to achieve the goal. The discussion groups studied the following situations:

Example 1:

A: No systematic collaboration between HEI and business.

B: Dual system study is implemented in some specific study fields.

Example 2:

A: Companies have no trained supervisors for students at internships.

B: Companies train their own supervisors for students at internships.

Example 3:

A: No interest in collaboration between HEI and business (on either side).

B: There is an ongoing collaboration between HEI and business at the study program level.

Example 4:

A: No information on how many young people leave the country to study and no policy to motivate their return; no following of young people careers after finishing secondary school.

B1: Governmental structures follow the careers of young people with the best results at the end of the secondary education (after 18/19 ys of age).

B2: Governmental structures have an information on how many young people went to study abroad and which studies they chose.

B3: Country has a policy how to motivate young people to return to the region after finishing the studies abroad.

We have thus decided to implement the bottom-up approach, that is, by starting with very specific situations and designing steps to achieve some very specific goals. Through such discussions a more general approach for achieving the labour market relevance of higher education was developed.

The leaders of each discussion group reported on the results of their discussions. All the suggestions were collected by the work package 4 leaders and used to prepare the draft of the document for further development at the next meeting. Some groups continued the discussion also via teleconferences after the meeting and sent the suggestions to the project partner leading the work package 4.

Based on the presentations and discussions at the Maribor meeting, the major goals of the New Danubian Governance Model were set (see the previous chapter) and presented at the meeting in Belgrade. These set basic points have not changed much even after the discussions at further meetings in Maribor, Vratsa and Kecskemet as the project partners and all the stakeholders agreed that they present the goals in a clear and concise way. It was decided that the New Danubian Governance model should be as short as possible, giving only the desired goal situation, while all other points should be included in the policy guide on how to reach the final goals described by the New Danubian Governance Model.

During the Belgrade meeting the steps towards achieving the goals set by the New Danubian Governance Model were further discussed, based on the drafts prepared by the University of Maribor. This drafts already included all the outcomes of the Maribor meeting. Based on the drafts, the partners on the project and stakeholders were able to further clarify the steps in achieving the labour market relevance of higher education. It was decided that the document should also include a section on the things that each stakeholder group should be willing to do and accept in order to implement professional study programs. It was also decided that the steps already taken by some Danubian countries in the direction of more professionally oriented study programmes, no matter how far from

or close to the goals of the New Danubian Governance Model they are, should be collected and included in the appendix to the document. It was also decided that the leaders of the work package preparing the policy guide and work package preparing pilot activities should meet and discuss/check the applicability of the policy guide in the pilot activities. During this meeting (Bratislava, March 2018), the steps that should be taken by the higher education institution and business were joined from the step describing the preparation of the professional study programs forward.

At the meeting in Maribor in January 2018, the partners and stakeholders obtained the first version joining all the parts of the workable policy. During the workshops the partners and stakeholders discussed

- the contents of the New Danubian Governance model; as a result, one point (the last one) was added to the model,
- the contents of the tables identifying the current state; it was decided that these questionnaires should also be prepared as web questionnaires, which would enable to fill in the answers on-line and the results to be printed out,
- the contents of the “Things you should be willing to do”,
- the steps to be taken by policy makers, higher education institutions and business.

As a lasting effect the formation of the national academies of professional study programs was proposed and the draft of the contract was suggested to be added in the appendix of the document.

Finally, at the Kecskemet meeting it was suggested that links to the e-learning courses, developed within the project are also given in the document. In addition, a prezi presentation was prepared, which enables an easier access to the working policy chapters and includes links to all the supporting material.

3.2 How to use the Policy Guide

Target groups

The New Danubian Governance Model and the Policy Guide is a tool that can be used by any stakeholder (policy makers, higher education institution leaderships, and business) that finds the need to stimulate changes in the higher education system towards higher labour market relevance of higher education study programmes.

Structure of the policy guide

The policy guide consists of three sections:

1. Identify your current state
 - This section also enables the setting of goals.
2. Things you should be willing to accept/undertake to implement professional/smart study programmes
 - This section addresses the prerequisites for the successful implementation of the labour market relevance of higher education; in short: policy makers have to give high

assistance to change, higher education institutions should change their mind-set and business should accept a new partnership role.

3. Steps

- For each stakeholder group the actions necessary to reach the goal are divided into 6 to 7 major steps.

Each section is divided into three parts: policy makers, higher education institutions and the business sector. The actions and steps of all three stakeholders are essentially interconnected. However, there are specifics for each stakeholder group and that is why it was decided to address each group separately. The connection to other stakeholder groups is obvious from the actions/steps suggested for each group. Especially the prezi version of the document makes the cross-reading between the stakeholder groups very easy.

This policy guide enables you:

- to identify your current state; descriptions of possible situations are given in such a way that you can already identify your goals during this process;
- to set your major and/or minor goals as there are several possibilities to achieve sustainable and long-lasting collaboration between universities and companies; and
- to check the steps that other countries have already performed to achieve a desired goal; multiple possibilities are given for you to choose the most appropriate one according to the legislation in your country or to check the steps that other countries have taken in order to change legislation.

This policy guide addresses the most frequently asked questions:

- Who (a university or companies) should initiate the collaboration?
- Are governmental structures required as catalysts?
- How long does it take to implement the changes?
- Are there downsides of internships and how to diminish them?
- How to make companies excited about collaboration?
- How to make universities interested in praxis-oriented studies?
- How to make praxis-oriented studies accessible for SMEs?
- What competencies and knowledge should supervisors in companies have and who should educate them?

Supporting material

The policy guide was prepared based on the experience of the partners involved in the project. Every suggested activity has already been performed successfully by at least one of the partners. In order to avoid scepticism on whether the goal of the labour market relevance of higher education study programs is achievable or not, we have collected all the steps already taken by the project partner countries (Appendix 5). The timeline of changes is included to show that enforcing the changes can take decades, because the most difficult thing is to change the mind-set. However, the examples of a successful implementation prove that it can be done.

The questions that occurred frequently during the discussions at seminars and workshops are collected in Appendix 4.

To make it easier to identify the current state and goals we have developed a web application (a questionnaire), which enables identification of the given situations as something that already exists and is already systematically enforced or as only an example of best practice, something that you would like to achieve (a goal) or something that is not applicable to you. The web application enables you to print out the situations according to the selected answer. We suggest using these questionnaires when starting the activities and then periodically to check how the situations identified as goals are moving towards the part identified as a current state.

Within the project several e-learning courses were also developed and can help in obtaining ideas on how to reach the goal. The links to the e-learning courses are included in appendix 7.

Where to start?

Anywhere! The topics are arranged linearly, but our mind does not work this way. Also, the activities required to reach the final goal do not necessarily follow each other as suggested by the policy guide. In several cases the order can be changed, several activities can run in parallel. However, to reach the final goal, most of them will have to be carried out at some point.

A suggestion: start at the activity that you find the easiest and most straightforward. The important thing is to start and keep in mind that it often suffices to have only one enthusiast in each stakeholder group to make a change. Are you one of them?

Is it workable?

Yes, it is! The suggested activities are based on the activities already carried out by the project partner John von Neumann University, who has already implemented those changes. Furthermore, the recommended steps were already used in the pilot activities within the project which lead to a successful implementation of:

- the first professional study program in Slovakia. In August 2018 the Slovak Accreditation Commission accredited a professional bachelor programme at the Slovak University of Technology in Bratislava, becoming the first accredited professionally oriented study programme in Slovakia approved by the commission according to the new criteria. The experts involved in the development of the accreditation criteria were involved in the development of the New Danubian Governance Model and followed its recommendations. The new study program was designed according to these recommendations as well. Thus, the professionally oriented study programme offered by the Faculty of Mechanical Engineering, is structured in four years of study and corresponds to the level of other bachelor programmes of the university, however, with a stronger focus on practical training, combining theoretical studies with mandatory practical training. In the first and second year the students are provided courses laying a theoretical foundation on which they can later build the practical skills. In the third year they are employed in one of the 8 transnational partner companies based in different regions of Slovakia. The fact that partner companies are based in different

regions of Slovakia plays an important role in mitigating brain drain from regions as well as in encouraging students to stay in their homeland after their studies. The curriculum of the fourth year was modified in collaboration with the partner companies in order to meet their actual requirements. In order to cover the theoretical background required by the company the students are employed, a wide range of subjects to choose from are offered. The students have the opportunity to receive company-sponsored scholarships each year. The total amount of provided financial means vary, depending on individuals' evaluation.

- the implementation of the professional internship at the master study programs at the University of Maribor (the matching platform between the students and companies was established through the EDU-LAB project, further activities in the next two years will be financed through the development funds provided by the Ministry of Higher Education, Science and Sports),
- a legislative change and the accreditation of a professional study program is being prepared in Serbia
- the National Academy for Professional Education was funded in Bulgaria as a coordinating body of activities aiming better lining of education to employment and lobbying for the legislative change that would be needed. The members are three EDU-LAB project partners, - the Technical University of Sofia, the Bulgarian Industry Association-Union of the Bulgarian business and the European Foundation for Education- joined by the German-Bulgarian Chamber of Industry and Commerce, the Industrial Cluster Srednogorie.

3.3 Identify your current state

3.3.1 Policy makers

In this section, you can check your current state regarding:

- the conditions that enable several possible systemic collaborations between the HEI and business (legislation, incentives, frameworks, etc.);
- the knowledge of what young people want in relation to what is offered to them (in scope of studies and future employment possibilities); and
- the conditions that can be met through collaboration among several relevant ministries.

The situations in the tables below are combined into the following sections:

1. High support to changes,
2. Incentives, and
3. Higher education laws and quality assurance.

The second column in the tables below is empty for you to record your specific answers. The described situations can give you an idea of what type of activities are possible, so you can identify the statement in the empty column as:

- something that already exists (current state - CS),
- something that you would like to achieve (goal -G), or
- something that is not applicable (NA) to you.

Some questions might require simple YES/NO answers, but again, they can show you the way of how to enforce a change.

There are empty lines at the end of each topic where you can add your own ideas.

When answering, think also about the system level of the situation:

- is this systematically arranged (SA), or
- is it just a matter of specific situations (best practice example - BPE).

<i>Identify your current state: POLICY MAKERS</i>	CS – current state G – goal NA – not applicable Y/N – yes/no SA – systematically applied BPE – best practice examples
1. HIGH SUPPORT TO CHANGES	
The country has performed a research on a current state of the labour market relevance of the higher education system.	CS, G, NA, Y/N, SA, BPE
Governmental structures follow the careers of young people after the secondary education (after 18-19 years of age).	CS, G, NA, Y/N, SA, BPE
Governmental structures follow the careers of young people after the HEI graduation.	CS, G, NA, Y/N, SA, BPE
Governmental structures have information on how many young people went to study abroad and which studies they chose.	CS, G, NA, Y/N, SA, BPE
The country has performed a research to find the amount of brain drain and reasons for it.	CS, G, NA, Y/N, SA, BPE
The country has a policy on how to motivate young people to return to the region after having finished their studies abroad.	CS, G, NA, Y/N, SA, BPE
The country has developed a long term vision of the labour market relevance of higher education.	CS, G, NA, Y/N, SA, BPE
The agents that can enforce legal changes are identified.	CS, G, NA, Y/N, SA, BPE
The agents that can change and motivate financing principles are identified.	CS, G, NA, Y/N, SA, BPE
The HEI laws are adapted to support the labour market relevance of higher education (the HEI laws enable professional/smart study programmes).	CS, G, NA, Y/N, SA, BPE
There is an on-going collaboration among all relevant ministries (the Ministry of Economy/Commerce, Ministry of Labour, Chamber of Commerce, Ministry of Higher Education, etc.).	CS, G, NA, Y/N, SA, BPE
The relevant ministries collaborate with regional policy makers.	CS, G, NA, Y/N, SA, BPE
There is a long term investment plan to build infrastructure.	CS, G, NA, Y/N, SA, BPE
A system for monitoring and stimulating the collaboration between HEIs and business is established and operative.	CS, G, NA, Y/N, SA, BPE
	CS, G, NA, Y/N, SA, BPE
	CS, G, NA, Y/N, SA, BPE
2. INCENTIVES	
The framework for financing HEIs to support professional/smart study programmes is built.	CS, G, NA, Y/N, SA, BPE
The framework for tax reduction for companies collaborating in the professional/smart study programmes is built.	CS, G, NA, Y/N, SA, BPE
The framework for incentives to stimulate professional/smart study programmes is built at the level of local governments.	CS, G, NA, Y/N, SA, BPE
Stable funds are allocated for the training of the supervisors.	CS, G, NA, Y/N, SA, BPE
A system to compensate for any obligatory additional costs due to the collaboration with business (e.g. legal obligations for the payment of insurance,	CS, G, NA, Y/N, SA, BPE

payments by HEIs to business or vice versa, or payments for students having internship, etc.) is built.	
There are financial incentives for the development of new study programmes in line with the strategic development plans of the region.	CS, G, NA, Y/N, SA, BPE
	CS, G, NA, Y/N, SA, BPE
	CS, G, NA, Y/N, SA, BPE
3. HIGHER EDUCATION LAWS AND QUALITY ASSURANCE	
Legislation allows HEIs to have flexible curriculums and to form them together with business partners.	CS, G, NA, Y/N, SA, BPE
Internship can be a part of any study programme.	CS, G, NA, Y/N, SA, BPE
Internship is an obligatory part of some study programmes.	CS, G, NA, Y/N, SA, BPE
Internship is enabled at the master study programme level.	CS, G, NA, Y/N, SA, BPE
HEIs can use/offer a more flexible study plan to business partners, e.g. more intensive courses to make time for internship.	CS, G, NA, Y/N, SA, BPE
A quality assurance body (a council for professional/smart study programmes) is established and operative on the national or regional level.	CS, G, NA, Y/N, SA, BPE
HE acts require the development of existing study programmes at HEIs.	CS, G, NA, Y/N, SA, BPE
HE acts enable HEIs to offer students greater exposure to practical acquisition of skills during the study.	CS, G, NA, Y/N, SA, BPE
HE acts enable HEIs to involve business experts into study programmes.	CS, G, NA, Y/N, SA, BPE
	CS, G, NA, Y/N, SA, BPE
	CS, G, NA, Y/N, SA, BPE

3.3.2 Higher education institutions

In this section, you can check your current state regarding:

- conditions required within the HEI to introduce study programmes in collaboration with business;
- the existing obstacles to reform study programmes or introduce new study programmes;
- systemic possibilities for collaboration between the HEI and business within study programmes; and
- flexibility or rigidity of the HEI system.

The situations in the tables below are combined into the following sections:

1. Reasons for collaboration between the HEI and business,
2. Possibility for collaboration,
3. Flexibility of the curriculum,
4. Incentives for collaboration between HEIs and business, and
5. Quality assurance.

The second column in the table below is empty for you to record your specific answers. The described situations can give you an idea of what type of activities are possible, so you can identify the statement in the empty column as:

- something that already exists (current state – CS),
- something that you would like to achieve (goal – G), or
- something that is not applicable (NA) to you.

Some questions might require simple YES/NO answers, but again, they can show you the way of how to enforce a change.

When answering, think also about the system level of the situation:

- is this systematically arranged (SA), or
- is it just a matter of specific situations (best practice example – BPE).

There are empty lines at the end of each topic where you can add your own ideas.

<i>Identify your current state:</i> HIGHER EDUCATION INSTITUTIONS	CS – current state G – goal NA – not applicable Y/N – yes/no SA – systematically applied BPE – best practice examples
1. REASONS FOR COLLABORATION BETWEEN THE HEI AND BUSINESS	
Companies have better (more up-to-date) laboratories than the HEI.	CS, G, NA, Y/N, SA, BPE
The HEI has experimental equipment that is useful for business as well.	CS, G, NA, Y/N, SA, BPE
The HEI is interested in offering its students greater exposure to the practical acquisition of skills during the study.	CS, G, NA, Y/N, SA, BPE
The HEI gives/wants to give knowledge and competencies that enable graduates to start their own business.	CS, G, NA, Y/N, SA, BPE
There are companies in the region which require graduates to acquire deep theoretical knowledge from the HEI, but would like to introduce students to their working processes and specific (target) knowledge during the studies (as opposed to the trial period after the graduation).	CS, G, NA, Y/N, SA, BPE
	CS, G, NA, Y/N, SA, BPE
	CS, G, NA, Y/N, SA, BPE
2. POSSIBILITIES FOR COLLABORATION	
Students can prepare their graduation theses at all study levels in collaboration with business.	CS, G, NA, Y/N, SA, BPE
Businesses can advertise their suggestions for theses/seminars at the HEI.	CS, G, NA, Y/N, SA, BPE
The HEI has a pool of mentors from business that are educated in helping students perform their thesis research.	CS, G, NA, Y/N, SA, BPE
The HEI has teaching staff that is involved in research projects with business.	CS, G, NA, Y/N, SA, BPE
The HEI involves business experts into study programmes (as separate lectures or within a study course).	CS, G, NA, Y/N, SA, BPE
The HEI has a career centre which acts as a “connecting tissue” between the HEI and companies, organizes career fairs/days, invites companies for seminars, organizes excursions/presentations at companies, etc.	CS, G, NA, Y/N, SA, BPE
The HEI enables internship as an obligatory or elective course within study programmes.	CS, G, NA, Y/N, SA, BPE
	CS, G, NA, Y/N, SA, BPE
	CS, G, NA, Y/N, SA, BPE
3. FLEXIBILITY OF THE CURRICULUM	
Legislation allows the HEI to have flexible curriculums and to form them together with business partners.	CS, G, NA, Y/N, SA, BPE
The HEI has freedom to change the curriculum of study programmes.	CS, G, NA, Y/N, SA, BPE
Internships can be a part of any study programme.	CS, G, NA, Y/N, SA, BPE
Internship is an obligatory part of some study programmes.	CS, G, NA, Y/N, SA, BPE

Internship is possible at the master study programme level.	CS, G, NA, Y/N, SA, BPE
The HEI can use/offer a more flexible study plan to business partners, e.g. more intensive courses to make time for internship.	CS, G, NA, Y/N, SA, BPE
The HEI can develop its own study programmes (without external accreditation procedure).	CS, G, NA, Y/N, SA, BPE
The HEI can develop its own study programmes (without external accreditation procedure) based on the national/regional guidelines/rules for the structure of study programmes.	CS, G, NA, Y/N, SA, BPE
	CS, G, NA, Y/N, SA, BPE
	CS, G, NA, Y/N, SA, BPE
4. INCENTIVES FOR COLLABORATION BETWEEN THE HEI AND BUSINESS	
The government funds R&D projects between the HEI and business – projects involving researchers.	CS, G, NA, Y/N, SA, BPE
The government funds R&D projects between the HEI and business – projects involving students.	CS, G, NA, Y/N, SA, BPE
There are financial incentives for the development of new study programmes in line with the strategic development plans of the region (e.g.: additional money given to the HEI based on its development proposal).	CS, G, NA, Y/N, SA, BPE
There are financial incentives for the teaching staff to collaborate in R&D projects with business.	CS, G, NA, Y/N, SA, BPE
There are financial incentives to compensate any obligatory additional costs (e.g. legal obligations for the payment of insurance, payments by the HEI to business or vice versa, or payments for students having internship, etc.) related to the internship.	CS, G, NA, Y/N, SA, BPE
	CS, G, NA, Y/N, SA, BPE
	CS, G, NA, Y/N, SA, BPE
	CS, G, NA, Y/N, SA, BPE
5. QUALITY ASSURANCE	
Within the quality assurance cycle study programmes are regularly evaluated and updated.	CS, G, NA, Y/N, SA, BPE
Study programmes have programme boards which include all types of stakeholders (including business) and their role is to give recommendations.	CS, G, NA, Y/N, SA, BPE
The HEI regularly reports on which recommendations were enforced and which not, and why not.	CS, G, NA, Y/N, SA, BPE
Business is invited to give suggestions for changes in study programmes (through programme boards, workshops, programme meetings, etc.).	CS, G, NA, Y/N, SA, BPE
Business is consulted when new study programmes are developed.	CS, G, NA, Y/N, SA, BPE
Alumni are consulted about the changes in study programmes.	CS, G, NA, Y/N, SA, BPE
	CS, G, NA, Y/N, SA, BPE
	CS, G, NA, Y/N, SA, BPE

3.3.3 Business

In this section, you can check your current state regarding:

- the collaboration with HEIs within study programmes;
- the systemic possibilities for collaboration between HEIs and the business within study programmes; and
- conditions required to enable collaboration with HEIs.

The situations in the tables below are combined into the following sections:

1. Awareness about the competencies and knowledge of graduates from different study programmes;
2. Missing knowledge/competencies of graduates;
3. Apart from the in-depth knowledge in the field of study, which competencies/skills are the most important for your company?;
4. Types of collaboration with higher education institutions;
5. Organization of the internship; and
6. Incentives for collaboration between HEIs and the business.

The second column in the tables below is empty for you to record your specific answers. The described situations can give you an idea of what type of activities are possible, so you can identify the statement in the empty column as:

- something that already exists (current state – CS),
- something that you would like to achieve (goal – G), or
- something that is not applicable (NA) to you.

Some questions might require simple YES/NO answers, but again, they can show you the way of how to enforce a change.

When answering, think also about the system level of the situation:

- is this systematically arranged (SA), or
- is it just a matter of specific situations (best practice example – BPE).

There are empty lines at the end of each topic where you can add your own ideas.

<i>Identify your current state: BUSINESS</i>	CS – current state G – goal NA – not applicable Y/N – yes/no SA – systematically applied BPE – best practice examples
1. AWARENESS ABOUT THE COMPETENCIES AND KNOWLEDGE OF GRADUATES FROM DIFFERENT STUDY PROGRAMMES	
The knowledge and competencies of graduates are revealed during the trial period of employment.	CS, G, NA, Y/N, SA, BPE
The knowledge and competencies of graduates are revealed during the studies (internship, the supervision of final theses, etc.).	CS, G, NA, Y/N, SA, BPE
The company “tests” graduates/students from different study fields in order to discern which study programmes provide relevant competencies and knowledge for their type of work.	CS, G, NA, Y/N, SA, BPE
The company is involved in the development of (new and existing) study programmes.	CS, G, NA, Y/N, SA, BPE
The company has employed several graduates from the regional HEI and finds their knowledge and competencies suitable for the development of the company.	CS, G, NA, Y/N, SA, BPE
The company employs students on a merit base (i.e. academic success counts).	CS, G, NA, Y/N, SA, BPE
The company employs graduates who proved themselves the most at the internship.	CS, G, NA, Y/N, SA, BPE
A system that enables systematic and regular feedback from the company to the HEIs regarding graduate competencies is established.	CS, G, NA, Y/N, SA, BPE
	CS, G, NA, Y/N, SA, BPE
	CS, G, NA, Y/N, SA, BPE
2. MISSING KNOWLEDGE/COMPETENCIES OF GRADUATES <i>(when answering, keep in mind the level of graduates: bachelor, master, PhD)</i>	
Graduates lack the basic theoretical knowledge and understanding.	CS, G, NA, Y/N, SA, BPE
Graduates lack new knowledge required for the development.	CS, G, NA, Y/N, SA, BPE
Graduates lack knowledge on project management.	CS, G, NA, Y/N, SA, BPE
Graduates lack language skills (both mother tongue and foreign languages).	CS, G, NA, Y/N, SA, BPE
Graduates lack presentation skills.	CS, G, NA, Y/N, SA, BPE
Graduates have proper theoretical and practical knowledge; however, the company would like to give them specific knowledge required for the work in the company within the study period.	CS, G, NA, Y/N, SA, BPE
	CS, G, NA, Y/N, SA, BPE
	CS, G, NA, Y/N, SA, BPE
3. APART FROM THE IN-DEPTH KNOWLEDGE IN THE FIELD OF STUDY, WHICH COMPETENCIES/SKILLS ARE THE MOST IMPORTANT FOR YOUR COMPANY?	CS, G, NA, Y/N, SA, BPE

Adaptability.	CS, G, NA, Y/N, SA, BPE
Ability of team work.	CS, G, NA, Y/N, SA, BPE
Ability to take initiatives.	CS, G, NA, Y/N, SA, BPE
Ability of fast learning.	CS, G, NA, Y/N, SA, BPE
Communication skills.	CS, G, NA, Y/N, SA, BPE
Intercultural competencies.	CS, G, NA, Y/N, SA, BPE
Analytical and problem-solving skills.	CS, G, NA, Y/N, SA, BPE
Ability to work under pressure.	CS, G, NA, Y/N, SA, BPE
	CS, G, NA, Y/N, SA, BPE
	CS, G, NA, Y/N, SA, BPE
4. TYPES OF COLLABORATION WITH HIGHER EDUCATION INSTITUTIONS	
Internships.	CS, G, NA, Y/N, SA, BPE
Experts from the business sector lecture within specific courses.	CS, G, NA, Y/N, SA, BPE
(Co-)supervision of final theses at all study levels.	CS, G, NA, Y/N, SA, BPE
Joint research projects.	CS, G, NA, Y/N, SA, BPE
Joint development projects.	CS, G, NA, Y/N, SA, BPE
Involvement in the development of study programmes (existing and new).	CS, G, NA, Y/N, SA, BPE
Patent applications.	CS, G, NA, Y/N, SA, BPE
Career days.	CS, G, NA, Y/N, SA, BPE
Career centres.	CS, G, NA, Y/N, SA, BPE
Specially appointed coordination centres.	CS, G, NA, Y/N, SA, BPE
Laboratories sponsored to do applicable research.	CS, G, NA, Y/N, SA, BPE
Sponsored student competitions.	CS, G, NA, Y/N, SA, BPE
Sharing laboratory/research equipment.	CS, G, NA, Y/N, SA, BPE
Researchers from HEIs are performing research in/for the company.	CS, G, NA, Y/N, SA, BPE
Students are involved in the development/research projects in/for the company.	CS, G, NA, Y/N, SA, BPE
	CS, G, NA, Y/N, SA, BPE
	CS, G, NA, Y/N, SA, BPE
5. ORGANIZATION OF THE INTERNSHIP	
Internship is a formalized cooperation between HEIs and the company (by long-term agreements).	CS, G, NA, Y/N, SA, BPE
There is a formalized regular feedback system to let the HEIs know how their students perform during internship.	CS, G, NA, Y/N, SA, BPE
The company has an option to send back/refuse/fail a student who does not meet the knowledge standards required for the internship, etc. (a selection system equivalent to exams at HEIs).	CS, G, NA, Y/N, SA, BPE
The company has trained supervisors for students.	CS, G, NA, Y/N, SA, BPE

Trained supervisors are a formal requirement for a company to enter the system of internship for students.	CS, G, NA, Y/N, SA, BPE
The company educates its own internship supervisors.	CS, G, NA, Y/N, SA, BPE
Internship supervisors are educated by the Chamber of Commerce.	CS, G, NA, Y/N, SA, BPE
There is an ongoing collaboration between supervisors and HEIs teaching staff in order to connect theory with practice, and to monitor and develop the system of collaboration to be quicker and more efficient.	CS, G, NA, Y/N, SA, BPE
Supervisors are able to help students/HEIs understand the needs of the company and to transfer to students the required skills and knowledge.	CS, G, NA, Y/N, SA, BPE
Supervisors have the needed qualification/skills and are able to cooperate in adapting the study programme accordingly.	CS, G, NA, Y/N, SA, BPE
	CS, G, NA, Y/N, SA, BPE
6. INCENTIVES FOR COLLABORATION BETWEEN HEIs AND BUSINESS	
The company offers financial and structural support for the mentors and supervisors involved in internships and other types of collaboration with HEIs.	CS, G, NA, Y/N, SA, BPE
There are governmental support and incentives for smaller companies to enable their collaboration with HEIs.	CS, G, NA, Y/N, SA, BPE
Collaboration between companies and HEIs in the form of internship is stimulated by tax reduction (to compensate, for example, the costs of training, certifying internal supervisors, and students for their time working in the company).	CS, G, NA, Y/N, SA, BPE
	CS, G, NA, Y/N, SA, BPE
	CS, G, NA, Y/N, SA, BPE
	CS, G, NA, Y/N, SA, BPE

3.4 Things you should be willing to accept/undertake to implement professional/smart study programmes

3.4.1 Policy makers

In order to implement professional/smart study programmes
you are required to give HIGH ASSISTANCE TO CHANGE!

- Develop a long-term vision (focus both on national and regional needs).
- Identify change agents; who can change and motivate:
 - financing principles,
 - allocation according to economic needs, and
 - legal changes.
- Adapt the HEI law to support professional/smart study programmes.
- Encourage collaboration among the Ministry of Commerce/Economy, Ministry of Labour, Chamber of Commerce, Ministry of Higher Education, and regional policy makers.
- Build the framework of incentives:
 - tax law,
 - financing of HEIs, and
 - incentives at the level of local governments.
- Invest in the training of supervisors (allocate stable funds).
- Invest in infrastructure.
- Adapt the accreditation procedures to include business.
- Create a quality assurance body (a council for professional/smart study programmes).
- Develop national/regional open databases with information on companies and the labour market.

3.4.2 Higher education institution

In order to implement professional/smart study programmes
you are required to CHANGE YOUR MINDSET and be willing to:

- Commit to collaboration with business on a strategic and operational level and allocate the resources:
 - develop funding models,
 - allocate staff to develop the system,
 - create openness to cooperation and innovation, and
 - create openness to partnership with business.
- Integrate practical work as a compulsory part of the curriculum.
- Be open to collaboration with business in changing/creating new study programmes.
- Prepare new study programmes and implement them.
- Be open to participation in innovative R&D.
- Change the ratio between theory and practice within study programmes and:
 - accept new methods of teaching (new mindset of professors),
 - include practical/project work as a part of study programmes (including examples from the business sector),
 - motivate a common use of infrastructure, and
 - improve digital and soft skills of the teaching staff and students.
- Involve students as partners in all stages of implementing changes.

3.4.3 Business

In order to implement professional/smart study programmes
you should ACCEPT A NEW PARTNERSHIP ROLE and be willing to:

- Commit to collaboration with HEIs on a strategic and operational level.
- Strategically commit to give personnel and financial resources.
- Assign employees to train for the role of supervisors.
- Invest in the training of supervisors.
- Invest in remuneration for students.
- Collaborate with HEIs in developing the curriculum.
- Take the responsibility for the implementation of a part of the curriculum.
- Collaborate with HEIs in the evaluation of study programmes, making changes, adaption, etc.
- Establish knowledge transfer between the company and HEIs (collaboration among supervisors and professors).
- Cooperate with other companies.
- Sign long-term agreements with HEIs.
- Be part of the selection procedure of students.
- Have patience: HEIs and policy makers operate on a different timescale than businesses.

3.5 Steps

3.5.1 Policy makers

Step 1: Identify the situation

Perform this step to the available extent (by no means should you use the lack of some data as an excuse to do nothing!)

- Obtain the data and analyse careers of young people after secondary education (after 18-19 years of age).
- Obtain the data and analyse careers of young people after HEI graduation.
- Obtain the data and analyse the number of young people that went to study abroad and the studies they chose.
- Perform a research to find the amount of brain drain and reasons for it.
- Carry out a research to find out how the environment/society accepts the idea of professional/smart study programmes.
- Open a public discussion and present best practices.
- Carry out a research to make predictions on future needs of the labour market (national and regional).

Step 2: Build a legal framework

- Develop a long-term vision on the labour market relevance of higher education.
- Develop a long-term regional strategy of educating for business needs.
- Make necessary changes in HE acts to establish a flexible framework of study programmes.
The system should
 - be pragmatically oriented and practical,
 - define responsibility, and
 - define the status of students doing internship.
- Make a legal framework for incentives to support collaboration between HEIs and business.
- Make necessary changes in legislation referring to the health insurance, safety guidelines, employment procedure, etc. for students doing internships and companies accepting the students (a labour code, law on income taxes, law on health insurance, etc.).

Step 3: Give incentives to stimulate/start collaboration between HEIs and business

- Invest in infrastructure (research centres, laboratories, etc.).
- Establish incubators of collaboration.
- Finance career centres at HEIs.
- Support inclusion of business experts in study programmes (as lecturers within specific courses, as (co)supervisors for final theses and internships, etc.).
- Finance R&D projects between business and HEIs including both HEI teaching staff and students.
- Establish a system of performance-based financing for universities.
- Give scholarships for students involved in professionally oriented study programmes.

- Establish a system for stimulating unemployed people to be integrated/reintegrated within professionally oriented study programmes (career counselling, etc.).

Step 4: Set the minimum standards for professional/smart study programmes

In setting the standards, refer to

- the level of competencies and learning outcomes of the study programmes;
- a contractual matrix among all stakeholders (HEIs and companies, HEIs and students, companies and students, and HEIs and authorities);
- the critical mass regarding the number of companies, number of study places, number of supervisors in companies, number of teaching staff at HEIs collaborating with companies;
- the threshold requirements regarding infrastructure and financial resources;
- the structure of study programmes: how many ECTS at the HEI, how many at the company, horizontal and vertical connection of courses, etc.;
- the requirements for trained supervisors;
- the requirements for an on-going collaboration between supervisors in companies and HEIs;
- the maximum length of the accreditation procedure:
 - should be short in order not to discourage business, and
 - gradually transfer the accreditation to HEIs and only perform regular quality assurance procedures.

Step 5: Assistance to the development of study programmes

- Help in negotiations between business and HEIs.
- SME: they will require incentives – find the money, set the rules, etc.
- Develop national/regional open databases with information on companies and labour market.

Step 6: Monitoring and quality assurance

- Establish a council for professional/smart education (the role can be assigned to an external accreditation council, if you decide to have it) and define
 - quality assurance procedures, and
 - the supervision and evaluation of implementation (visit companies and HEIs).
- Establish a system for monitoring the employability of graduates within their field of study in order to plan the study fields that require or are appropriate for the professional/smart study programmes.

3.5.2 Higher education institutions

Step 1: Commitment

- Define cooperation between the HEI and business as a strategic goal at the management level.
- Organize meetings, events, conferences, focus groups, and workshops in collaboration with universities, business, chambers of commerce, and business associations in order to get feedback from the labour market, to identify the way of cooperation and common interests, and to promote best practices.
- Create awareness about the need for partnership and cooperation among university professors and students.
- Improve the capacity of the HEI to implement changes (changes in management).
- Allocate financial funds to implement changes.

Step 2: Build academic capacity

- Build the academic capacity of the HEI to collaborate with business by
 - establishing career centres,
 - inviting guest speakers from business to lecture,
 - inviting former graduates to present their experiences and courses they took,
 - offering the teaching staff time to spend at the associated companies,
 - jointly developing case studies,
 - setting research themes for students that are influenced by the research teams of companies,
 - organizing business competitions for students,
 - conducting applied research projects that are contracted between universities and companies,
 - designing training programmes (LLL) for employees of companies,
 - promoting scholarships for students,
 - offering workshops run by people from business/external experts,
 - taking advantage of the European mobility programmes for the employment of students,
 - communicating with alumni, and
 - enabling voluntary internship within study programmes.
- Form an advisory board for collaboration with business.
- Form an administrative office, responsible for developing the above types of partnerships (an example: University of Rochester, USA – 270 people hired and responsible to connect with alumni and business in order to raise money for the university).

Step 3: Development of professional/smart study programmes

- Define possible study fields for professional/smart study programmes.
- Identify companies available in the region.
- Approach business associations, clusters and companies (employers) in general.

- Form a joint working group (business – HEI) to develop the curriculum in line with the standards set for professional/smart study programmes (see the suggestions for step 4 for policy makers).
- Explore the options on additional life-long learning programmes with the mindset of professional/smart study programmes, based on actual needs of local/national business.
- Decide on the content:
 - define the goals of the programmes;
 - define the skills, competencies and knowledge of the graduates (professional/technical knowledge, social competencies, language skills, transferable skills, IT-skills, project management skills, certified foreign language knowledge on B2 level at least, etc.);
 - define topics covered by the HEI and topics covered by a company (also based on the information on which equipment the company is willing to share for the study process); and
 - define the targeted values on practical vs. academic knowledge (time and content).
- Decide on the structure:
 - define the number of months per year that students should spend in companies;
 - define ECTS allocated for lectures/tutorials at the HEI and ECTS for internship;
 - define the interchange of time spent at the HEI and in a company (interchange within each week, e.g. 3 days at the HEI and 2 in the company, or interchange within months, e.g. 3 months at the HEI, one month in the company, etc.);
 - decide on whether students shall have internship in more than one company; and
 - define the courses that are horizontally and vertically correlated.
- Decide on the (new) methods of teaching.
 - Prepare trainings for HE teaching staff within the business sector (associated companies) to give them the necessary skills required for the professionally oriented study programmes.
- Agree on the entrance conditions for students and their selection:
 - The system should be transparent.
 - Define the prior education that students should have to be eligible to apply.
 - Define the entrance exams (theoretical, practical, psychological, etc.)
 - Define the responsibility for performing the selection procedure.
 - Each party (academia and business) should be able to reject the applicant.
- Decide on the requirements and training of tutors/supervisors in the company.
 - What knowledge and skills should supervisors have? For example:
 - Teaching/pedagogical skills: not having pedagogical skills represents the risk of not transferring the knowledge, which results in poor performance of students.
 - Digital skills: not just the regular use of computers and software, but using technology to transfer knowledge and build capacity of students.
 - Expert skills.
 - Ability to translate learning goals into practical tasks and exercises.
 - Ability to work with academia.
 - Who should educate the tutors/supervisors? For example:
 - chambers of commerce;

- training centres;
- associations related to training; or
- the HEI: not advised, because HEIs are not flexible enough and practically oriented, they get too theoretical and they do not know about processes in business.
- Content of training, for example:
 - development of social skills (didactics, pedagogy, psychology, communication, etc.);
 - building the ability to translate learning goals in practical tasks and exercises (based on examples for specific study fields); and
 - the development of digital skills.
- Education of tutors/supervisors should end with a formal license/certificate.
- Keep a register of licensed tutors/supervisors.
- Define responsibilities and quality assurance procedures.
- Prepare and sign long-term agreements between the HEI and companies, which include the above-raised points discussed and agreed upon within the joint working group.
- Prepare a template for students – a company agreement in which you define at least:
 - responsibilities of the company,
 - responsibilities of the student,
 - if the students are required to stay in the company after graduation (we strongly advise against such a requirement),
 - remuneration for students at internship, and
 - what happens if students do not perform well enough.

Step 4: Accreditation

- Approval of a new or adapted study programme by the body defined in the regional/national higher education act.

Step 5: Implementation

Prior to the release of the application call:

- Select the companies involved (quality assurance check).
- Define the number of study places:
 - How many new students per year is each company willing to accept?
 - The decision should also be based on how many supervisors can company train and allocate.
 - Are companies interested in „sharing“ students with other companies (i.e. they learn in other companies as well)
 - Suggestion: the number of study places is lower than the number of possible internship places.

After the closure of the application call:

- Select the students:
 - Check general requirements (are applicants eligible to apply).

- Perform the entrance exams in the HEI and in companies (if such entrance exams are defined within the study programme).
- Match the selected students and companies (each party has a right to reject).
- Sign the student – company study agreements.

Step 6: Monitoring and quality assurance

- Define a study programme council (it can also be a council at the faculty or university level) to monitor the implementation of the contract between the HEI and business in order to avoid any deviation.
- Plan regular meetings between HEI teaching staff and supervisors from business to follow up on the student progress and to resolve the issues raised.
- Perform regular (self)evaluation of the study programme (including a semester-based student-satisfaction survey) and propose changes in the curriculum, develop/change teaching methods, develop new study cases, update the syllabus of the study courses, evaluate the performance of students, lecturers and supervisors, adapt the selection procedure, etc.
- Follow up on the percentage of graduates that were employed by the companies involved in the study programme.
- Regularly check the satisfaction of graduates with the knowledge and skills obtained within the study programme, focusing both on the part performed by the HEI and the part performed by companies.

Step 7: Sustainability of collaboration between the HEI and business

- Form a national/regional board, for example the National Academy of Professional Education, which will combine the following activities in a synergetic way:
 - professional/smart study programmes;
 - qualification programmes for trainers in companies for apprenticeships and practical parts of dual studies;
 - further education for teachers in professionally oriented schools, in particular technical high schools;
 - further formation programmes such as start-up training, entrepreneurship, design thinking, and deep learning; and
 - the organization of know-how transfer between universities and companies in the fields of study programmes, science and research.

3.5.3 Business

Step 1: Commitment

- Commit on a strategical level (collaboration with HEIs, also/especially through professional/smart study programmes is „the right thing“).
- Build an implementation team, strategic and operational, and
 - identify frontrunners, and
 - propose to managers a clearly defined roadmap:
 - human resources are needed (internal experts required for teaching students are taken from their original role), and
 - financial resources are needed.

Step 2: Build a connection/collaboration with HEIs

- Whom to contact?
 - approach the HEI or a specific department directly, or/and
 - approach a career centre at the HEI, or/and
 - approach a vice-rector or vice-dean for education, research or collaboration with business, or/and
 - approach laboratories of applicative research.
- Build connections with the HEI by offering
 - to give lectures as guest speakers in courses,
 - internships,
 - joint development of case studies,
 - research themes for students that are influenced by your research team,
 - a business competition for students,
 - scholarships for students,
 - to collaborate in applied research projects that are contracted between universities and companies.
- Organize clusters of smaller and mid-size companies in order to give them the capacity to get involved in professional/smart study programmes.

Step 3: Development of professional/smart study programmes

- Whom to contact?
 - If there are no professional/smart study programmes yet: approach the chamber of commerce or employers' organizations; they should approach either the ministry of higher education or HEIs directly.
 - If professional/smart study programmes already exist: contact the HEI directly.
- Form a joint working group (business – HEI) to develop the curriculum in line with the standards set for professional/smart study programmes (see the suggestions for step 4 for policy makers).
- Decide on the content:
 - define the goals of the programmes;

- define the skills, competencies and knowledge of the graduates (professional/technical knowledge, social competencies, language skills, transferable skills, IT-skills, etc.);
- define topics covered by the HEI and topics covered by the company (also based on the information on which equipment the company is willing to share for the study process); and
- define the targeted values on practical vs. academic knowledge (time and content).
- Decide on the structure:
 - define the number of months per year that students should spend in the company;
 - define ECTS allocated for lectures/tutorials at the HEI and ECTS for internship;
 - define the interchange of time spent at the HEI and in the company (interchange within each week, e.g. 3 days at the HEI and 2 in the company, or interchange within months, e.g. 3 months at the HEI, one month in the company, etc.);
 - decide on whether students shall have internship in more than one company; and
 - define the courses that are horizontally and vertically correlated.
- Decide on the (new) methods of teaching.
- Agree on the entrance conditions for students and their selection:
 - The system should be transparent.
 - Define the prior education that students should have to be eligible to apply.
 - Define the entrance exams (theoretical, practical, psychological, etc.)
 - Define the responsibility for performing the selection procedure.
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- Decide on the requirements and training of tutors/supervisors in the company.
 - What knowledge and skills should supervisors have? For example:
 - Teaching/pedagogical skills: not having pedagogical skills represents the risk of not transferring the knowledge, which results in poor performance of students.
 - Digital skills: not just the regular use of computers and software but using technology to transfer knowledge and build capacity of students.
 - Expert skills.
 - Ability to translate learning goals into practical tasks and exercises.
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 - Who should educate the tutors/supervisors? For example:
 - chambers of commerce;
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 - associations related to training; or
 - HEIs: not advised, because they are not flexible enough and practically oriented, they get too theoretical and they do not know about processes in business.
 - Content of training, for example:
 - development of social skills (didactics, pedagogy, psychology, communication, etc.);
 - building the ability to translate learning goals in practical tasks and exercises (based on examples for specific study fields); and
 - development of digital skills.

- Education of tutors/supervisors should end with a formal license/certificate.
- Keep a register of licensed tutors/supervisors.
- Define responsibilities and quality assurance procedures.
- Prepare and sign long-term agreements between the HEI and the company, which includes the above-raised points discussed and agreed upon within the joint working group.
- Prepare a template for students – a company agreement in which you define at least:
 - responsibilities of the company,
 - responsibilities of the student,
 - if the students are required to stay in the company after graduation (we strongly advise against such a requirement),
 - remuneration for students at internship, and
 - what happens if students do not perform well enough.

Step 4: Accreditation

- Approval of a new or adapted study programme by the body defined in the regional/national higher education act.

Step 5: Implementation

Prior to the release of the application call:

- Select the companies involved (quality assurance check).
- Define the number of study places:
 - How many new students per year is each company willing to accept?
 - The decision should be based also on how many supervisors can company train and allocate.
 - Are companies interested in „sharing“ students with other companies (i.e. they learn in other companies as well)
 - Suggestion: the number of study places is lower than the number of possible internship places.

After the closure of the application call:

- Select the students:
 - Check general requirements (are applicants eligible to apply).
 - Perform the entrance exams in the HEI and in companies (if such entrance exams are defined within the study programme).
 - Match the selected students and companies (each party has a right to reject).
 - Sign the student – company study agreements.

Step 6: Monitoring and quality assurance

- Define a study programme council (it can also be a council at the faculty or university level) to monitor the implementation of the contract between the HEI and business in order to avoid any deviation.

- Plan regular meetings between HEI teaching staff and supervisors from business to follow up on the student progress and to resolve the issues raised.
- Perform regular (self)evaluation of the study programme (including a semester-based student-satisfaction survey) and propose changes in the curriculum, develop/change teaching methods, develop new study cases, update the syllabus of the study courses, evaluate the performance of students, lecturers and supervisors, adapt the selection procedure, etc.
- Follow up on the percentage of graduates that were employed by the companies involved in the study programme.
- Regularly check the satisfaction of graduates with the knowledge and skills obtained within the study programme, focusing both on the part performed by the HEI and the part performed by companies.

Step 7: Sustainability of collaboration between the HEI and business

- Form a national/regional board, for example the National Academy of Professional Education, which will combine the following activities in a synergetic way:
 - professional/smart study programmes;
 - qualification programmes for trainers in companies for apprenticeships and practical parts of dual studies;
 - further education for teachers in professionally oriented schools, in particular technical high schools;
 - further formation programmes such as start-up training, entrepreneurship, design thinking, and deep learning; and
 - the organization of know-how transfer between universities and companies in the fields of study programmes, science and research.

3.5.4 Guidelines for a successful implementation of professional/smart study programmes in companies

1. Practical placements need to be planned carefully. In the course of their studies, students acquire a wide spectrum of necessary professional skills by being charged with versatile tasks.
2. The companies receive information in due time regarding the time and length of the internship/deployment, the level of knowledge of the student, and the qualitative requirements.
3. The companies ensure that qualified mentors and enough time is dedicated to the guidance of the students.
4. Tasks and project goals are clearly communicated to the students. Students are held accountable for carrying out the tasks independently.
5. Students are charged with projects and tasks that contribute to their personal and professional development and bring added value for internal and external customers.
6. The students get insight in business processes through their work. The conferred responsibilities leave room for personal initiative, individual approaches and creativity. Growing complexity and responsibility of tasks (practice projects) offer students the chance to acquire professional competency and increase their employability.
7. Students are integrated in teams and experience socialization within the company. Besides acquiring professional and methodical competencies, they get familiar with standards needed to carry out their profession and the rules for successful communication and cooperation.
8. If possible, students spend an internship phase abroad. Ideally, there they receive tasks and responsibilities that complement the theoretical and practical knowledge gained in their home countries. Special attention must be paid to acquiring language skills and intercultural competencies.
9. Students have a dedicated mentor/coach for the entire length of their studies. Students receive regular feedback regarding their professional and personal development.
10. Students receive guidance from their mentor/coach during their last academic year as well and are assisted in finding an appropriate topic for their bachelor thesis. Furthermore, the mentor/coach stays available after the final exam to advise the students while they are looking for their first employment. His knowledge of the professional environment and of the personality and qualifications of the student contributes to a successful career start.
11. If the company cannot fulfil all the demands for the necessary professional skills, the partners organize exchange programmes with other companies, and if necessary, with other professional centres for training.
12. As the students are selected by the company and are actively working in the company, the company pays a remuneration to support the living costs and the tuition fees of the students.

4 Appendices

Appendix 1: Identify the current state – JOINT

Policy makers
1. HIGH SUPPORT TO CHANGES
The country has performed a research on a current state of the labour market relevance of the higher education system.
Governmental structures follow the careers of young people after the secondary education (after 18-19 years of age).
Governmental structures follow the careers of young people after the HEI graduation.
Governmental structures have information on how many young people went to study abroad and which studies they chose.
The country has performed a research to find the amount of brain drain and reasons for it.
The country has a policy on how to motivate young people to return to the region after having finished their studies abroad.
The country has developed a long term vision of the labour market relevance of higher education.
The agents that can enforce legal changes are identified.
The agents that can change and motivate financing principles are identified.
The HEI laws are adapted to support the labour market relevance of higher education (the HEI laws enable professional/smart study programmes).
There is an on-going collaboration among all the relevant ministries (the Ministry of Economy/Commerce, Ministry of Labour, Chamber of Commerce, Ministry of Higher Education, etc.).
The relevant ministries collaborate with regional policy makers.
There is a long term investment plan to build infrastructure.
A system for monitoring and stimulating the collaboration between HEIs and business is established and operative.
2. INCENTIVES
The framework for financing HEIs to support professional/smart study programmes is built.
The framework for tax reduction for companies collaborating in the professional/smart study programmes is built.
The framework for incentives to stimulate professional/smart study programmes is built at the level of local governments.
Stable funds are allocated for the training of the supervisors.
A system to compensate for any obligatory additional costs due to the collaboration with business (e.g. legal obligations for the payment of insurance, payments by HEIs to business or vice versa, or payments for students having internship, etc.) is built.
There are financial incentives for the development of new study programmes in line with the strategic development plans of the region.
3. HIGHER EDUCATION LAWS AND QUALITY ASSURANCE
Legislation allows HEIs to have flexible curriculums and to form them together with business partners.
Internship can be a part of any study programme.
Internship is an obligatory part of some study programmes.
Internship is enabled at the master study programme level.
HEIs can use/offer a more flexible study plan to business partners, e.g. more intensive courses to make time for internship.
A quality assurance body (a council for professional/smart study programmes) is established and operative on the national or regional level.
HE acts require the development of existing study programmes at HEIs.
HE acts enable HEIs to offer students greater exposure to practical acquisition of skills during the study.
HE acts enable HEIs to involve business experts into study programmes.

Higher education institutions
1. REASONS FOR COLLABORATIONS BETWEEN THE HEI AND BUSINESS
Companies have better (more up-to-date) laboratories than the HEI.
The HEI has experimental equipment that is useful for business as well.
The HEI is interested in offering its students greater exposure to the practical acquisition of skills during the study.
The HEI gives/wants to give knowledge and competencies that enable graduates to start their own business.
There are companies in the region which require graduates to acquire deep theoretical knowledge from the HEI, but would like to introduce students to their working processes and specific (target) knowledge during the studies (as opposed to the trial period after the graduation).
2. POSSIBILITIES FOR COLLABORATION
Students can prepare their graduation theses at all study levels in collaboration with business.
Business can advertise their suggestions for theses/seminars at the HEI.
The HEI has a pool of mentors from business that are educated in helping students perform their thesis research.
The HEI has teaching staff that is involved in research projects with business.
The HEI involves business experts into study programmes (as separate lectures or within a study course).
The HEI has a career centre which acts as a “connecting tissue” between the HEI and companies, organizes career fairs/days, invites companies for seminars, organizes excursions/presentations at companies, etc.
The HEI enables internship as an obligatory or elective course within study programmes.
3. FLEXIBILITY OF THE CURRICULUM
Legislation allows the HEI to have flexible curriculums and to form them together with business partners.
The HEI has freedom to change the curriculum of study programmes.
Internship can be a part of any study programme.
Internship is an obligatory part of some study programmes.
Internship is enabled at the master study programme level.
The HEI can use/offer a more flexible study plan to business partners, e.g. more intensive courses to make time for internship.
The HEI can develop its own study programmes (without external accreditation procedure).
The HEI can develop its own study programmes (without external accreditation procedure) based on the national/regional guidelines/rules for the structure of study programmes.
4. INCENTIVES FOR COLLABORATION BETWEEN THE HEI AND BUSINESS
The government funds R&D projects between the HEI and business – projects involving researchers.
The government funds R&D projects between the HEI and business – projects involving students.
There are financial incentives for the development of new study programmes in line with the strategic development plans of the region (e.g.: additional money given to the HEI based on its development proposal).
There are financial incentives for the teaching staff to collaborate in R&D projects with business.
There are financial incentives to compensate any obligatory additional costs (e.g. legal obligations for the payment of insurance, payments by the HEI to business or vice versa, or payments for students having internship, etc.) related to the internship.
5. QUALITY ASSURANCE
Within the quality assurance cycle study programmes are regularly evaluated and updated.
Study programmes have programme boards which include all types of stakeholders (including business) and their role is to give recommendations.
The HEI regularly reports on which recommendations were enforced and which not, and why not.
Business is invited to give suggestions for changes in study programmes (through programme boards, workshops, programme meetings, etc.).
Business is consulted when new study programmes are developed.
ALUMNI are consulted about the changes in study programmes.

Business
1. AWARENESS ABOUT THE COMPETENCIES AND KNOWLEDGE OF GRADUATES FROM DIFFERENT STUDY PROGRAMMES
The knowledge and competencies of graduates are revealed during the trial period of employment.
The knowledge and competencies of graduates are revealed during the studies (internship, the supervision of final theses, etc.).
The company “tests” graduates/students from different study fields in order to discern which study programmes provide relevant competencies and knowledge for their type of work.
The company is involved in the development of (new and existing) study programmes.
The Company has employed several graduates from the regional HEI and finds their knowledge and competencies suitable for the development of the company.
The company employs students on a merit base (i.e. the academic success counts).
The company employs graduates who proved themselves most at the internship.
A system that enables systematic and regular feedback from the company to the HEIs regarding graduate competencies is established.
2. MISSING KNOWLEDGE/COMPETENCIES OF GRADUATES (when answering, keep in mind the level of graduates: bachelor, master, PhD)
Graduates lack the basic theoretical knowledge and understanding.
Graduates lack new knowledge required for the development.
Graduates lack knowledge on project management.
Graduates lack language skills (both mother tongue and foreign languages).
Graduates lack presentation skills.
Graduates have proper theoretical and practical knowledge; however, the company would like to give them specific knowledge required for the work in the company within the study period.
3. APART FROM THE IN-DEPTH KNOWLEDGE IN THE FIELD OF STUDY, WHICH COMPETENCIES/SKILLS ARE THE MOST IMPORTANT FOR YOUR COMPANY?
Adaptability.
Ability of team work.
Ability to take initiatives.
Ability of fast learning.
Communication skills.
Intercultural competencies.
Analytic and problem solving skills.
Ability to work under pressure.
4. TYPES OF COLLABORATION WITH HIGHER EDUCATION INSTITUTIONS
Internships.
Experts from business lecture within specific courses.
(Co)supervision of final theses at all study levels.
Joint research projects.
Joint development projects.
Involvement in the development of study programmes (existing and new).
Patent applications.
Career days.
Career centres.
Specially appointed coordination centres.
Laboratories sponsored to do applicable research.
Sponsored student competitions.
Sharing laboratory/research equipment.
Researchers from HEIs are performing research in/for the company.
Students are involved in the development/research projects in/for the company.
5. ORGANIZATION OF THE INTERNSHIP
Internship is a formalized cooperation between HEIs and the company (by long-term agreements).
There is a formalized regular feedback system to let the HEIs know how their students perform during internship.
The company has an option to send back/refuse/fail a student who does not meet the knowledge standards required for the internship, etc. (a selection system equivalent to exams at HEIs).
The company has trained supervisors for students.
Trained supervisors are a formal requirement for a company to enter the system of internship for students.
The company educates its own internship supervisors.
Internship supervisors are educated by the Chamber of Commerce.
There is an ongoing collaboration between supervisors and HEIs teaching staff in order to connect the theory with practice, and to monitor and develop the system of collaboration to be quicker and more efficient.
Supervisors are able to help students/HEIs understand the needs of the company, qualification/skills needed and be able to cooperate in adapting the study programme accordingly.
6. INCENTIVES FOR COLLABORATION BETWEEN HEI AND BUSINESS
The company offers financial and structural support for the mentors and supervisors involved in internships and other types of collaboration with HEIs.
There are governmental support and incentives for smaller companies to enable their collaboration with HEIs.
Collaboration between companies and HEIs in the form of internship is stimulated by tax reduction (to compensate, for example, the costs of training, certifying internal supervisors, and students for their time working in the company).

Identify your current state: POLICY MAKERS	CS – current state G – goal NA – not applicable Y/N – yes/no SA – systematically applied BPE – best practice examples
1. HIGH SUPPORT TO CHANGES	
The country has performed a research on a current state of the labour market relevance of the higher education system.	CS, G, NA, Y/N, SA, BPE
Governmental structures follow the careers of young people after the secondary education (after 18-19 years of age).	CS, G, NA, Y/N, SA, BPE
Governmental structures follow the careers of young people after the HEI graduation.	CS, G, NA, Y/N, SA, BPE
Governmental structures have information on how many young people went to study abroad and which studies they chose.	CS, G, NA, Y/N, SA, BPE
The country has performed a research to find the amount of brain drain and reasons for it.	CS, G, NA, Y/N, SA, BPE
The country has a policy on how to motivate young people to return to the region after having finished their studies abroad.	CS, G, NA, Y/N, SA, BPE
The country has developed a long term vision of the labour market relevance of higher education.	CS, G, NA, Y/N, SA, BPE
The agents that can enforce legal changes are identified.	CS, G, NA, Y/N, SA, BPE
The agents that can change and motivate financing principles are identified.	CS, G, NA, Y/N, SA, BPE
The HEI laws are adapted to support the labour market relevance of higher education (the HEI laws enable professional/smart study programmes).	CS, G, NA, Y/N, SA, BPE
There is an on-going collaboration among all the relevant ministries (the Ministry of Economy/Commerce, Ministry of Labour, Chamber of Commerce, Ministry of Higher Education, etc.).	CS, G, NA, Y/N, SA, BPE
The relevant ministries collaborate with regional policy makers.	CS, G, NA, Y/N, SA, BPE
There is a long term investment plan to build infrastructure.	CS, G, NA, Y/N, SA, BPE
A system for monitoring and stimulating the collaboration between HEIs and business is established and operative.	CS, G, NA, Y/N, SA, BPE
	CS, G, NA, Y/N, SA, BPE
	CS, G, NA, Y/N, SA, BPE
	CS, G, NA, Y/N, SA, BPE
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2. INCENTIVES	
The framework for financing HEI to support professional/smart study programmes is built.	CS, G, NA, Y/N, SA, BPE
The framework for tax reduction for companies collaborating in the professional/smart study programmes is built.	CS, G, NA, Y/N, SA, BPE
The framework for incentives to stimulate professional/smart study programmes is built at the level of local governments.	CS, G, NA, Y/N, SA, BPE
Stable funds are allocated for the training of the supervisors.	CS, G, NA, Y/N, SA, BPE
A system to compensate for any obligatory additional costs due to the collaboration with business (e.g. legal obligations for payment of insurance, payment of HEI to business or vice versa or payment for the students having internship, etc.) is built.	CS, G, NA, Y/N, SA, BPE
There are financial incentives for the development of new study programmes in line with the strategic development plans of the region.	CS, G, NA, Y/N, SA, BPE
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3. HIGHER EDUCATION LAWS AND QUALITY ASSURANCE	
Legislation allows HEI to have flexible curriculums and to form them together with business partners.	CS, G, NA, Y/N, SA, BPE
Internship can be a part of any study programme.	CS, G, NA, Y/N, SA, BPE
Internship is an obligatory part of some study programmes.	CS, G, NA, Y/N, SA, BPE
Internship is enabled at the master study programme level.	CS, G, NA, Y/N, SA, BPE
HEI can use/offer a more flexible study plan to business partner, e.g. more intensive courses to make time for internship.	CS, G, NA, Y/N, SA, BPE
A quality assurance body (council for professional/smart study programmes) is established and operative on the national or regional level.	CS, G, NA, Y/N, SA, BPE
HE acts require development of the existing study programmes at HEI.	CS, G, NA, Y/N, SA, BPE
HE acts enable HEI to offer students greater exposure to practical acquisition of skills during the study.	CS, G, NA, Y/N, SA, BPE
HE acts enable HEI to involve business experts into study programmes.	CS, G, NA, Y/N, SA, BPE
	CS, G, NA, Y/N, SA, BPE
	CS, G, NA, Y/N, SA, BPE

Identify your current state: HIGHER EDUCATION INSTITUTIONS	CS – current state G – goal NA – not applicable Y/N – yes/no SA – systematically applied BPE – best practice examples
1. REASONS FOR COLLABORATIONS BETWEEN THE HEI AND BUSINESS	
Companies have better (more up-to-date) laboratories than the HEI.	CS, G, NA, Y/N, SA, BPE
The HEI has experimental equipment that is useful for business as well.	CS, G, NA, Y/N, SA, BPE
The HEI is interested in offering its students greater exposure to the practical acquisition of skills during the study.	CS, G, NA, Y/N, SA, BPE
The HEI gives/wants to give knowledge and competencies that enable graduates to start their own business.	CS, G, NA, Y/N, SA, BPE
There are companies in the region which require graduates to acquire deep theoretical knowledge from the HEI, but would like to introduce students to their working processes and specific (target) knowledge during the studies (as opposed to the trial period after the graduation).	CS, G, NA, Y/N, SA, BPE
	CS, G, NA, Y/N, SA, BPE
	CS, G, NA, Y/N, SA, BPE
	CS, G, NA, Y/N, SA, BPE
2. POSSIBILITIES FOR COLLABORATION	
Students can prepare their graduation theses at all study levels in collaboration with business.	CS, G, NA, Y/N, SA, BPE
Business can advertise their suggestions for theses/seminars at the HEI.	CS, G, NA, Y/N, SA, BPE
The HEI has a pool of mentors from business that are educated in helping students perform their thesis research.	CS, G, NA, Y/N, SA, BPE
The HEI has teaching staff that is involved in research projects with business.	CS, G, NA, Y/N, SA, BPE
The HEI involves business experts into study programmes (as separate lectures or within a study course).	CS, G, NA, Y/N, SA, BPE
The HEI has a career centre which acts as a “connecting tissue” between the HEI and companies, organizes career fairs/days, invites companies for seminars, organizes excursions/presentations at companies, etc.	CS, G, NA, Y/N, SA, BPE
The HEI enables internship as an obligatory or elective course within study programmes.	CS, G, NA, Y/N, SA, BPE
	CS, G, NA, Y/N, SA, BPE
	CS, G, NA, Y/N, SA, BPE
	CS, G, NA, Y/N, SA, BPE
3. FLEXIBILITY OF THE CURRICULUM	
Legislation allows the HEI to have flexible curriculums and to form them together with business partners.	CS, G, NA, Y/N, SA, BPE
The HEI has freedom to change the curriculum of study programmes.	CS, G, NA, Y/N, SA, BPE
Internship can be a part of any study programme.	CS, G, NA, Y/N, SA, BPE
Internship is an obligatory part of some study programmes.	CS, G, NA, Y/N, SA, BPE
Internship is enabled at the master study programme level.	CS, G, NA, Y/N, SA, BPE
The HEI can use/offer a more flexible study plan to business partners, e.g. more intensive courses to make time for internship.	CS, G, NA, Y/N, SA, BPE

The HEI can develop its own study programmes (without external accreditation procedure).	CS, G, NA, Y/N, SA, BPE
The HEI can develop its own study programmes (without external accreditation procedure) based on the national/regional guidelines/rules for the structure of study programmes.	CS, G, NA, Y/N, SA, BPE
	CS, G, NA, Y/N, SA, BPE
	CS, G, NA, Y/N, SA, BPE
	CS, G, NA, Y/N, SA, BPE
4. INCENTIVES FOR COLLABORATION BETWEEN THE HEI AND BUSINESS	
The government funds R&D projects between the HEI and business – projects involving researchers.	CS, G, NA, Y/N, SA, BPE
The government funds R&D projects between the HEI and business – projects involving students.	CS, G, NA, Y/N, SA, BPE
There are financial incentives for the development of new study programmes in line with the strategic development plans of the region (e.g.: additional money given to the HEI based on its development proposal).	CS, G, NA, Y/N, SA, BPE
There are financial incentives for the teaching staff to collaborate in R&D projects with business.	CS, G, NA, Y/N, SA, BPE
There are financial incentives to compensate any obligatory additional costs (e.g. legal obligations for the payment of insurance, payments by the HEI to business or vice versa, or payments for students having internship, etc.) related to the internship.	CS, G, NA, Y/N, SA, BPE
	CS, G, NA, Y/N, SA, BPE
	CS, G, NA, Y/N, SA, BPE
	CS, G, NA, Y/N, SA, BPE
5. QUALITY ASSURANCE	
Within the quality assurance cycle study programmes are regularly evaluated and updated.	CS, G, NA, Y/N, SA, BPE
Study programmes have programme boards which include all types of stakeholders (including business) and their role is to give recommendations.	CS, G, NA, Y/N, SA, BPE
The HEI regularly reports on which recommendations were enforced and which not, and why not.	CS, G, NA, Y/N, SA, BPE
Business is invited to give suggestions for changes in study programmes (through programme boards, workshops, programme meetings, etc.).	CS, G, NA, Y/N, SA, BPE
Business is consulted when new study programmes are developed.	CS, G, NA, Y/N, SA, BPE
ALUMNI are consulted about the changes in study programmes.	CS, G, NA, Y/N, SA, BPE
	CS, G, NA, Y/N, SA, BPE
	CS, G, NA, Y/N, SA, BPE
	CS, G, NA, Y/N, SA, BPE

Identify your current state: BUSINESS	CS – current state G – goal NA – not applicable Y/N – yes/no SA – systematically applied BPE – best practice examples
1. AWARENESS ABOUT THE COMPETENCIES AND KNOWLEDGE OF GRADUATES FROM DIFFERENT STUDY PROGRAMMES	
The knowledge and competencies of graduates are revealed during the trial period of employment.	CS, G, NA, Y/N, SA, BPE
The knowledge and competencies of graduates are revealed during the studies (internship, the supervision of final theses, etc.).	CS, G, NA, Y/N, SA, BPE
The company “tests” graduates/students from different study fields in order to discern which study programmes provide relevant competencies and knowledge for their type of work.	CS, G, NA, Y/N, SA, BPE
The company is involved in the development of (new and existing) study programmes.	CS, G, NA, Y/N, SA, BPE
The company has employed several graduates from the regional HEI and finds their knowledge and competencies suitable for the development of the company.	CS, G, NA, Y/N, SA, BPE
The company employs students on a merit base (i.e. the academic success counts).	CS, G, NA, Y/N, SA, BPE
The company employs graduates who proved themselves most at the internship.	CS, G, NA, Y/N, SA, BPE
A system that enables systematic and regular feedback from the company to the HEIs regarding graduate competencies is established.	CS, G, NA, Y/N, SA, BPE
	CS, G, NA, Y/N, SA, BPE
	CS, G, NA, Y/N, SA, BPE
2. MISSING KNOWLEDGE/COMPETENCIES OF GRADUATES (when answering, keep in mind the level of graduates: bachelor, master, PhD)	
Graduates lack the basic theoretical knowledge and understanding.	CS, G, NA, Y/N, SA, BPE
Graduates lack new knowledge required for the development.	CS, G, NA, Y/N, SA, BPE
Graduates lack knowledge on project management.	CS, G, NA, Y/N, SA, BPE
Graduates lack language skills (both mother tongue and foreign languages).	CS, G, NA, Y/N, SA, BPE
Graduates lack presentation skills.	CS, G, NA, Y/N, SA, BPE

Graduates have proper theoretical and practical knowledge; however, the company would like to give them specific knowledge required for the work in the company within the study period.	CS, G, NA, Y/N, SA, BPE
	CS, G, NA, Y/N, SA, BPE
	CS, G, NA, Y/N, SA, BPE
3. NEXT TO THE IN-DEPTH KNOWLEDGE IN THE FIELD OF STUDY, WHICH COMPETENCIES/SKILLS ARE MOST IMPORTANT FOR YOUR COMPANY?	CS, G, NA, Y/N, SA, BPE
Adaptability.	CS, G, NA, Y/N, SA, BPE
Ability of team work.	CS, G, NA, Y/N, SA, BPE
Ability to take initiatives.	CS, G, NA, Y/N, SA, BPE
Ability of fast learning.	CS, G, NA, Y/N, SA, BPE
Communication skills.	CS, G, NA, Y/N, SA, BPE
Intercultural competencies.	CS, G, NA, Y/N, SA, BPE
Analytic and problem-solving skills.	CS, G, NA, Y/N, SA, BPE
Ability to work under pressure.	CS, G, NA, Y/N, SA, BPE
	CS, G, NA, Y/N, SA, BPE
	CS, G, NA, Y/N, SA, BPE
4. TYPES OF COLLABORATION WITH HIGHER EDUCATION INSTITUTIONS	
Internships.	CS, G, NA, Y/N, SA, BPE
Experts from business lecture within specific courses.	CS, G, NA, Y/N, SA, BPE
(Co)supervision of final theses at all study levels.	CS, G, NA, Y/N, SA, BPE
Joint research projects.	CS, G, NA, Y/N, SA, BPE
Joint development projects.	CS, G, NA, Y/N, SA, BPE
Involvement in the development of study programmes (existing and new).	CS, G, NA, Y/N, SA, BPE
Patent applications.	CS, G, NA, Y/N, SA, BPE
Career days.	CS, G, NA, Y/N, SA, BPE
Career centres.	CS, G, NA, Y/N, SA, BPE
Specially appointed coordination centres.	CS, G, NA, Y/N, SA, BPE
Laboratories sponsored to do applicable research.	CS, G, NA, Y/N, SA, BPE
Sponsored student competitions.	CS, G, NA, Y/N, SA, BPE
Sharing laboratory/research equipment.	CS, G, NA, Y/N, SA, BPE
Researchers from HEIs are performing research in/for the company.	CS, G, NA, Y/N, SA, BPE
Students are involved in the development/research projects in/for the company.	CS, G, NA, Y/N, SA, BPE
	CS, G, NA, Y/N, SA, BPE
	CS, G, NA, Y/N, SA, BPE
5. ORGANIZATION OF THE INTERNSHIP	

Internship is a formalized cooperation between HEIs and the company (by long-term agreements).	CS, G, NA, Y/N, SA, BPE
There is a formalized regular feedback system to let the HEIs know how their students perform during internship.	CS, G, NA, Y/N, SA, BPE
The company has an option to send back/refuse/fail a student who does not meet the knowledge standards required for the internship, etc. (a selection system equivalent to exams at HEIs).	CS, G, NA, Y/N, SA, BPE
The company has trained supervisors for students.	CS, G, NA, Y/N, SA, BPE
Trained supervisors are a formal requirement for a company to enter the system of internship for students.	CS, G, NA, Y/N, SA, BPE
The company educates its own internship supervisors.	CS, G, NA, Y/N, SA, BPE
Internship supervisors are educated by the Chamber of Commerce.	CS, G, NA, Y/N, SA, BPE
There is an ongoing collaboration between supervisors and HEIs teaching staff in order to connect the theory with practice, and to monitor and develop the system of collaboration to be quicker and more efficient.	CS, G, NA, Y/N, SA, BPE
Supervisors are able to help students/HEIs understand the needs of the company and to transfer to students the required skills and knowledge.	CS, G, NA, Y/N, SA, BPE
Supervisors have the needed qualification/skills and are able to cooperate in adapting the study programme accordingly.	CS, G, NA, Y/N, SA, BPE
	CS, G, NA, Y/N, SA, BPE
	CS, G, NA, Y/N, SA, BPE
6. INCENTIVES FOR COLLABORATION BETWEEN HEIS AND BUSINESS	
The company offers financial and structural support for the mentors and supervisors involved in internships and other types of collaboration with HEIs.	CS, G, NA, Y/N, SA, BPE
There are governmental support and incentives for smaller companies to enable their collaboration with HEIs.	CS, G, NA, Y/N, SA, BPE
Collaboration between companies and HEIs in the form of internship is stimulated by tax reduction (to compensate, for example, the costs of training, certifying internal supervisors, and students for their time working in the company).	CS, G, NA, Y/N, SA, BPE
	CS, G, NA, Y/N, SA, BPE
	CS, G, NA, Y/N, SA, BPE
	CS, G, NA, Y/N, SA, BPE

Policy makers

Higher education institutions

Business

GIVE HIGH ASSISTANCE TO CHANGE!

CHANGE YOUR MINDSET!

ACCEPT A NEW PARTNERSHIP ROLE!

- Develop a long-term vision (focus both on national and regional needs).
- Identify change agents; who can change and motivate:
 - financing principles,
 - allocation according to economic needs, and
 - legal changes.
- Adapt the HEI law to support professional/smart study programmes.
- Encourage collaboration among the Ministry of Commerce/Economy, Ministry of Labour, Chamber of Commerce, Ministry of Higher Education, and regional policy makers.
- Build the framework of incentives:
 - tax law,
 - financing of HEIs, and
 - incentives at the level of local governments.
- Invest in the training of supervisors (allocate stable funds).
- Invest in infrastructure.
- Adapt the accreditation procedures to include business.
- Create a quality assurance body (a council for professional/smart study programmes).
- Develop national/regional open databases with information on companies and the labour market.

- Commit to collaboration with business on a strategic and operational level and allocate the resources:
 - develop funding models,
 - allocate staff to develop the system,
 - create openness to cooperation and innovation, and
 - create openness to partnership with business.
- Integrate practical work as a compulsory part of the curriculum.
- Be open to collaboration with business in changing/creating new study programmes.
- Prepare new study programmes and implement them.
- Be open to participation in innovative R&D.
- Change the ratio between theory and practice within study programmes and:
 - accept new methods of teaching (new mind-set of professors),
 - include practical/project work as a part of study programmes (including examples from the business sector),
 - motivate a common use of infrastructure, and
 - improve digital and soft skills of the teaching staff and students.
- Involve students as partners in all stages of implementing changes.

- Commit to collaboration with HEIs on a strategic and operational level.
- Strategically commit to give personnel and financial resources.
- Assign employees to train for the role of supervisors.
- Invest in the training of supervisors.
- Invest in remuneration for students.
- Collaborate with HEIs in developing the curriculum.
- Take the responsibility for the implementation of a part of the curriculum.
- Collaborate with HEIs in the evaluation of study programmes, making changes, adaption, etc.
- Establish knowledge transfer between the company and HEIs (collaboration among supervisors and professors).
- Cooperate with other companies.
- Sign long term agreements with HEIs.
- Be part of the selection procedure of students.
- Have patience: HEI and policy makers operate on a different timescale than business.

Policy makers

Step 1: Identify the situation
<p>Perform this step to the available extent (by no means should you use the lack of some data as an excuse to do nothing!)</p> <ul style="list-style-type: none"> ➤ Obtain the data and analyse careers of young people after the secondary education (after 18-19 years of age). ➤ Obtain the data and analyse careers of young people after the HEI graduation. ➤ Obtain the data and analyse the number of young people that went to study abroad and the studies they chose. ➤ Perform a research to find the amount of brain drain and reasons for it. ➤ Make a research to find out how the environment accepts the idea of professional/smart study programmes. ➤ Open a public discussion and present the best practices. ➤ Make a research to make predictions on future needs of the labour market (national and regional).
Step 2: Build a legal framework
<ul style="list-style-type: none"> ➤ Develop a long term vision on the labour market relevance of higher education. ➤ Develop a long-term regional strategy of educating for business needs. ➤ Make necessary changes in HE acts to establish a flexible framework of study programmes. The system should <ul style="list-style-type: none"> ○ be pragmatically oriented and practical, ○ define responsibility, and ○ define the status of students at internship. ➤ Make a legal framework for incentives to support collaboration between HEIs and business. ➤ Make necessary changes in legislation referring to the health insurance, safety guidelines employment procedure, etc. for students doing internships and companies accepting the students (a labour code, law on income taxes, law on health insurance, etc.).
Step 3: Give incentives to stimulate/start collaboration between HEIs and business
<ul style="list-style-type: none"> ➤ Invest in infrastructure (research centres, laboratories, etc.). ➤ Establish incubators of collaboration. ➤ Finance career centres at HEIs. ➤ Support inclusion of business experts in study programmes (as lecturers within specific courses, as (co)supervisors for final theses and internships, etc.). ➤ Finance R&D projects between business and HEIs including both HEI teaching staff and students. ➤ Establish a system of performance-based financing for universities. ➤ Give scholarships for students involved in professionally oriented study programmes. ➤ Establish a system for stimulating unemployed people to be integrated/reintegrated within professionally oriented study programmes (career counselling, etc.).
Step 4: Set the minimum standards for professional/smart study programmes
<p>In setting the standards, refer to</p> <ul style="list-style-type: none"> ➤ the level of competencies and learning outcomes of the study programmes; ➤ a contractual matrix among all stakeholders (HEIs and companies, HEIs and students, companies and students, and HEIs and authorities); ➤ the critical mass regarding the number of companies, number of study places, number of supervisors in companies, number of teaching staff at HEIs collaborating with companies; ➤ the threshold requirements regarding infrastructure and financial resources; ➤ the structure of study programmes: how many ECTS at the HEI, how many at the company, horizontal and vertical connection of courses, etc.; ➤ the requirements for trained supervisors; ➤ the requirements for an on-going collaboration between supervisors in companies and HEIs; ➤ the maximum length of the accreditation procedure: <ul style="list-style-type: none"> ○ should be short in order not to discourage business, and ○ gradually transfer the accreditation to HEIs and only perform regular quality assurance procedures.
Step 5: Assistance to the development of study programmes
<ul style="list-style-type: none"> ➤ Help in negotiations between business and HEIs; ➤ SME: they will require incentives – find the money, set the rules, etc. ➤ Develop national/regional open databases with information on companies and labour market.
Step 6: Monitoring and quality assurance
<ul style="list-style-type: none"> ➤ Establish a council for professional/smart education (the role can be assigned to an external accreditation council, if you decide to have it) and define <ul style="list-style-type: none"> ○ quality assurance procedures, and ○ the supervision and evaluation of implementation (visit companies and HEIs). ➤ Establish a system for monitoring the employability of graduates within their field of study in order to plan the study fields that require or are appropriate for the professional/smart study programmes.

Step 1: Commitment	
<p>Define cooperation between HEIs and business as a strategic goal at the management level.</p> <ul style="list-style-type: none"> ➤ Organize meetings, events, conferences, focus groups, and workshops in collaboration with universities, business, chambers of commerce, and business associations in order to get feedback from the labour market, to identify the way of cooperation, and common interests, and to promote best practices. ➤ Create awareness about the need for partnership and cooperation among university professors and students. ➤ Improve the capacity of the HEI to implement changes (changes in management). ➤ Allocate financial funds to implement changes. 	<ul style="list-style-type: none"> ➤ Commit on a strategical level (collaboration with HEIs, also/especially through professional/smart study programmes is „the right thing“). ➤ Build an implementation team, strategic and operational, and <ul style="list-style-type: none"> ○ identify frontrunners, and ○ propose to managers a clearly defined roadmap: <ul style="list-style-type: none"> • human resources are needed (internal experts required for teaching students are taken from their original role), and • financial resources are needed.
Step 2: Build the academic capacity	Step 2: Build the connection/collaboration with HEIs
<ul style="list-style-type: none"> ➤ Build the academic capacity of the HEI to collaborate with business by <ul style="list-style-type: none"> ○ establishing career centres, ○ inviting guest speakers from business to lecture, ○ inviting former graduates to present their experiences, and courses they took, ○ offering the teaching staff time to spend at the associated companies, ○ jointly developing case studies, ○ setting research themes for students that are influenced by the research teams of companies, ○ organizing business competitions for students, ○ conducting applied research projects that are contracted between universities and companies, ○ designing training programmes (LLL) for employees of companies, ○ promoting scholarships for students, ○ offering workshops run by people from business/external experts, ○ taking advantage of the European mobility programmes for the employment of students, ○ communicating with alumni, and ○ enabling voluntary internship within study programmes. ➤ Form an advisory board for collaboration with business. ➤ Form an administrative office, responsible for developing the above types of partnerships (an example: University of Rochester, USA – 270 people hired and responsible to connect with alumni and business in order to raise money for the university). 	<ul style="list-style-type: none"> ➤ Whom to contact? <ul style="list-style-type: none"> ○ approach the HEI or a specific department directly, or/and ○ approach a career centre at the HEI, or/and ○ approach a vice-rector or vice-dean for education, research or collaboration with business, or/and ○ approach laboratories of applicative research. ➤ Build connections with the HEI by offering <ul style="list-style-type: none"> ○ to give lectures as guest speakers in courses, ○ internships, ○ joint development of case studies, ○ research themes for students that are influenced by your research team, ○ a business competition for students, ○ scholarships for students, ○ to collaborate in applied research projects that are contracted between universities and companies.
Step 3: Development of professional/smart study programmes	
<ul style="list-style-type: none"> ➤ Define possible study fields for professional/smart study programmes. ➤ Identify companies available in the region. ➤ Approach business associations, clusters and companies (employers) in general. ➤ Form a joint working group (business – HEI) to develop the curriculum in line with the standards set for professional/smart study programmes (see the suggestions for step 4 for policy makers). ➤ Explore the options on additional life-long learning programmes with the mind-set of professional/smart study programmes, based on actual needs of local/national business. ➤ Decide on the content: <ul style="list-style-type: none"> ○ define the goals of the programmes; ○ define the skills, competencies and knowledge of the graduates (professional/technical knowledge, social competencies, language skills, transferable skills, IT-skills, project management skills, certified foreign language knowledge on B2 level at least, etc.); ○ define topics covered by the HEI and topics covered by a company (also based on the information on which equipment the company is willing to share for the study process); and ○ define the targeted values on practical vs. academic knowledge (time and content). ➤ Decide on the structure: <ul style="list-style-type: none"> ○ define the number of months per year that students should spend in companies; ○ define ECTS allocated for lectures/tutorials at the HEI and ECTS for internship; ○ define the interchange of time spent at the HEI and in a company (interchange within each week, e.g. 3 days at the HEI and 2 in the company, or interchange within months, e.g. 3 months at the HEI, one month in the company, etc.); ○ decide on whether students shall have internship in more than one company; and ○ define the courses that are horizontally and vertically correlated. ➤ Decide on the (new) methods of teaching. <ul style="list-style-type: none"> ○ Prepare trainings for HE teaching staff within the business sector (associated companies) to give them the necessary skills required for the professionally oriented study programmes. ➤ Agree on the entrance conditions for students and their selection: <ul style="list-style-type: none"> ○ The system should be transparent. ○ Define the prior education that students should have to be eligible to apply. 	<ul style="list-style-type: none"> ➤ Whom to contact? <ul style="list-style-type: none"> ○ If there are no professional/smart study programmes yet: approach the chamber of commerce or employers’ organizations; they should approach either the ministry of higher education or HEIs directly. ○ If professional/smart study programmes already exist: contact the HEI directly.

- Define the entrance exams (theoretical, practical, psychological, etc.).
- Define the responsibility for performing the selection procedure.
 - Each party (academia and business) should be able to reject the applicant.
- Decide on the requirements and training of tutors/supervisors in the company.
 - What knowledge and skills should supervisors have? For example:
 - Teaching/pedagogical skills: not having pedagogical skills represents the risk of not transferring the knowledge, which results in poor performance of students.
 - Digital skills: not just the regular use of computers and software, but using technology to transfer knowledge and build capacity of students.
 - Expert skills.
 - Ability to translate learning goals into practical tasks and exercises.
 - Ability to work with academia.
 - Who should educate the tutors/supervisors? For example:
 - chambers of commerce;
 - training centres; and
 - associations related to training.
 - the HEI: not advised, because HEIs are not flexible enough and practically oriented, they get too theoretical and they do not know about processes in business.
 - Content of training, for example:
 - development of social skills (didactics, pedagogy, psychology, communication, etc.).
 - building the ability to translate learning goals in practical tasks and exercises (based on examples for specific study fields); and
 - the development of digital skills.
 - Education of tutors/supervisors should end with a formal license/certificate.
 - Keep a register of licensed tutors/supervisors.
- Define responsibilities and quality assurance procedures.
- Prepare and sign long term agreements between the HEI and companies, which include the above-raised points discussed and agreed upon within the joint working group.
- Prepare a template for students – a company agreement in which you define at least:
 - responsibilities of the company,
 - responsibilities of the student,
 - if the students are required to stay in the company after graduation (we strongly advise against such a requirement),
 - remuneration for students at internship, and
 - what happens if students do not perform well enough.

Step 4: Accreditation

- Approval of a new or adapted study programme by the body defined in the regional/national higher education acts.

Step 5: Implementation

Prior to the release of the application call:

- Select the companies involved (quality assurance check).
- Define the number of study places:
 - How many new students per year is each company willing to accept?
 - The decision should be based also on how many supervisors can company train and allocate.
 - Are companies interested in „sharing“ students with other companies (i.e. they learn in other companies as well)
 - Suggestion: the number of study places is lower than the number of possible internship places.

After the closure of the application call:

- Select the students:
 - Check general requirements (are applicants eligible to apply).
 - Perform the entrance exams in the HEI and in companies (if such entrance exams are defined within the study programme).
 - Match the selected students and companies (each party has a right to reject).
 - Sign the student – company study agreements.

Step 6: Monitoring and quality assurance

- Define a study programme council (it can also be a council at the faculty or university level) to monitor the implementation of the contract between the HEI and business in order to avoid any deviation.
- Plan regular meetings between HEI teaching staff and supervisors from business to follow up on the student progress and to resolve the issues raised.
- Perform regular (self)evaluation of the study programme (including a semester-based student-satisfaction survey) and propose changes in the curriculum, develop/change teaching methods, develop new study cases, update the syllabus of the study courses, evaluate the performance of students, lecturers and supervisors, adapt the selection procedure, etc.
- Follow up on the percentage of graduates that were employed by the companies involved in the study programme.
- Regularly check the satisfaction of graduates with the knowledge and skills obtained within the study programme, focusing both on the part performed by the HEI and the part performed by companies

Step 7: Sustainability of collaboration between the HEI and business

- Form a national/regional board, for example the National Academy of Professional Education, which will combine the following activities in a synergetic way:
 - professional/smart study programmes;
 - qualification programmes for trainers in companies for apprenticeships and practical parts of dual studies;
 - further education for teachers in professionally oriented schools, in particular technical high schools;
 - further formation programmes such as start up training, entrepreneurship, design thinking, and deep learning; and
 - the organization of know-how transfer between universities and companies in the fields of study programmes, science and research.

Appendix 4: Frequently asked questions

Who (university or companies) should be an initiator for the collaboration?

Do not wait for each other. Whoever has the interest should initiate communication with the other party. Usually, business will be the initiator because they have an interest. However, the initiation idea accompanied by incentives could come from policy makers as well, because they are the ones that have to enable the legal framework for collaboration.

Are governmental structures required as catalysts?

Governmental structures are required as catalyst for all the systemic types of collaboration because these require changes in the legal system. Nevertheless, there are several types of collaboration between business and academia that require only the interest and goodwill of both sides.

How long does it take to implement changes?

It depends on the interest of all the actors involved in the triple helix (policy makers, HEIs, and business). From the first gems of collaboration between HEIs and business to the implementation of the professional/smart study programmes it can take several decades (see the steps taken in Germany in the next section). This should not discourage you. The establishment of collaboration is a long process. Usually, it takes the longest to change the legal framework; however, the legal framework itself cannot make the collaboration happen. Above all, the collaboration between HEIs and business requires a change in the mindset. Policy makers are crucial in this respect, because collaborations between HEIs and business built through carefully planned investments of money incentives can later be advertised as examples of good practice, which, in turn, stimulate further collaborations.

Are there downsides of internship and how to diminish them?

The major downside of the internship comes from students not being properly supervised, which in turn presents the risk of not transferring the knowledge to students. Thus, the most important thing is to educate the supervisors. For ideas on what knowledge and skills supervisors should have, who should educate the supervisors and the contents of the training for supervisors, see step 3 under HEIs and business.

How to make companies excited about collaboration?

In general, companies are interested in collaboration if they see the opportunity to obtain the best graduates and/or diminish the time required to introduce new employees to work, but they will require incentives (especially small companies) for additional costs that collaboration brings about (remuneration for students, cost of supervisors, training of supervisors, etc.).

How to make universities interested in professional/smart study programmes and what can be done if universities are not willing to undertake professional study programmes?

In several cases, universities feel that having also professional study programmes is a step back, because they consider themselves as purely academic institutions. They might also be afraid of losing their master and doctoral studies and being reduced to vocational schools with significantly lower budget and without the possibility to apply for scientific-research projects.

Even when universities are willing to extend their mission to the professional study programmes, active collaboration between universities and companies might make universities face the tension between the scientific education and praxis-oriented education, and between the scientific freedom and research performed by contracts for companies. Policy makers can release this tension by stimulating both the basic research (scientific freedom) and the research performed by contracts for companies. The common mistake is that policy makers (sometimes also HEIs) wrongly assume/require that this dualism is achieved within each HEI researcher/professor. This is not feasible; instead, it should be possible and feasible to have both types of researchers. The combination of basic and applicative research might have a positive effect on both.

If universities, which have a wider mission, exercise their autonomy by rejecting the collaboration with business, HE acts should enable establishment of higher education institutions to collaborate with business.

How to make professional/smart study programmes accessible to SMEs?

Policy makers should develop a framework of incentives for SMEs to be able to collaborate in professional/smart study programmes.

What competencies and knowledge should supervisors in companies have and who should educate them?

For ideas on what knowledge and skills supervisors should have, who should educate the supervisors and the contents of the training for supervisors, see step 3 under HEIs and business.

Appendix 5: Steps already taken in the Danube countries

Germany

<p>Societal challenges</p>	<ul style="list-style-type: none"> • The number of pupils obtaining a Matura certificate doubled in approx. 10 years (in the 1960s). • Everyone obtaining a Matura certificate wanted to pursue academic studies. • Universities and colleges were full. • Employability was yet an unknown concept. • Discrepancy between science/higher education and the needs of the labour market: <ul style="list-style-type: none"> ○ traditional higher education programmes did not meet the industrial requirements, and ○ they did not ensure the possibility to tie young talents to companies. • Employers were afraid that this tendency would result in too many students enrolling in academia, leading to a skill shortage/ lack of trained professionals having the skills that were really needed.
<p>Response to these societal challenges: an alliance of major companies, an institute of higher education, and a chamber of commerce and industry</p>	<p>The Stuttgart Model</p> <ul style="list-style-type: none"> • Initiators: <ul style="list-style-type: none"> ○ companies in the Stuttgart region (Daimler-Benz, Robert Bosch GmbH, Standard Elektrik Lorenz (SEL), <ul style="list-style-type: none"> ▪ Personal motivation: the son of the Chairman of the General Works Council of Daimler-Benz was undergoing vocational education and training as industrial clerk – and the level was too low for someone with a Matura certificate – they found that a study programme offering the same amount of practical experience but combined with theoretical knowledge would be needed. ○ an institute of higher education (“Württembergische Verwaltungs- und Wirtschaftsakademie” – Academy of Administration and Economy in Württemberg), and ○ the Chamber of Commerce and Industry (“Industrie- und Handelskammer Mittlerer Neckar”). • A new course system in higher education combining academic education with professional education. <ul style="list-style-type: none"> ○ 3 years of study – graduation in business administration (“Prüfung zum Betriebswirt” / MBA in German); ○ 2 years of study: a professional exam of the Chamber of Commerce and Industry as industrial and data processing clerk – this made entering the labour market at an earlier point possible for those students who decided not to continue their studies; and ○ the main characteristics of today’s cooperative (“dual”) study system were already present <ul style="list-style-type: none"> ▪ alternating practical phases in the companies and study phases at the university, and ▪ linking theory and practice. • Benefits for students: <ul style="list-style-type: none"> ○ same career chances and payment as in the case of university studies but in less time, and ○ entering the labour market is possible even after two years.
<p>Call for application</p>	<p>15 July 1972: a call for application offering 30 positions</p> <ul style="list-style-type: none"> ○ overwhelming response: 500 students expressed their interest for a training/study place at Daimler – 140 serious applications; ○ the selection process: 2 tests, an interview and letters of recommendation/study results; and ○ very good applicants having a good Matura average: sceptics were convinced.
<p>1st attempt to establish a legal framework (1973)</p>	<p>1973: The Ministry of Education (Kultusministerium) drafted a legal framework for “Berufsakademien”, which represented an alternative to universities: the initiator was the Minister of Education (Wilhelm Hahn). A committee (“Referat Berufsakademie”) was established:</p> <ul style="list-style-type: none"> • Members: <ul style="list-style-type: none"> ○ relevant ministries, ○ representatives of the business community/companies, and ○ representatives of universities, universities of applied science, VET schools. • The concept was applied to further study fields: <ul style="list-style-type: none"> ○ technical subjects, and ○ social sector.
<p>Problems</p>	<ul style="list-style-type: none"> ○ The Confederation of German Trade Unions opposed the introduction of cooperative academies and refused to participate in the committee, because they observed that: <ul style="list-style-type: none"> ▪ the acquired knowledge would be only applied knowledge related to specific companies and would be outdated shortly, and ▪ the initiative served only big companies that did not need the innovative academic knowledge, just well-adjusted workers. ○ The representatives of the business community observed that: <ul style="list-style-type: none"> ▪ the negotiations with the ministry took too long, ▪ the state wanted to have too much influence on the professional training within the companies, and ▪ the state wanted the businesses/companies to pay for higher education. ○ The representatives of universities and technical colleges observed that:

	<ul style="list-style-type: none"> ▪ the academic level would be too low, ▪ the choice of academic staff was not adequate, ▪ the lack of research activities was a problem, and ▪ students should not receive any remuneration.
Solution (1974)	<ul style="list-style-type: none"> ○ Wilhelm Hahn, the Minister of Education himself led the most important meetings. ○ A senior government official (“Regierungsdirektor”), Dr. Manfred Erhardt, was appointed as head of the committee to lead the negotiations. ○ A timeframe was set: 5 months to establish the legal framework and create a new study model. ○ Operative implementation by the government official Manfred Erhardt: <ul style="list-style-type: none"> ○ designing the curricula, ○ acquisition of academic staff, ○ acquisition of placements in companies, and ○ 1992–2005, a director of the “Berufsakademie Stuttgart”.
Pilot phase (1974)	<p>Two locations/51 companies:</p> <ul style="list-style-type: none"> ○ Stuttgart: <ul style="list-style-type: none"> ▪ Department of Economics: banking, data management, industry, and insurance; and ▪ social services (one year later than planned): residential care, open youth work, and social work with criminal offenders. ○ Mannheim: <ul style="list-style-type: none"> ▪ Department of Economics: industry, commerce, and insurance; and ▪ technical sciences – Electrical engineering.
Further development	<p>6 new locations until 1981. A rising number of enrolled students: 5 420 – almost all of them finished their studies, were employed and made a career.</p>
Study of Effectiveness	<p>1980s: Prof. Zabeck from the University of Mannheim made a comparison between students of the cooperative study programmes (“Berufsakademie”) with a BA degree and graduates of universities and technical colleges: superiors/supervisors assessed performance of the graduates of the new study programmes better in several aspects.</p>
Legal recognition process	<p>1982: “Legislation regarding the Berufsakademie in Baden-Württemberg”:</p> <ul style="list-style-type: none"> ○ the degree was recognized as equal to that provided by state universities (only in Baden-Württemberg), ○ not recognized at the federal level, and ○ graduates were not eligible for PhD studies. <p>1990s:</p> <ul style="list-style-type: none"> ○ a student initiative to have the “Berufsakademie” recognized as a university was launched, ○ further private and state funded professional academies (“Berufsakademie”) were established in other German states, and ○ foreign countries introduced the model. <p>1994/1995: Graduates of the “Berufsakademie” started to be treated equally as graduates of technical colleges and universities by employment laws but not by the higher education act.</p> <p>1998: Study programmes in English were introduced.</p> <p>1998: The university was officially named in English as the UNIVERSITY OF COOPERATIVE EDUCATION.</p> <ul style="list-style-type: none"> ○ 2000: Professional academies (“Berufsakademie”) were allowed to offer BA degrees and students were allowed to pursue master studies. <p>2009:</p> <ul style="list-style-type: none"> ○ The professional academy (“Berufsakademie”) of Baden-Württemberg became the “Duale Hochschule Baden-Württemberg” (DHBW) – an official English name: Baden-Wuerttemberg Cooperative State University. ○ The DHBW was declared a university of applied sciences, which enabled the DHBW to confer degrees with academic status. ○ Practically-oriented research became a requirement. ○ The first MA programme started in 2009. ○ 2014: The Center for advanced studies (CAS) was established.

Serbia

Societal challenges	<ul style="list-style-type: none"> - High youth unemployment. - A lack of practical skills after obtaining a university degree. - Discrepancy between higher education and the needs of the labour market: higher education programmes did not meet the needs of employers.
Responses to these societal challenges	<p>Student internship programmes</p> <p>Organising student internships is regulated by the Regulations on Professional Practice, which are adopted by faculties for one or all study programmes. This form of education is, in various forms, compulsory for the majority of higher education programmes at the universities in Serbia. Two basic approaches to professional practice can be identified: compulsory and optional professional practice.</p>
	<p>Career development centres</p> <p>Most of universities in Serbia (in Belgrade, Novi Sad, Kragujevac, and Nis) have established career development centres which offer services such as career counselling, updating registers of employers offering internships for students, mediating between students and potential employers, etc.</p>
	<p>Internships in the government and governmental bodies (agencies, ministries, and public companies)</p> <p>The government and state authorities occasionally offer student internships in state bodies, organizations, agencies, and public enterprises.</p>
	<p>Initiatives of local governments</p> <p>Certain local governments organize internships for students in public institutions on respective territory. E.g. City of Pancevo organized summer student internships in 2015, 2016, and 2017.</p>
	<p>New Initiative – a national model of student practice within the project “My Town - My Choice - My Career”</p> <p>In October 2017, the Ministry of Education, Science and Technological Development launched an initiative for a national model of student practice, based on cooperation between universities, the business sector, and local self-government. The goal is to develop a model of student practice and entrepreneurial education. The Employers Council, established by the Law on Higher Education, will give a better insight into the labour market. It will provide information on professions relevant for the market, which should decrease the number of young people enrolling in the study programmes not needed by the market. There will also be a ranking list made and published on the website of the Ministry of Education, enabling young people to see whether the desired study programme is a good choice at that moment.</p>
Legal framework	<p>The new Law on Higher Education was adopted by the National Assembly of RS on 27 September 2017. It strongly emphasises career guidance and counselling, student practice, and cooperation between HE institutions and businesses. The most important points are as follows:</p> <ul style="list-style-type: none"> - The state is obliged to finance centres for knowledge and technology transfer at higher education institutions, as well as centres for career guidance and counselling. - The National Council for Higher Education has undergone minor changes – its purpose has remained to secure the development and improvement of HE quality, but its composition is slightly different. It consists of 17 members appointed by the Government. The novelty is that the Chamber of Commerce and Industry of Serbia nominates two members of the Council, while the Council itself is obliged to have meetings with the Chamber at least twice a year. - The National Accreditation Body was established for the purposes of accreditation, the quality control of HE institutions, evaluation of study programmes, and quality assurance in HE. The Chamber of Commerce and Industry of Serbia nominates two members of the Body. - The Law envisages the Employers’ Council at each higher education institution, in order to set up a linkage between HE and the business sector. - The Law gives opportunity to university professors, researches, and students to found “spin-off” and “start-up” companies, as well as the possibility to engage an expert from a company as a teacher/lecturer. <p>The law provides for the introduction of short study programmes and work-based studies enabling the acquisition of practical knowledge and skills in line with market needs.</p>

Slovakia

Societal challenges	<ul style="list-style-type: none"> • By 1989, a low number of students had continued their studies at higher education institutions/universities. • There was a low percentage of university educated citizens in the Slovak Republic. • The vocational level of secondary education was high. • After 1989, an enormous increase in the number of higher education institutions/universities occurred. • Birth rates decreased. • Students were leaving abroad. • The orientation of students to socio-professional specializations was enormous. • There was a lack of technically educated university graduates. • Fresh graduates coming from universities could demonstrate solid theoretical knowledge but not sufficient practical use. • Formal HE did not emphasise enough the importance of soft and teamwork skills.
Response to these societal challenges: an alliance of major companies, an institute of higher education and a chamber of commerce and industry	<ul style="list-style-type: none"> • Transition to the three-level concept of higher education, • the establishment of an institute of incentive specialization scholarships, • attempts to diversify higher education institutions into higher education institutions and science-oriented universities (unsuccessful), • practical training, e.g. selecting study groups for the requirements of a particular company, for example Whirlpool a. s., • external teaching at the premises of the company, • the interconnection of teaching and practice mainly in the form of conducting the final thesis, and • establishing formal partnerships between business and education institutions.
Call for application	/
1st attempt to establish the legal framework	<ul style="list-style-type: none"> • When introducing a three-level concept, it was assumed that two types of bachelor study would be developed: <ul style="list-style-type: none"> - a bachelor with a theoretical basis for further studies of university character, and - a bachelor's degree designed for practical conditions. • 2013: An amendment of the Act on Higher Education was prepared by the Ministry of Education, Science and Sport of the Slovak Republic and approved by the Slovak Parliament. This amendment enabled the creation of professionally oriented bachelor study programmes (as an alternative to the academic study programmes). • 2017: The Accreditation Committee prepared a draft of special criteria for the evaluation of professionally oriented bachelor study programmes. These criteria will be approved and issued by the Ministry. It is expected that these criteria will simplify and stimulate the creation of professionally oriented bachelor study programmes (as the current number of this type of study programmes in Slovakia is low).
Problems	<ul style="list-style-type: none"> • From 1989 to 2010: an enormous increase in the requirements for external study by employees without higher education/university education (mainly employees of state and public institutions); • a decrease in the quality level of secondary schools, especially of secondary industrial schools, a change in their orientation, and the extinction of some schools; • enormous orientation towards grammar schools that had no or little connection to technically oriented practice; • funding for education did not meet its real needs; • gradual minimization of the scope of practice in a higher education/university study; • constant change in the post of the minister of education; • universities' quality standards and equipment were not on par with those in the business sector; • academic staff were not up-to-date with the current knowledge and skills required in the business sector, • HE did not receive enough financial support to overcome their problems; and • the question of how to stimulate the HEIs to create new professionally oriented bachelor study programmes.
Solution	<ul style="list-style-type: none"> • Several concepts have been processed without a significant penetration into practice. • The Ministry of Education, Science and Sport of the Slovak Republic is preparing a public call for funding projects of HEIs, which will include the creation of professionally oriented bachelor study programmes. The launch of this call is expected in 2018.
Pilot phase	<ul style="list-style-type: none"> • Pilot project of cooperation in preparing a professional bachelor 4-year bachelor study programme between Volkswagen Slovakia and Mechanical Engineering Faculty of the Slovakian Technical University in Bratislava, which will consist in 50% from practical experience directly at the company.
Further development	/
Effectiveness study	/
Legal recognition process	/

Hungary

<p>Analysis of the situation in 2011</p>	<ul style="list-style-type: none"> • The Hungarian higher education, especially the universities, has traditionally been more theory oriented. • The former colleges (similar to the German “Fachhochschule”) did not play the same role as before because of the Bologna system. • The then education cycle seemed to be too long, the dropout rate was high. • The Hungarian state (following the tendencies in Europe) reduced its financial participation in the higher education. • The Hungarian industry (especially the automotive industry) required more practice-oriented engineers for operating the high-tech production technology, with problem solving and teamwork abilities, and working experience. • There was a lack of social and soft skills (leading, communication, project management, negotiation, etc.). • Companies had to organize extensive trainings and retraining for fresh graduate engineers. • Most of the Hungarian automotive companies had good experiences with the co-operative education. 																		
<p>Expectations and tasks</p>	<p>Expectations of the industry:</p> <ul style="list-style-type: none"> • strong theoretical basis and its application in practice, • a short education period (3-4 years), • a theoretical foundation of the necessary skills and abilities, and • participation of industrial experts in education. <p>Expectations of the society:</p> <ul style="list-style-type: none"> • cheaper education, • more flexible education, and • quality education. <p>Expectations of the institutes (universities/colleges):</p> <ul style="list-style-type: none"> • no new accreditation, • fit to the present time frame, and • a thoroughfare between normal and dual type educations. 																		
<p>The concept</p>	<div style="display: flex; justify-content: space-between;"> <div style="width: 45%;"> <table border="1"> <caption>Stacked Bar Chart Data</caption> <thead> <tr> <th>Education Type</th> <th>Lecture (4)</th> <th>Lab/Calc (3)</th> <th>Exam (2)</th> <th>Industry</th> <th>Holiday (1)</th> </tr> </thead> <tbody> <tr> <td>Normal</td> <td>4</td> <td>3</td> <td>2</td> <td>1</td> <td>1</td> </tr> <tr> <td>Dual</td> <td>4</td> <td>3</td> <td>2</td> <td>1</td> <td>1</td> </tr> </tbody> </table> </div> <div style="width: 50%;"> <p>Dual education – part time students:</p> <ul style="list-style-type: none"> • no accreditation is needed, • correct and definite legal relations, • interchangeable with full time students, and • financing can be solved. <p>Common subjects with full time students at universities/colleges:</p> <ul style="list-style-type: none"> • lectures, • calculations (i.e. Maths, physics etc.), and • lab practices (if needed). <p>Requirements:</p> <ul style="list-style-type: none"> • industrial background, • reorganisation of the timetable, • determination of the industrial projects, and • quality checks. <p>Work plan:</p> <ul style="list-style-type: none"> • co-operation between Kecskemét and Győr, • a project team, • determination of subprojects, • schedule, and • dissemination/marketing. </div> </div> <div style="margin-top: 20px;"> <pre> graph TD U1[University 13 weeks] --> C1[Company 8 weeks] C1 --> U2[University 13 weeks] U2 --> C2[Company 14-16 weeks] C2 --> U3[University 13 weeks] H[Holiday 2-4 weeks] -.-> U1 H -.-> U2 </pre> </div>	Education Type	Lecture (4)	Lab/Calc (3)	Exam (2)	Industry	Holiday (1)	Normal	4	3	2	1	1	Dual	4	3	2	1	1
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<p>Preliminary conditions for the „dual” education</p>	<p>Harmonisation</p> <ul style="list-style-type: none"> • Dual and normal education are parallel, therefore the two forms had to be strongly harmonized. <p>No accreditation</p> <ul style="list-style-type: none"> • It was necessary to accelerate the introduction process. (Most probably, the dual form was possible within the existing framework.) <p>Urgent and fast introduction</p> <ul style="list-style-type: none"> • The targeted date was September 2012. <p>Selection process</p> <ul style="list-style-type: none"> • It started in autumn 2011. <p>Contracts between students and a company</p> <ul style="list-style-type: none"> • It had to be clarified. (working contracts, scholarships, etc.) <p>Financial issues had to be clarified both at universities and at companies. The process of a company’s „accreditation” by universities had to be carried out. The structure of the Vehicle Engineering curriculum was set, but the content had to be restructured. The compatibility between:</p> <ul style="list-style-type: none"> - the „dual” and the normal education form, - different institutions in Hungary, - BSc and MSc level, and - foreign dual educations had to be provided. <p>The DHBW model is followed as far as the work quantity is concerned: in a semester, 12 weeks at the university and 12 weeks at the company, on average. However, this basic rule may vary between the autumn and spring semester.</p>		
<p>Recruitment system</p>	<ol style="list-style-type: none"> 1. The first step of enrolment takes place at the company where dual training will be carried out. 2. It is followed by the entrance exam to the higher education institution. 		
<p>Pilot project (2012) and nowadays (2017)</p>	<p>Kecskemét College was the first to introduce a dual-type training at the Faculty of Vehicle Engineering with 25 students and two companies.</p> <p>Outcomes: Following the first semester, the planned period of time had to be reworked, because if the number of students had increased, the programme could not have been carried out. The performance of dual students was compared with that of the non-dual students and significant improvement was indicated.</p> <p>In 2013:</p> <ul style="list-style-type: none"> • Two new courses, BSc in Mechanical Engineering and Technical Management specializing in logistics. <p>At present:</p> <ul style="list-style-type: none"> • 300 students, and • more than 60 companies. 		
<p>Problems today (2017)</p>	<table border="1" style="width: 100%;"> <tr> <td style="width: 50%; vertical-align: top;"> <p style="text-align: center;">Students:</p> <ul style="list-style-type: none"> • focused on one specialized field, • adapted to one company's needs, • overburdened (not well-balanced curriculum), and • lack adapting to a new system. </td> <td style="width: 50%; vertical-align: top;"> <p style="text-align: center;">Companies:</p> <ul style="list-style-type: none"> ▪ not having sufficiently developed teaching materials, ▪ engineers have imperfect knowledge of pedagogical skills, ▪ students require too much time besides daily work, ▪ not sufficient pre-knowledge, ▪ focused on one specialized field, ▪ students adapted to only one company's needs, ▪ difficulties with the students' schedule, and ▪ an economic risk if the student will not take a job with the company after graduation. </td> </tr> </table>	<p style="text-align: center;">Students:</p> <ul style="list-style-type: none"> • focused on one specialized field, • adapted to one company's needs, • overburdened (not well-balanced curriculum), and • lack adapting to a new system. 	<p style="text-align: center;">Companies:</p> <ul style="list-style-type: none"> ▪ not having sufficiently developed teaching materials, ▪ engineers have imperfect knowledge of pedagogical skills, ▪ students require too much time besides daily work, ▪ not sufficient pre-knowledge, ▪ focused on one specialized field, ▪ students adapted to only one company's needs, ▪ difficulties with the students' schedule, and ▪ an economic risk if the student will not take a job with the company after graduation.
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<p>1981(5)-1993 The period of Career Oriented Education – the strategic project in Yugoslavia with an aspiration for strengthening development</p>	<p>The Career Oriented Act in 1981 regulated higher education together with secondary education on the premises that all education should be oriented directly towards work and a vocation:</p> <ul style="list-style-type: none"> • Undergraduate HE consisted of 2-year vocational study programmes. • Graduates could continue with their studies at 2-year academic study programmes. • Post-graduate HE included special type of study programmes. • All type of study programmes were delivered by HEIs. Faculties and vocational colleges were part of universities. • Enrolment places were approved by the state. • Matura in Secondary Education was abolished.
<p>Problems of Career Oriented Education and path to new education in the independent Republic of Slovenia</p>	<ul style="list-style-type: none"> • The act restricted the role of institutions of higher education to teach alone and established a system that neglected their scientific, artistic, and expert work. • Study programmes, weekly lectures were expanding, the trend towards longer study programmes also emerged due to the argument that the new system of secondary education – oriented towards work and vocation – failed to provide a suitable basis for studying at higher educational institutions. • The system lacked the mechanism that would measure or check the quality of studies. • The system was not welcomed in Slovenia; there was a strong opposition from civic society. • The movement against Career Oriented Education was a part of democratization process of the late 80s and the act changed in 1989 and gave university autonomy in the academic sphere, reintroduced the grammar school (gimnazija) and agreed on the externally assessed exam at the end of secondary schooling (matura) before the university.
<p>Completing secondary education – steps towards Matura and Vocational Matura</p>	<ul style="list-style-type: none"> • In the 80's, Matura in Secondary Education was abolished. • On completing secondary education, candidates were awarded a certificate stating that they met all the requirements of the educational programme, but this system soon became questionable due to being too much oriented directly towards work and a vocation, but less to quality and knowledge. • Amendments to the 1983 Vocational Education Act and the 1988 Rules on Evaluation and Assessment of Knowledge in Vocational Education allowed for the possibility of completing secondary education with a school-leaving examination, if so stipulated by the educational programme in question. • In 1991, candidates were obliged to sit a school-leaving exam in two subjects for the first time. • In 1992/93, the exam (the final examination) consisted of four examination units, i.e. Slovene, Mathematics or a foreign language, and two optional subjects (normally chosen from among vocational subjects depending on the type of school (e. g. technical fields, economic, health care, etc.). • The final examination led to employment or the continuation of studies in professional higher educational programmes.¹ • The first initiatives “for reintroduction of matura” started at universities. • Law changes in 1989 reintroduced the Matura as a school-leaving examination at the end of a 4-year secondary education. • In 1994, a pilot test was carried out on a sample of secondary schools, and Matura was reintroduced in the 1994/95. 2003 was marked by the Matura Examination Act which changed the name of the then Matura to General Matura and added the Vocational Matura. • Vocational Matura is a form of a school-leaving exam giving candidates technical education and enabling them to continue studies in vocational colleges and other colleges without any additional requirements.² <p>The changes went hand in hand with the new secondary school education:</p> <ul style="list-style-type: none"> • General secondary education became gimnazija. There are 2 types of gimnazija: <ul style="list-style-type: none"> ○ general (splošna gimnazija) – it is concluded by matura, and ○ technical (strokovna gimnazija, e.g. technical, economic, art., etc.) – it is concluded by matura. • Vocational education (programmes last from 2 to 4 years): It is possible for students to learn a trade and to continue their studies in some cases, but not directly in higher educational programmes. After completion of vocational education, students have a possibility to enrol in one-year matura course, then take a matura examination, and then continue to higher education. It is also possible to attend a one-year vocational course instead of taking a matura examination after the last year at gimnazija in order to obtain a vocational qualification.
<p>1993/4 – 2004 New system in the Republic of Slovenia - new Higher Education</p>	<p>- Study programmes of the former two-year colleges were abolished.</p> <p>The new HEA is a product of political, economic, and social changes after Slovenia's independence in 1991 and placed individuals in a “world of thousands possibilities”. It is part of a great alteration of the education system in Republic of Slovenia, which culminated in the adoption of new legislation in 1996:</p>

¹ In the first three years after the matura, students finishing gimnazija could also take final examinations.

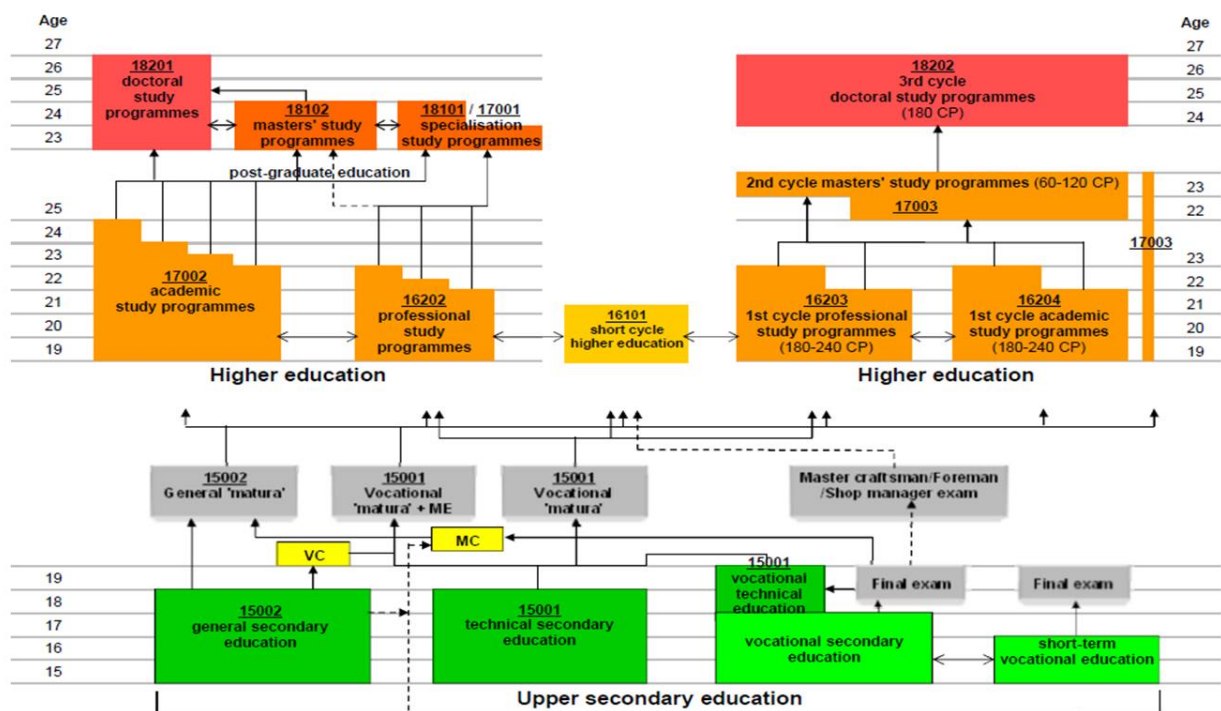
² With regard to further studies, the difference between the Vocational Matura and the Matura is that the Matura enables candidates to enrol in all programmes of tertiary education (i.e. vocational colleges, colleges, and university courses), while the Vocational Matura enables candidates to enrol only in vocational colleges and colleges but not university courses. The Vocational Matura with an additional exam from the general Matura can give access to most academic undergraduate study programmes.

<p>Act (HEA) in 1993 and classification into professional higher education programmes and university study programmes</p>	<ul style="list-style-type: none"> - <u>Dual track system was introduced on the undergraduate level</u> in the form of: <ul style="list-style-type: none"> o Professional higher education programmes that usually lasted <u>3 years</u> (exceptionally 4 years); they included practical training conducted in cooperation with companies and state and local administration. o University study programmes that lasted <u>4 years</u> to complete, exceptionally some lasted four and a half, five (e.g. engineering, pharmacy, veterinary, and medicine) or 6 years (human medicine and dental medicine). - Students could transfer between programmes under certain conditions. Faculties or art academies could offer both type of programmes, while professional colleges could deliver only professional higher education programmes. <p>Post-graduate education included 1-2 year specialisation study programmes (specializacija) that were professionally oriented (not scientific); magisterij (2 years of study) and doktorat znanosti were scientifically oriented.</p> <ul style="list-style-type: none"> - Entry requirements: <ul style="list-style-type: none"> o general matura gives access to all undergraduate study programmes and integrated master study programmes, o vocational matura gives access to professional study programmes, and o vocational matura with an additional exam from general matura can give access to most academic undergraduate study programmes.³ - The mechanism for measuring or checking the quality of studies was established. - HE study programmes needed to be approved by the Council of the Republic of Slovenia for higher education.
<p>Background</p>	<ul style="list-style-type: none"> • In the new system of <u>higher education, professional colleges and private institutions are intended primarily to encourage the economic sector to cooperate with local communities</u>, and in addition to the state, to facilitate conditions for the creation of study, research and development programmes. These would increase access to higher education for a lot of candidates and should contribute to more jobs opportunities. It is for that reason that the practical education in a working environment was introduced as a mandatory component of these study programmes. On the other hand, practical education in a working environment (or participation in research) is not a mandatory component of university study programmes. • In 1994, the Educational Council of RS was founded by the Government to take charge of the coordination of the higher education planning at the national level; it advised state bodies, which decided on finances, and defined criteria for the designation of the curricula and criteria for monitoring and assessing the quality of work in HEIs. It was also responsible for the accreditation procedure, etc.
<p>Introduction of short-cycle vocational higher education - from 1996 (with new legislation "organization and financing of Educational Act and the Vocational Education and Training Act)</p>	<p>The introduction of short-cycle vocational higher education through vocational colleges ("višje strokovne šole") established in cooperation between industry and employers. It was conceived as the highest level in the vocational educational system and as the education offered in collaboration with industry. Great interest has been shown particularly by adults working in companies, who have broad practical knowledge but lack higher education. This type of education thus focuses on practical training in enterprises and less on studying.</p> <p>The short-cycle vocational higher education is part of Slovene tertiary education. It runs parallel with HE:</p> <ul style="list-style-type: none"> - Two-year study programmes are delivered by higher vocational colleges that are not HEIs. - Practice-oriented programmes that provide students with vocational competencies in accordance with vocational standards. - 40% of curriculum is practical training in enterprises/companies. - Applicants having passed the Matura exam (or the final exam, before the Matura was introduced) after completing a four-year secondary school may enrol; under certain conditions, admission is also granted to applicants with a completed 3 year vocational school. - In contrast to HE study programmes, these programmes are based on vocational standard that is adopted by the Council of the Republic of Slovenia for Vocational and Professional Education. - Some HE professional study programmes allow enrolment of these graduates directly into the 2nd year.
<p>From 2004 – implementing Bologna process</p>	<p>Introduction of new higher education according to the Bologna process:</p> <ul style="list-style-type: none"> - The first-cycle kept a division between academic and professional study programmes. - The professional study programmes must have practical education in working environment; it is not obligatory for university study programmes. - Under the HE Act practical training is an obligatory part of the first-cycle professional study programmes. - The second-cycle master study programmes are only academic. - The postgraduate study programmes are scientific doctoral study programmes. <p>In 2011, Slovenia established an independent National Agency for the Quality of Higher Education (NAKVIS), which is responsible for quality assurance in higher education, and for the development and advisory work in this field.</p>

³ Vocational Matura candidates wishing to enrol in university courses must pass the Vocational Matura as well as one subject of the Matura. If a candidate passes the Vocational Matura, university admission is possible in the majority of university programmes but not all of them (it depends on the requirements of the study programme. Exams from different subjects are required for different university courses – this is evident from the annual Call for Enrolment.

	<p>In 2011, the National Higher Education Programme 2011-2020 was adopted, imposing a measure to redefine »the binary system – separation of university and professional study programmes«, which hasn't been fulfilled yet.</p>
<p>The problem with the redefinition of the binary system in Slovenia</p>	<ul style="list-style-type: none"> ▪ <u>Faculties perform scientific research and educational activities, while professional colleges carry out educational and professional activities.</u> This type of arrangement was intended to ensure a kind of binary higher education system, which facilitates the development of science, university-level education and professional education, which offers graduates professional competencies with practical work connected to the economy. ▪ There was an expectation that in the first two decades after the declaration of Slovenia's independence, higher education institutions would gradually and naturally diversify in the direction of a binary system, so that certain institutions would have become more academic and research-oriented, and others more professionally oriented. However, higher education institutions, with more or less the same staff, offer both types of study programmes (i.e. academic and professional programmes), whereby the contents of these programmes are often interwoven, with teaching and working methods being very similar, if not identical, and the results are consequently not the best. ▪ Within the context of greater diversification, flexibility, deregulation, and increased transparency in Slovenian higher education, the binary system of university and professional study programmes, and higher education institutions needs to be better defined.

The Structure of Education in Slovenia with KLASIUS-SRV code



Croatia

<p>Introduction</p>	<ul style="list-style-type: none"> • Binary education system: universities and professional studies. • Three cycles: undergraduate, graduate and postgraduate. • HE institutions (public and private): universities, polytechnics, colleges, and universities of applied sciences. • Autonomy (since 2003) – HE institutions independently determine entrance quotas and develop study programmes. • Types of studies: <ul style="list-style-type: none"> - professional studies – mainly delivered by polytechnics, colleges, and universities of applied sciences, and - academic studies – preparing for scientific work; exclusively offered by universities. • 80% of students study at universities. Majority is enrolled in humanities and social sciences study programmes.
<p>Practice within study programmes</p>	<ul style="list-style-type: none"> • Practice based learning within study programmes: <ul style="list-style-type: none"> - over two-thirds of study programmes include some practical elements (mostly mandatory), - every university has a different approach to including practice based learning, and - on average there are more than 200 hours of practice based learning within a study programme. • Practice as part of a study programme: <ul style="list-style-type: none"> - When organized as a work placement: (1) the employer nominates a mentor (in many cases not); (2) HEIs sign contracts with employers (but not in all cases); (3) competencies are evaluated through learning logs, reports, certificates from the employer, or exams; (4) in most cases students' status is not regulated; and (5) students rarely receive financial compensation. - When organized at HEIs (labs, fieldwork, clinics, etc.): (1) a course coordinator is mentoring the work; and (2) in most cases competencies are evaluated through exams.
<p>Call for application</p>	<p>/</p>
<p>1st attempt to establish the legal framework</p>	<ul style="list-style-type: none"> • The HE system in Croatia has been in the process of reform for the past several years. In 2001, the Bologna Declaration was signed and the Educational Sector Development Plan (2005-2010) was adopted. • The first step in reforming HEIs was the reform of undergraduate, graduate, and professional study programmes in line with the Bologna cycles in 2005 and the reconstruction of postgraduate studies between 2005 and 2009. • In that period about 30 new HEIs have been established - private colleges and first private universities and public polytechnics. • In 2006, the development of the Croatian Qualifications Framework started. • In 2008, the external evaluation of HEIs, in line with the Act on Science and Higher Education, started. • In 2013, the first draft version of the Strategy of Education, Science and Technology was presented. • The Parliament adopted the Strategy of Education, Science and Technology (SEST) in October 2014. • Some of the main priorities of the Strategy are the improvement of study programmes by consistent implementation of principles of the Bologna reform, the establishment of an efficient binary HE system aligned with national needs and with the principles of efficient management of HEIs, and the internationalization of HEIs.
<p>Problems</p>	<ul style="list-style-type: none"> • The Strategy of Education, Science and Technology covers a wide spectrum of current issues and offers quality solutions, but the actual implementation, regarding HE has not properly started yet. A Special Expert Committee for its implementation has already been appointed and restructured several times: in November 2014, January 2017, and December 2017.
<p>Solution</p>	<ul style="list-style-type: none"> • The KawFound team is continuously conducting mapping (small-scale interview based research) of good practice in Croatia. At the moment mostly HEIs have been interviewed. Findings and challenges: <ul style="list-style-type: none"> - The carrier centre is one of the first important steps in communication between students and companies. - Practice and mentorship standardization is crucial: (1) The standardization of practice (learning outcomes) and awarding of ECTS points is one of most important steps in the practice based learning education system; and (2) mentorship at companies must be regulated (tasks, obligations, legal status, and subventions). - Employability: (1) study programmes have to be in line with the demand; (2) the methodology to foresee the needs of the business sector has to be developed and future entrance quotas planned (e.g. annual statistical data of the Croatian Employment Service on the employability of each study programme has only a recommendation status and does not have a proper impact); and (3) continuous tracking of student's employability is necessary. - The involvement of the business sector in curricula: (1) continuous analysis and cooperation with the business sector and its needs; and (2) the business sector have to be more involved in

	<p>the adjustment/creation of curricula/syllabi (Croatia has one of the lowest rates of influence of business on the curricula development).</p> <ul style="list-style-type: none"> - Entrepreneurship and its perception: (1) preparing students for an entrepreneurial career after their studies through the provision of training, mentoring, and coaching, and through the provision of infrastructural support; (2) encouraging students to start their own business already during studies, not just after graduating; and (3) establishing entrepreneurship incubators within the HEIs largely contributes to the emergence of new start-ups and the perception of the entrepreneurship. - The perception of a degree: (1) the perception of a degree is more important than employability; and (2) this perception has roots already in the family (parents) and the overall positive perception of universities and their degrees is higher than the perception of the universities of applied studies. - The regulation of degree status of universities (UNI) and the universities of applied sciences (UAS): Students from UASs have many study course differences to overcome to continue their studies at UNIs (e.g. for PhD), however, in Slovenia (e.g. University of Maribor), the situation is not the same – there is a direct entrance (and many use it!). - Service learning (SL) is a teaching strategy connecting meaningful community service with academic learning and civic responsibility. SL was introduced into the Information Science curriculum at the Faculty of Humanities and Social Sciences in Zagreb for the first time in 2006/07, with the goal to transform the old teaching style. It has been developing since then. More information is accessible at http://inf.ffzg.unizg.hr/index.php/en/service-learning-projects.
Pilot phase	/
Further development	/
Effectiveness study	/
Legal recognition process	/

Romania

<p>Societal challenges</p>	<ul style="list-style-type: none"> • The discrepancy between the higher education offer and the needs and demands of the labour market: traditional higher education programmes do not match the industrial requirements and do not ensure the possibility to tie young talents to the companies. • Employers are afraid that this tendency will result in too many students enrolling in academia which would lead to a skill shortage/ lack of trained professionals having the skills that are really needed.
<p>Response to these societal challenges:</p>	<ul style="list-style-type: none"> • The responses to the challenging situation in Romania consist mostly of individual responses from some higher education institutions which have addressed the long term impact of the gap between the current education system and the actual needs of the business environment, in partnership with companies that have a specific need in a certain community.
<p>Legal framework</p>	<p>In Romania, the educational system is governed by four types of laws:</p> <ul style="list-style-type: none"> • the Constitution of Romania; • the organic law of education; • common specialized laws (regarding the accreditation of higher education institutions and the recognition of university diplomas and the Act regarding the Statute of the Teaching Staff); and • the Orders of the Minister of Education. <p>Order no. 94/2014 of the Ministry of Education regarding dual education in Romania. The Ministry of Education regulated dual education and its organization after consulting employers and at their request, in order to create a strong vocational education system tailored to the needs of the economy and labour market requirements.</p> <p>In this respect, the Ministry of Education held a dialogue with representatives of employers on the best possible organization of the vocational training system in Romania. Under the new regulations, dual organization of education is at the request of economic agents.</p> <p>Moreover, organization, duration, content of training programmes, and certification training modalities are established in consultation with economic operators.</p>
<p>Attempt to improve the legal framework</p>	<p>Order no. 3.262 of the Ministry of Education from February 16, 2017 regarding the organization and functioning of student entrepreneurial societies in the higher education system in Romania. This order regulates the organization and operation of entrepreneurial students structure, referred to as SAS, established in higher education institutions (accredited public or private) in Romania. SAS provides a mechanism for supporting development and encouraging entrepreneurship in academia, especially among students and university graduates in order to increase competitiveness of universities and to enable the employability of students. SAS addresses: a) students in higher education institutions, in every programme of study; and b) graduates in their first three years of graduation.</p> <p>The SAS has the following main responsibilities: developing information and guidance materials for students; organizing mentoring for students who want to establish a start-up; encouraging mentor - student cooperation in order to strengthen and develop entrepreneurial skills; organizing projects related to start-up business ideas, etc., in order to select proposals to be submitted to the executive board for review and feedback; organizing contests to attract funding to the best projects; and coordinating activities of all business incubators and other business simulated entities within higher education institutions.</p> <p>In 2015, the National Authority for Qualifications - ANC established the Advisory Council which consists of 33 persons - representatives of educational institutions and universities, students, professional associations, public administration central employers' organizations, trade unions, and representatives of sectoral committees. This structure is intended to establish an effective link between the labour market employers / unions, students, and institutions involved in the continuous training of adults participating in lifelong learning.</p> <p>At the same time, the Advisory Council supports the ANC in developing national strategies and action plans for qualifications and continuous training, exercises a consultative role and endorses draft legislation and methodologies related to the implementation of the National Qualifications Framework.</p> <p>The national education strategy until 2020 states that Romania will channel all its powers so that education and training will meet labour market and skills needs.</p> <p>The Education and Training Strategy proposes to develop an accessible system, attractive and competitive, in order to provide quality education and training which are relevant and quick to respond to the needs of people and the economy by managing resources efficiently.</p> <p>The strategic vision of education and training in Romania is to provide high-level skills relevant to the labour market and society for everyone, therefore the development of more professionally oriented study programmes is one of the main focuses of most higher education institutions in Romania.</p> <p>This is the reason why, in the last few years, there have been more and more MBA programmes developed. These are usually joint programmes with universities in Canada, the USA, and Europe, or different foundations and chambers of commerce from different countries.</p> <p>Dedicated study programmes are another concern since one of the biggest challenges universities are facing today is their inability to provide practical knowledge for their students, while companies are looking for experienced workforce on the job market.</p>
<p>Problems</p>	<p>There are two basic methods for including labour market relevance in quality assurance: to require from higher education institutions to submit employability-related information to quality assurance agencies before</p>

	<p>programme accreditation or before its reaccreditation, and to ensure employer involvement in the governance, design and implementation of education.</p> <p>For Romania, the first method is the most problematic in the sense that the process of using the collected information is difficult and it can take up to three years to change a curricula (ARACIS procedures do not make it easy) in order for it to respond to the market requirements. In spite of that, Romania has made a lot of progress in the last few years in involving employers in the educational process, especially in the higher education, as it can be seen in the best practice examples in the next section.</p> <p>The last bill approved by the Government on this matter (2016) redefines the status of the dual-education system as an organizational form of the professional and technical education, carried out at the initiative of the interested economic operators, as potential employers and apprenticeships partners, based on a partnership contract and on individual contracts for apprenticeships, as the economic operators will cover the additional scholarships for students.</p>
Solution	<p>The Advisory Board of the Lucian Blaga University of Sibiu. In order to adapt the university's curriculum to the economic and social environment requirements, LBUS started the initiative to establish the Advisory Board in 2008. The Advisory Board is a representative structure of the economic and business environment operating under a partnership with the LBUS management team that works to improve the quality of the graduates.</p> <p>The LBUS Advisory Board identifies material resources and ideas to increase the quality of the entire education and scientific research process, and the active participation of the university in the community life for the benefit of all community members and society in general.</p> <p>The cooperation between higher education institutions and companies can be mutually beneficial, yielding valuable benefits. The LBUS has experience in this regard, in the last years having developed joint education programmes and curricula at the initiative of certain companies such as the joint programmes between Continental Automotive and the Faculty of Engineering, and between Keep Calling and the Faculty of Economic Sciences. Keep Calling even sponsored the whole marketing graduate programme at the Faculty of Economic Sciences.</p>
Pilot phase	/
Further development	/
Effectiveness study	/
Legal recognition process	/

Bulgaria

Societal challenges	<ul style="list-style-type: none"> The lack of suitable work force, rapid development of technology, and an increased presence of foreign investors.
Response to these societal challenges: an alliance of major companies, an institute of higher education, and a chamber of commerce and industry	<ul style="list-style-type: none"> An increasing number of businesses offer ongoing professional training to their employees. There are already several projects led by the Ministry of Education and Science to apply German, Swiss and Austrian experience in the field of <u>secondary vocational education</u>. E.g. the DOMINO project (2015 – 2019) has been implemented with the support of the Swiss-Bulgarian Cooperation Program: The project is engaged in the following activities: <ul style="list-style-type: none"> the preparation and introduction of dual-training curricula in schools and companies, training of teachers and mentors, instruction of Bulgarian experts and trainers in dual education, and introducing the Swiss model in other Bulgarian vocational schools. Strong interest in more practice-oriented training programmes stated by companies and business people. Publicly expressed readiness for bilateral cooperation by both the business and the universities.
Call for application	/
1st attempt to establish the legal framework	<ul style="list-style-type: none"> Minor changes to the legal framework allowing dual learning (2014-2015) <u>only on the high school level (secondary level)</u>. Continuous vocational training is regulated by several legal acts: the Labour Code, Employment Promotion Act, and National Action Plan on Employment. The Higher Education Act defines continuous professional training in the field of higher education – the postgraduate qualification. The latest amendments of the Higher Education Act <u>were not related to the creation of professional education in higher education institutions</u>.
Problems	<ul style="list-style-type: none"> Educational institutions and universities are impeded to implement programmes of bilateral cooperation between HE institutions and business on a large scale since institutional mechanisms and legal regulations are still not in place.
Solution	<ul style="list-style-type: none"> Interest has been claimed and pre-requisites were created for the implementation of pilot solutions in the field of professional oriented studies in higher education (professional bachelors-colleges and universities). A programme named “Improving the Quality of Education and Training in Line with the Labour Market Needs for Building a Knowledge-Based Economy” enabled 36 higher education institutions to receive grant funding for their projects in 2012. In 2016, the Ministry of Education and Science proposed a new programme scheme “Student Practices - Phase 1”. 48 higher education institutions and more than 40 000 students were given the opportunity to receive financial support for the realization of student practices to create a direct connection between the university studies and the actual practice in selected enterprises. Long-term engagement of business experts as teachers and lecturers in higher education institutions. Participation of business people in the development of practical tasks that will be applied in the training of students. Such practices have been established at the German Faculty of the Technical University of Sofia, the Faculty of Economics of the Sofia University, the Free University in Varna, and others. The Government Program for the period 2017-2021 is particularly focused on the development of dual education as a “priority objective 99”. <ul style="list-style-type: none"> Developing vocational education in partnership with the business by active implementation of the Dual System (Learning through Work); career orientation of students through stable partnerships with parents, universities and businesses. The implementation of this objective foresees several measures, some of which are strongly related to the higher education and changing the model of higher education relevance to the labour market needs: <ul style="list-style-type: none"> ensuring quality vocational education and training (VET) and the higher education matching with the labour market needs; enhancing cooperation between all stakeholders for the development of vocational education and training through e.g. “Establishment and implementation of models for cooperation between secondary and higher education institutions, training institutions and business”; in partnership with the business, the Ministry of Education and Science, and the Ministry of Labour and Social Policy developed a new employment contract for the sake of the dual training. Developing its statutory rules of health, tax, insurance relations between employers and students in the case of dual training; Establishing a register of enterprises wishing to participate in the process of dual education;

	<ul style="list-style-type: none"> - providing accessible and quality career guidance services to students and adults in order to make an informed choice of education, training, career and career development and lifelong learning. • The Ministry of Economy has started developing the Register of Enterprises involved in the dual education process so that students and parents can be more easily oriented towards socially responsible companies which provide jobs and mentor training. The Ministry of Economy has reached the first stage of preparing an interactive map of industries in the country. • A new Labour Code article (Art. 230) was created which regulates a new type of employment contract with regard to the vocational training. Within this contract, the employer undertakes to train the student in the process of work in a particular profession or specialty, and the student to learn and master it. After accomplishing the training successfully, the employer is according to the contract obliged to accept the student due to the acquired qualification, and the student is obliged to work within the agreed term.
Pilot phase	/
Further development	/
Effectiveness study	/
Legal recognition process	/

Appendix 6: Proposal for the creation of national academies for professional education

Below is the EFE proposal for the creation of national academies for professional education:



Letter of Intent
(30 January 2018)

for the creation of

the National Academy for Professional Education

between

national partners

(universities, chambers of commerce, business associations,
National-German Chamber, etc.)

and

the European Foundation for Education

(Stuttgart, Germany)

and

further partners.

1. Our common mission

The high youth unemployment and the brain drain of many young talented people have negative impacts on the future development of the countries in the Danube Region. Based on comprehensive analyses, the European Commission has issued recommendations and provided these countries with significant funds for the implementation of the reform programmes. The funds, specifically, the European Social Fund/ERDF and IPA Fund, are still largely available for financing projects aimed at linking education and employment systematically.

Based on the sustainable goals of the European Union and in consideration of the UN Agenda 2030, our goals are:

- to improve professional chances of young people,
- to implement practice-oriented study programmes,
- to improve the competitiveness of companies, and

- to strengthen the regional economic development.

To achieve these goals, we have to change our educational systems in a way that our young people will be prepared for living and working in the 21st century.

All educational systems are challenged by global megatrends: globalization, digitalization, social and cultural heterogeneity, and demographic changes. Therefore, they are facing the complex question: which knowledge, abilities, and skills do we need in the 21st century?

Education for the 21st century should comprise 5 fields of competencies which are considered essential especially for companies:

- Specific professional expertise as basic and orientative knowledge combined with the understanding of the economic, social and political context.
- Cognitive abilities, especially analytic and problem-solving skills, combined with the ability to familiarize oneself with new fields of professional activities.
- Social competencies, above all communication skills, ability to work individually and in team, as well as ability to work under pressure and to be flexible.
- Intercultural competencies, above all openness to other cultures, knowledge of foreign languages, competencies related to foreign countries and familiarity with their everyday culture.
- Personal abilities, specifically willingness to perform, resilience, flexibility, motivation, and proactivity.

In order to mediate knowledge and competencies, educational and learning processes should become dual through systematically linking: basic knowledge with problem-solving skills; expertise with understanding of the system; theory with practice; analogue with digital forms of learning; individual with cooperative learning; independent with team-based work; personal cultural identity with intercultural understanding; and self-reflection with social interaction.

In order to assure this type of dual learning, new methods of learning such as deep learning and design thinking will be used. At the same time, the manifold linking of theory with practice is needed. Therefore, the binding, long-term engagement of companies in the form of learning partnerships is necessary.

These learning partnerships will be based on binding guidelines signed by the participating companies and valid for vocational education as well as for dual study programmes.

2. Creation of national academies for professional education (NAPEs)

Each partner is planning to create a national academies for professional education as a non-profit organization under national law.

The NAPE will combine five activities in a synergetic way:

- i) supporting universities in implementing dual study programmes (if needed with accredited bachelor's degrees in Germany);
- ii) developing and offering qualification programmes for trainers in companies for apprenticeships and practical parts of dual studies;
- iii) providing qualification for teachers in professionally oriented schools, in particular technical high schools;

- iv) offering further formation programmes such as start-up training, entrepreneurship, design thinking, and deep learning; and
- v) organizing know-how transfer between universities and companies in the fields of study programmes, science and research.

By this combination, the professors and the teaching staff of the NAPE will be part of a continuous learning process. The NAPE will use digital media offering a blended learning system.

The NAPE will be active on demand in all cities in which the founding members are represented by operational units.

If needed, the EFE will propose that a German university or universities of applied science become (a) founding member(s) of the NAPE.

3. Structure of the dual study programmes

The students have two learning venues. They work part-time in a company as an obligation of the practical training and they study part-time at the college.

For entering the dual study programme, the students need:

- a high school degree or an equivalent school degree which allows them to study at a university, and
- a contract of traineeship with a company for the study time of 3 years.

Study programmes:

The dual study programmes will offer undergraduate programmes with a Bachelor's degree (if needed based on the study programmes of German universities). Depending on the demand of the companies, the partners will select the appropriate study programmes out of the 1500 dual study programmes in Germany. The EFE will organize the selection process and provide the study programme from a German university:

- the length of studies: 3 or 4 years, depending on national law;
- each semester consists of a three-month practical phase and three-month study phase, or a half week study and a half week working time;
- practical phases can take place at different locations of a company;
- the location of study:
 - theoretical studies: in the regular form of learning, as well as distance learning, or interactive digital learning combined with regular tutorials (for example once a week) at the local study centre;
 - practical experience: in the company and partly – if possible – in Germany.
- The language of study: the national language, partly English and German.

Final degree:

The students of the dual study programme graduate with a Bachelor of Science/Bachelor of Arts (depending on the study programme). The partners are planning the accreditation of study programmes in order to provide graduates with an additional Bachelor's degree accredited in the participating countries, especially in Germany.

4. Organisation of the dual study programmes:

The partners agree on the following responsibilities and tasks in order to start with pilot programmes offering dual study programmes in October 2019.

Roles and main tasks of the partners

The EFE:

- i) proposing a German university or universities which provide(s) dual study programmes;
- ii) helping to develop specific study programmes tailored to the needs of the companies together with the university partner;
- iii) helping to provide the knowledge transfer for qualification and further education;
- iv) helping to assure the quality of educational activities;
- v) developing a financial plan; and
- vi) raising public funding together with the partners.

Participating universities:

- i) selecting, together with EFE, the German university to be the founding member of the NAPE;
- ii) developing specific study programmes tailored to the needs of the companies;
- iii) translating study programmes into the national language, where needed;
- iv) supporting the links between students and companies;
- v) accrediting the dual study programmes;
- vi) developing a financial plan together with EFE; and
- vii) raising public funds together with the partners.

Private sector, particularly chambers of commerce, craft and industry, and business associations:

- i) recruiting companies offering traineeship contracts for the practical part of the dual study programme;
- ii) approving the selection of companies;
- iii) exploiting synergy effects of the infrastructure and resources available, such as classrooms and teaching equipment in different cities;
- iv) helping to develop specific study programmes tailored to the needs of the companies (together with the participating universities and EFE);
- v) developing a financial plan, together with EFE; and
- vi) raising public funds together with other partners.

To achieve a successful implementation of the dual study programmes, as well as the qualification programmes, further education and knowhow transfer, a strong and binding cooperation is needed.

5. Financing of NAPEs

The expenditure comprises the costs for:

- the study programmes at universities;
- the qualification of trainers and further education of teachers;
- the companies for remuneration of the trainees and for the trainers in the companies; and
- the coordination and organisation of the NAPE.

Revenues of NAPEs:

Private financing – the NAPE will receive incomes stemming from:

- percentage of the tuition fees paid by students; and
- fees for further education and qualification programmes offered by the NAPE.

Public financing – the NAPE will obtain public funding stemming from EU-Programmes (Erasmus+, EU Funds and others).

The NAPE will help its partners in obtaining public funds for:

- o the formation of professors and university staff;
- o new study programmes at universities;
- o incentives for companies, in particular for the training of the trainers and the coaching of employees; and
- o contributions to the remuneration of trainers and students paid by the companies.

The partners plan to raise public funding, including from the ESF, ERDF, and IPA Funds, for the development of the educational programmes.

6. Cooperation in the planned Danubian Council of Academies for Professional Education

NAPes are willing to work together in the planned council with the goal to:

- exchange experiences;
- developing study programmes and blended learning systems with e-learning modules and courses for partnering educational institutions; and
- be a strong partner to national governments and European institutions.

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Prof. Dr. Wolfgang Schuster, Chair
European Foundation for Education

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Appendix 7: E-learning courses

E-learning courses are available at <http://jpo.imp.bg.ac.rs/edu-lab/>. Specific parts of the courses can be accessed also through the links below.

E-learning course 1: Encouraging further development of higher education acts

Theme 1: Existing governance models

Theme 2: Adoption and amendments of higher education acts

[Theme 3: Admission to higher education](#)

The Prezi presentation (Themes 1, 2 and 3): <https://prezi.com/p/sek24vyzodlv/>

E-learning course 2: Fostering the creation of more professionally-oriented study programmes

[Module 1: Why to change higher education studies?](#)

[Module 2: How to bring practical experience in higher education studies?](#)

[Module 3: Examples of existing best practices](#)

[Module 4: What's possible? – One example from the automotive industry in Slovakia](#)

[Module 5: Where to start? - Step-by-step: How to create a more professionally-oriented study programme](#)

Best practices:

[T-Systems, Slovakia](#)

[KeepCalling, Romania](#)

[Duale Hochschule Baden-Wuerttemberg, Germany](#)

[Lucian Blaga University of Sibiu, Romania](#)

[Continental Sibiu, Romania](#)

[Dual Training Council, Hungary](#)

[John von Neumann University, Hungary](#)

E-learning course 3: Enhancing professional training (train the trainers) in companies

Course 1: The training-of-trainers competency model

[Module 1: Competencies and competency models for trainers of the 21st century](#)

[Module 1: Competencies and competency models for trainers of the 21st century - video](#)

[Module 2: Training methodology. Need analysis. Knowledge management.](#)

[Module 3: Technologies and Web 2.0 for training. Training 3.0 for trainers.](#)

[Module 3: Technologies and Web 2.0 for training-video](#)

[Module 4: Pedagogy 2.0 and e-portfolio in training. Feedback](#)

[Module 4: Pedagogy 2.0 and e-portfolio in training. Feedback.-video](#)

[Module 5: Training delivery, assessment and efficiency](#)

Course 2: Trainers` e-skills, management and change management skills

[Course 2, Module 1: E-skills and digital event management](#)

[Course 2, Module 1: E-skills and digital event management-video](#)

[Course 2, Module 2: Communication skills and social media](#)

[Course 2, Module 3: Time management skills](#)

[Course 2, Module 3: Time management skills-video](#)

[Course 2, Module 4: Change management skills](#)

[Course2, Module 5: Management and marketing for training](#)

[Course2, Module 5: Management and marketing for training-video](#)

E-learning course 4: Strengthening the regional economic development

Theme 1: EU, regional and national context: challenges, policy context, recommendations

[Session 1: Analysis of the regional context and challenges](#)

[Session 2: National policy responses](#)

[Session 3: EUSDR Strategic Context](#)

[Session 4: Contribution and vision of EDU-LAB: Facilitate interaction between actors](#)

Theme 2: Business environment

[Session 1: Policy context, incentives, barriers](#)

[Session 2: Challenges](#)

[Session 3: Policy recommendations: Increasing labour force participation the quality of existing workforce, addressing skills mismatch etc.](#)

[Session 4: Best practices](#)

Theme 3: Higher education institutions as centres of regional development and innovation

[Session 1: Regulatory frameworks, policy recommendations, incentives, barriers](#)

[Session 2: Regional role of higher education institutes \(connecting universities to regional growth\)](#)

[Session 3: Policy recommendations on institutional, national and EU level](#)

[Session 4: Best practices](#)

Theme 4: RIS3/Smart specialization

[Session 1: Definition of RIS3, policy context, potential](#)

[Session 2: HEIs' leading role in regional development and innovation strategies, e.g. for smart specialisation](#)

[Session 3: Creation of innovation friendly business environment](#)

[Session 4: Best practices](#)