

## **Adapted STIR Method**

### The D-STIR Method



**Author:**

First Hungarian Responsible

Innovation Association

November, 2017

Project website: <http://www.interreg-danube.eu/approved-projects/d-stir>

Adapted STIR Method

## Content

|  |    |
|--|----|
| 1. Summary of Considerations: what should be changed in the original method? ..... | 4  |
| 2. New elements in the original STIR Method to adapt the D-STIR method.....        | 9  |
| 3. Adapted D-STIR Method.....  | 12 |
| 3.1. STIR in Academia .....  | 12 |
| 3.2. Innovation Process Management in the Business Sector.....                     | 15 |
| 4. Complex, multi-level motivation system.....                                     | 19 |
| 4. 1. Academic Motivation .....  | 19 |
| 4.1.1. Institutional .....   | 19 |
| 4. 2. Business Motivation.....   | 22 |
| 5. Pre- and post-study interview questions in academia .....                       | 23 |
| 6. Pre- and post-study interview questions in the business sector .....            | 28 |

| Identification  |                |                     |
|-----------------|----------------|---------------------|
| WP              | Project Output | Output Title        |
| WP4 – RRI Tools | Output 1.      | Adapted STIR Method |

This output in D-STIR project is the basis for the practical application of RRI with the D-STIR Method in academic and business environments. It forms part of the Danube RRI Strategy (WP3) and is applied to the Transnational Pilots (WP5). This document first comprises the considerations raised during the methodology development by the stakeholders both in the academic and the business TSG meetings. During the methodology development phase, all D-STIR project partners gave us several feedbacks in electronic form (using the input documents) and personally in the participative sessions of the project meetings in Kosice, Sarajevo and Szeged. The next chapter contains the factors we collected and took into consideration when customizing the STIR methodology in the D-STIR project. The following chapter summarizes the New Elements of the method: what is new in D-STIR compared to the original STIR method. Finally, the Adapted Method can be read. We prepared the whole document with the help of the EMFIE's external expert, namely the Metodus Kft. who gave instructions and support in preparing the business part.

## 1. Summary of Considerations: what should be changed in the original method?

Nowadays the practical implementation of Responsible Research and Innovation (RRI) has been in the focus of academic and policy researches; more and more practices appear, which contribute to the incorporation of RRI aspects in both the academic and the business researches. One of these methods is STIR that has a relatively long documented history in developed countries. In addition, there are some scientific results proving that STIR works differently in a developed country than in a less developed one.<sup>1</sup> That is why the STIR method has to be adjusted to the specific characteristics of the Danube region.

### ***The need for motivation***

The starting point of designing the STIR method (its new name would be D-STIR) was a surprising observation in the Danube region. Literally, motivating stakeholder groups to participate in the project is a problematic task. The reason behind is that stakeholder groups do not understand why it is good and advantageous for them to learn what RRI is and how to implement it into their daily work. The solution to this problem is to prepare short motivational materials to foster them to cooperate with us as STIR-investigators. In addition, we have to emphasize when inviting the researchers to use the (D-)STIR method that D-STIR helps researchers to find a better connection between social needs, challenges and their research scope. Hence, D-STIR could facilitate the application of research outputs in the society. Since natural scientists can only think by means of mathematical formulae or differential equations, human factor or economic and environmental aspects do not exist for them. Let us think of a laboratory or a procedure; everything is standardized, errors are minimal,

---

<sup>1</sup> See, for example, a current publication: Lukovics, M. – Flipse, S. – Udvari, B. + Fisher, E. (2017): Responsible research and innovation in contrasting innovation environments: Socio-Technical Integration Research in Hungary and the Netherlands. *Technology in Society*, 51, November, pp. 172-182.

and there is a perfect explanation for every little observation. At this moment, someone (i.e., the embedded humanist) comes in and disturbs the equilibrium with embarrassing questions. The natural scientist is skeptical and suspicious: “How can he/she help without the deep knowledge of mathematical formulae, names of bacteria, nervous system, or photoelectrochemistry?” Scientific results demonstrate that they can, with the careful investigation of personal decisions and via drawing attention to human, time, economic, environmental, etc. factors. These above-mentioned instances inspired us to create a list of reasons to motivate scientists working in academia, to participate in the D-STIR project – that is, we created the individual motivation. For other occasions, we created the institutional motivation, as well. It contains convincing topics, but in a form of coherent text, and other aspects, e.g., it does not focus on only the personal development.

Thereafter, we paid great attention on the environments of the different workplaces. Thus, we adjusted the motivation strategy for the companies, too. We introduced D-STIR as a *unique* and *free* “coaching service”, which was established in the United States and tested in other developed countries. Project partners suggested that it would be supportive if we could use the contact base of previous projects to familiarize them with this unique service. We must divide companies into categories based on their size, that is, small and medium-sized enterprises (SMEs) and big international corporations. Location is also a factor that has to be taken into consideration in case of motivation – it has to be adjusted to capital cities, district cities or the countryside. Mostly, SMEs do not have the free capacity to involve RRI into their business strategy and customers still prefer mainly the lowest price. Therefore, the public engagement to RRI matters and still a need in underdeveloped countries. The situation of a big company and corporation, however, is different because they have their own company responsibility strategies and many other ways concerning social responsibility (company foundations).

In designing the motivation strategy with D-STIR partners, we realized that a name change is needed in the business sector because STIR as Socio-Technical Research Integration does not fit to the needs and expectations of companies. Concerning the name, several ideas came up, and the common point was to emphasize that it is some kind of (advisory) service on innovation.

### ***The need for a pre-training***

Additional suggestions—called Step Zero in methodology development—were based on the deficiencies resulting from the type of education in post-socialist countries. It supposed to be a training for scientists in those places, where the concepts of innovation, RRI and social science do not have an adequate representation in the educational system. The training should be tailor-made for the participants of each state (and research lab or company) because their basic knowledge regarding social sciences differs. Thus, in the methodology phase came up the idea that the embedded humanist should decide in which fields the scientist has a lack of education based on the pre-study interview. Most of the project partners agreed that the training should take place after the pre-study interview since it must present the starting situation – according to its definition. It is an extra step, a completion, thus it does not disturb the 12-week long STIR study.

Regarding the content of this training, mostly the basics of the main social sciences were mentioned. The training should be different for a scientist working in the lab and for innovative companies and organizations. For companies, it should give an overview of the theoretical background of innovation activities, RRI and specific information on the possibilities of financing innovative activities. Completed the theory, the training for companies should offer specific information on the gained advantages of applying RRI. Furthermore, the well-trained embedded humanist should show the example of the STIR implementation rather than talk about the theories. Other important fields, in which researchers have incomplete knowledge are

patent law and commercialization. Principal investigators are usually afraid of developing products and they stay at the fundamental research level. So, these fields were also mentioned as parts of the training.

In order not to bother researchers, most D-STIR partners voted for e-learning, which offers the opportunity to use and learn the materials when scientists have free time so there is no pressure on them. Another argument for e-learning is that classroom education can be expensive and time-consuming. Short summaries could follow these e-learning sessions and online seminars. In the case of **companies**, classroom education is not appropriate since they do not have time. Project partners agreed that the language of the training depends on the researchers, but in general, it would be better to use the national language, because it is easy to understand for everyone.

### ***The need for a pre-action***

Most project partners expressed that some preliminary action should be inserted, in a form of a short, written material or video. We called this action Step Minus One. It is important to provide as broad information to researchers as possible. This extra education can be integrated before the STIR study and before Step Zero. Additional ideas were the presentation of “worst practices”, where the negative effects of a research were bigger than the expected positive ones. It could serve as an example that is worth avoiding. Other suggestion is to prepare a training material about the implementation of RRI in various institutions. For example, how to involve it in ministries, small and medium enterprises, associations, etc. Furthermore, it would be useful to indicate what opportunities are available relating RRI in the context of EU funds.

### ***The original 12-week interaction phase***

The original 12-week phase of STIR must not be changed. The questions of both the pre- and the post-study interviews, however, can be tailored to our needs. Therefore, we agreed that the answers should be rated on a 1–6 scale to avoid neutral answers.

Upon thinking what could draw the attention to RRI in the Danube countries is advertising. For example, sharing information about RRI with the wider public. We assume that it is a necessary precondition in the project. D-STIR partners should pay extraordinary attention to the continuous “raising awareness on RRI” activity. EMFIE helps the partners in this activity – partners should continuously share the relevant contents on their own Facebook page and/or motivate their pilot partners to follow

**The process of the current D-STIR method in the D-STIR project:**

1. Embedded Humanists (EHs) were already trained in July 2017, but the pilots will take place half a year later. Therefore, there should be an online reminder training (or a “questions and answers” session) led by Erik Fisher. Planned date of the training: 23 November 2017, 4 pm.
2. There should be a final exam for the trained EHs. The details of this exam would be prepared by the Erik Fisher team at the ASU. Expectedly, the exam would contain some STIR simulation that should be submitted in a video format. Planned deadline: 15 December 2017
3. From mid-November, partners should send their invitation and motivation letter to their potential pilot partners. Partners have to inform EMFIE until 10 December where (in which pilot partner) they would use the STIR method.
4. The first pilots should start in January 2018.

us. It is important to know that raising awareness of RRI is only a unidirectional communication, therefore, it cannot substitute STIR.

In the next chapter, we will explain the steps we changed and the new elements we introduced.



## 2. New elements in the original STIR Method to adapt the D-STIR method

Based on the experiences and lessons gained from partners and stakeholders, new elements appear in the adapted STIR method leading to the development of the D-STIR method. Many suggestions, however, are left out as a result of the consultation with Erik Fisher and our external expert, Metodus Kft. We realized that we cannot produce training materials (as Step 0 and Step -1), which can universally be used. Furthermore, we noticed that these extra steps would not bear more impacts on the effectiveness of the STIR interactions than the absence of them. They would only lengthen the study resulting in loss of some impacts. Therefore, we decided to leave these educational steps out of the final D-STIR method. In this chapter, we summarize the new elements of the D-STIR method in comparison with the original STIR method. These reflect how we adapted the STIR method to the Danube region. These differences are summarized in Table 1.

In the original STIR method, the **training for embedded humanists** was carried out in small groups under the leadership of Erik Fisher (professor at Arizona State University, USA). In D-STIR, however, the training takes place in medium-sized groups personally in a form of seminars and online training sessions. The latter ones have to be introduced because of the great geographical distances. The trainer remained Erik Fisher – and this unchanged property has a crucial importance in terms of constant quality and a uniform and standardized process. This resulted in changes in the procedure of exams: the final exam is organized after the online reminder training.

The **pre- and post-study interviews** are changed in D-STIR method, since they contain tailor-made questions to the special features of the Danube countries. In addition, the **answers** should be rated on a 1–6 scale, which gives us data that can be evaluated quantitatively, while in the original STIR, the answers were exclusively narrative. During the **twelve-week long interactions**, embedded humanists consult with their trainer, i.e., Erik Fisher, and EMFIE. This consultation is regular, happens

after the sixth, ninth, and tenth week. Moreover, the embedded humanists have to report the results continuously what is not a practice in the original method.

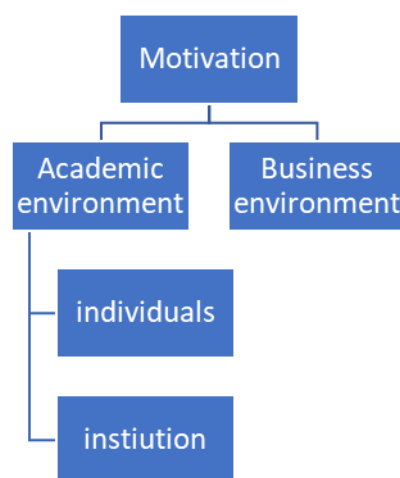
**Table 1.** Differences between the STIR and the D-STIR method.

| Criteria  | STIR                                      | D-STIR  |
|---|---|---|
| <b>TRAINING PHASE – EMBEDDED HUMANISTS</b>            |   |   |
| <b>Type of the personal training</b>                  | in small groups led by Erik Fisher        | in medium-sized group (talk and seminar) with an online “reminder training” led by Erik Fisher              |
| <b>Exam</b>   | in-process exam during the training       | final exam after the online reminder training   |
| <b>INVITATION PHASE</b>                               |   |   |
| <b>Focus of the invitation letter – motivations</b>   | Focus on STIR research without motivation | Adjusted to the personal and institutional needs and motivations of the actors in the Danube Region         |
| <b>Invitation letter – short-term benefits</b>        | No focus on the short-term benefits       | Mere emphasis on the short-term benefits of the participant company (why is D-STIR useful for the company?) |
| <b>Invitation of the academic and business actors</b> | No distinction                            | Different invitation letters to academia and business   |
| <b>Name of the method</b>                             | STIR                                      | Business sector: STIR Innovation Process Management<br>Academia: STIR                                       |
| <b>PRE-STUDY INTERVIEW</b>                            |   |   |
| <b>Questions</b>                                      | General questions                         | Tailor-made questions to the special features of the Danube countries                                       |
| <b>Answers</b>  | Only narrative answers                    | Answers on a 1 to 6 scale   |
| <b>12-WEEK PHASE</b>                                  |   |   |
| <b>Consultation with the trainer</b>                  | No regular consultation                   | Online consultation after week 6, 8 and 10.   |
| <b>Reporting to the trainer during 12 weeks</b>       | No  | Continuous reporting  |
| <b>POST-STUDY INTERVIEW</b>                           |   |   |
| <b>Questions</b>                                      | General questions                         | Tailor-made questions to the special features of the Danube countries                                       |
| <b>Answers</b>  | Only narrative answers                    | Answers on a 1 to 6 scale   |
| <b>EVALUATION PHASE</b>                               |   |   |
| <b>Evaluations</b>                                    | Narratives                                | Narratives and statistical evaluation (scale)   |
| <b>HORIZONTAL ISSUE</b>                               |   |   |
| <b>Raising RRI awareness</b>                          | No  | Obligatory and continuous task with using the social media with the support of the trainer                  |

Source: own construction

One of the most important results of the methodology development is the **complex, multi-level motivation system** (see Figure 1). In our project, we separated the academic from the business environments after long discussions and careful examination – that was unknown in the process of STIR. In the case of academic environment, the motivation is tailored to academic individuals, and institutions, as well. In the businesses environment, the choice of participating or not in D-STIR is not a one man’s decision. Thus, it was not necessary to develop different motivational materials. Additionally, the new motivation system mentions short-term benefits as well, which encourages the candidates to participate. The name of the method became Innovation Process Management in the business sector, while it remained STIR in academia. The motivational materials are listed in Chapter 4.

**Figure 1.** The multi-level motivation system of D-STIR



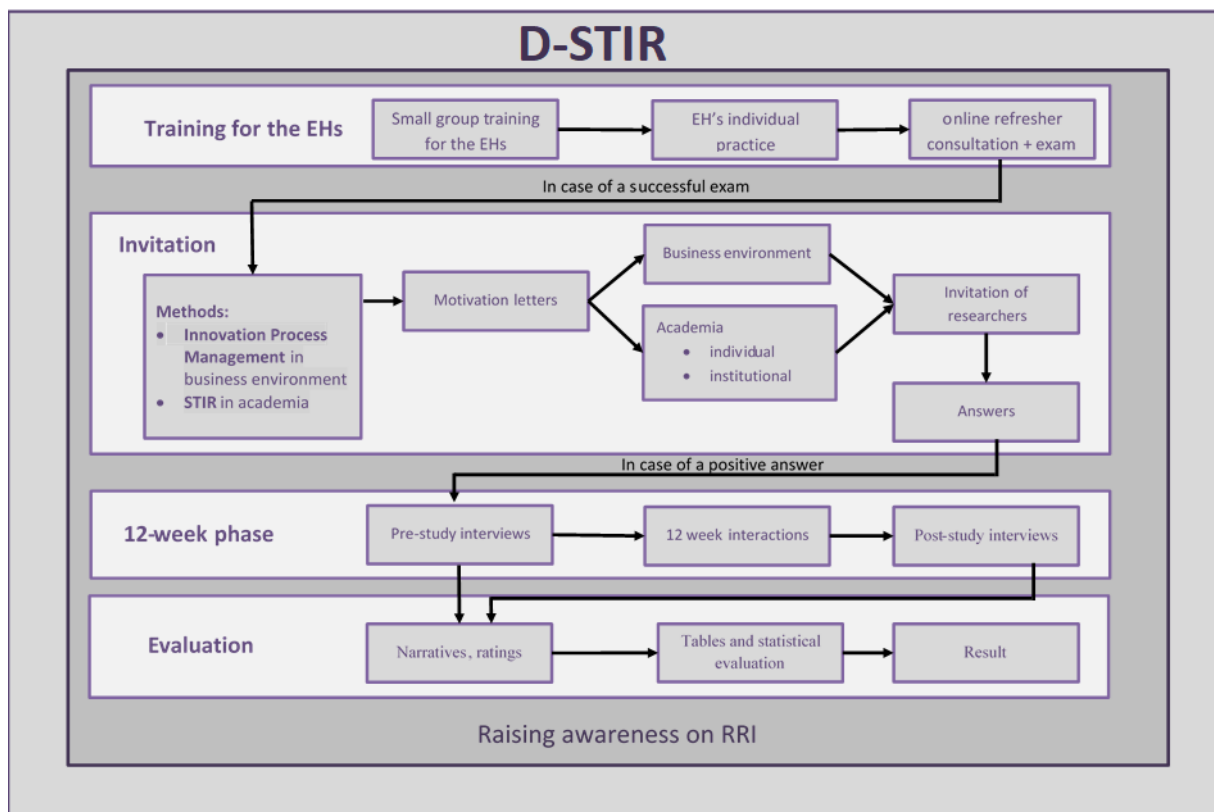
Source: own construction

**Raising awareness** is a horizontal issue during D-STIR that is an obligatory and continuous task via using the social media with the support of the trainer.

### 3. Adapted D-STIR Method

The previous chapters summarize those considerations that D-STIR project partners and stakeholders raised and the new elements of the method comparing it with the original one. Figure 2 describes how the D-STIR method logic looks like. The interventions concern the invitation phase, the pre- and post-study interviews, the name of the STIR in the business sector, and the evaluation phase (not only narratives but statistics are also used).

**Figure 2.** Final structure of the D-STIR method



Source: own construction

#### 3.1. STIR in Academia

The STIR method in academia begins with the training of embedded humanists. To maintain the quality of the study, the training happens in medium-sized groups, and the leader is Erik Fisher who developed and tested the method years ago. Thereafter, an online reminder training will take place, also with Erik Fisher. Participation in both

pieces of training is obligatory for the EHs. At the end, a final exam with pass/fail assessment will be held. If the trained EH fails, he or she is not allowed to implement the STIR method in the pilot partner institution.

The first step of the project is sending out invitation letters. We prepared motivation letters that are adjusted to the needs of the Danube Region. We paid attention on the careful word choice and the content as well. The EH can choose which motivation letter is the most appropriate (in academic environment individual or institutional). We intended to rename the method, however, STIR became a brand, and sells itself. There is no reason to introduce a somewhat similar name.

When the EH receives a positive answer, the study is about to begin. The EH starts it with a pre-study interview. The questions are adjusted to the special features of the Danube countries. The answers are no longer narrative since there is a scale from one to six that avoids neutral answers, from which we will be able to reach quantitative data, statistics, tables. With the above-mentioned interview, the study has already started. The EH asks questions regularly from the researcher. It is important to note that in D-STIR EHs can ask Erik Fisher about difficulties and questions arisen. There are also non-optional consultations after the sixth, eighth, and tenth week. Similarly to the pre-study interview, there is an interview after the observation and examination phase (twelfth week). The EH asks tailored questions, and the answers are scaled like in the previous interview. The evaluation will be based on more quantitative data due to the modified interviews. Besides narrative data, there will be a statistical evaluation in this step, too.

An important added value of the project is that it will familiarize the society with RRI and related terms. Namely, there is a horizontal issue, the raising awareness on RRI. It is compulsory, but the project partners can ask for help from the EMFIE.

Finally, here we collected the tasks of the adjusted STIR method in twelve points.

## **TRAINING PHASE – EMBEDDED HUMANISTS**

1. There will be a personal training in a medium-sized group (talk and seminar) as well as an online “reminder training” provided by Erik Fisher. Participation in both pieces of training is obligatory for the EHs.
2. At the end, a final exam with pass/fail assessment will be held for the trained EHs. If the trained EH fails, he or she is not allowed to implement the D-STIR method in the pilot partner institution. The Erik Fisher team at the ASU will detail the exam and how to prepare the necessary STIR-simulation video.

## **INVITATION PHASE**

3. The invitation (and motivation) letters have been changed and adjusted to the personal and institutional needs and motivations of the actors in the Danube Region.
4. As a more than a 10-year old brand name in academia, the STIR remains the name of the 12-week long interactions in academia.

## **PRE-STUDY INTERVIEW**

5. Questions are tailor-made to adjust to the special features of the Danube countries.
6. Answers given in the pre- and the post-study interviews are rated on a 1–6 scale to avoid neutral answers.

## **12-WEEK INTERACTION PHASE**

7. Online consultation after weeks 6, 8 and 10.
8. Continuously reporting on the progress and the difficulties arose.

## **POST-STUDY INTERVIEW**

9. Questions are tailor-made to adjust to the special features of the Danube countries.
10. Answers given in the pre- and the post-study interviews are rated on a 1–6 scale to avoid neutral answers.

## **EVALUATION PHASE**

11. Based on points 6 and 10, embedded humanists will make narrative and statistical evaluations as well.

## **HORIZONTAL ISSUE**

12. During D-STIR, the partner institutions must pay extraordinary attention to the continuous “raising awareness on RRI” activity. To support the partners and help them find the right contents, EMFIE helps the partners in this activity – the partners must continuously share the relevant contents of the EMFIE Facebook page on their own Facebook page or motivate their pilot partners to follow us (or both).

### **3.2. Innovation Process Management in the Business Sector**

The STIR method in business environment begins with the training of embedded humanists. To maintain the quality of the study, the training happens in medium-sized groups, and the leader is Erik Fisher who developed and tested the method years ago. Thereafter, an online reminder training will take place, also with Erik Fisher. Participation in both pieces of training is obligatory for the EHs. At the end, a final exam with pass/fail assessment will be held. If the trained EH fails, he or she is not allowed to implement the STIR method in the pilot partner institution.

The first step of the project is sending out invitation letters. We prepared motivation letters that are adjusted to the needs of the Danube Region. We paid attention on the careful word choice and the content as well. The invitation (and motivation) letter of the business sector is specific and focuses on the short-term benefits of the participating company. It details why D-STIR is useful for the company. Additionally, we renamed the method to Innovation Process Management to make it more attractive.

When the EH receives a positive answer, the study is about to begin. The EH starts it with a pre-study interview. The questions are adjusted to the special features of the Danube countries. The answers are no longer narrative since there is a scale from one to six that avoids neutral answers, from which we will be able to reach



quantitative data, statistics, tables. With the above-mentioned interview, the study has already started. The EH asks questions regularly from the researcher. It is important to note that in D-STIR EHs can ask Erik Fisher about difficulties and questions arisen. There are also non-optional consultations after the sixth, eighth, and tenth week. Similarly to the pre-study interview, there is an interview after the observation and examination phase (twelfth week). The EH asks tailored questions, and the answers are scaled like in the previous interview. The evaluation will be based on more quantitative data due to the modified interviews. Besides narrative data, there will be a statistical evaluation in this step, too.

An important added value of the project is that it will familiarize the society with RRI and related terms. Namely, there is a horizontal issue, the raising awareness on RRI. It is compulsory, but the project partners can ask for help from the EMFIE.

Finally, here we collected the tasks of the adjusted STIR method in twelve points.

### **TRAINING PHASE – EMBEDDED HUMANISTS**

1. There will be a personal training in medium-sized group (talk and seminar) as well as an online “reminder training” provided by Erik Fisher. Participation in both trainings is obligatory for the EHs.
2. At the end, a final exam with pass/fail assessment will be held for the trained EHs. If the trained EH fails, he or she is not allowed to implement the D-STIR method in the pilot partner institution. The Erik Fisher team at the ASU will detail the exam and how to prepare the necessary STIR-simulation video.

### **INVITATION PHASE**

3. The invitation (and motivation) letters have been changed and adjusted to the personal and institutional needs and motivations of the actors in the Danube Region.
4. The invitation (and motivation) letter of the business sector is specific and focuses on the short-term benefits of the participating company (details why D-STIR is useful for the company).



5. For marketing reasons, the name of the method is “Innovation Process Management” in the business sector.

### **PRE-STUDY INTERVIEW**

6. Questions are tailor-made to adjust to the special features of the Danube countries.
7. Answers given in the pre- and the post-study interviews are rated on a 1–6 scale to avoid neutral answers.

### **12-WEEK INTERACTION PHASE**

8. Online consultation after weeks 6, 8 and 10.
9. Continuous reporting on the progress and the difficulties arose.

### **POST-STUDY INTERVIEW**

10. Questions are tailor-made to adjust to the special features of the Danube countries.
11. Answers given in the pre- and the post-study interviews are rated on a 1–6 scale to avoid neutral answers.

### **EVALUATION PHASE**

12. Based on point 7 and 11, embedded humanists will make narrative and statistical evaluations as well.

### **HORIZONTAL ISSUE**

13. During D-STIR, the partner institutions must pay extraordinary attention to the continuous “raising awareness on RRI” activity. To support the partners and help them find the right contents, EMFIE helps the partners in this activity – the partners must continuously share the relevant contents of the EMFIE Facebook page on their own Facebook page or motivate their pilot partners to follow us (or both).

In conclusion, we worked out a method that is specific enough to use in post-socialist countries, but not too different from the original method. It is a hard task to find the equilibrium, but we assume that it was successful. The advantage of the newly developed process is that we can compare these studies with the earlier ones carried out in the USA, the Netherlands etc. Another achievement is that the method itself

does not differ in the business and the academic sector, therefore these data will be comparable as well.

## 4. Complex, multi-level motivation system

### 4. 1. Academic Motivation

#### 4.1.1. Institutional

#### **Be a Responsible Innovator, Apply for Grants More Successfully!**

##### **International Cooperation for Responsible Innovation!**

The conception of Responsible Research and Innovation (RRI) has a high priority in the innovation policy of the EU. Additionally, the possibilities of its practical application raise increasingly important questions worldwide. RRI is introduced in practice in a way that the EU Innovation Framework Program, i.e., H2020, focuses more on financing RRI-containing projects.

It is expected that RRI will be further appreciated in financing innovation projects and – according to experts – it may even become a horizontal aspect.

Let your research group be the leader in applying RRI, learn about RRI and the opportunities of its practical application, in which we are happy to help – free of charge only during the project duration! Act now and cooperate with us! As a responsible innovator, you can gain competitive advantage. Integrating this advantage into your innovative projects, the committee will recognize your application. According to our experiences and track record, these projects are more likely to be supported.

The well-documented Social-Technical Integration Research (STIR) method can help in this issue, as it basically integrates social concerns into the scientific research and the decision-making processes. STIR is a tool that will widen the intellectual perspective of researchers with environmental, economic, psychological, ethical, and other sociological aspects. This sort of complex thinking, which you may consider as **Innovation Process Management**, increases the probability of arriving at responsible R&D&I decisions.

## **Be a Responsible Researcher, Apply for Grants More Successfully!**

### **International Cooperation for Responsible Innovation!**

- Do you have troubles with fully understanding whole R&I chain of your research?
- Do you have troubles with identifying the impact of your research?
- Would you like to receive funds from EU R&I based schemes?

If you answer to any of these questions yes, then you should be aware of the concept of Responsible Research and Innovation (RRI). RRI is on the rise as a priority of innovation policy in EU thus making it important during development of successful project proposal.

Scientists often do not fully understand the full potential of their research – is it marketable? Is there a societal need for improvement? The well-documented Social-Technical Integration Research (STIR) method can help in this issue, as it basically integrates economic, environmental, and social aspects into the scientific research and the decision-making processes. This sort of complex thinking increases the probability of arriving at responsible R&D&I decisions. Understanding of economic, environmental, and societal aspects of research improves significantly impact part of your research proposals, where you can show that you understand the broader environment of your research from multiple perspectives.

Let your research group be the leader in applying RRI, learn about RRI and the opportunities of its practical application, in which we are happy to help as a responsible innovator, you can gain a competitive advantage by integrating it into your R&I projects. According to our experiences, these projects are more likely to be funded.

#### 4.1.2. Individual

##### **Be the researcher and/or the innovator of the future!**

Reasons to Participate in D-STIR:

1. it **does not require extra time** (i.e., we carry out our study during your routine lab work)
2. your researcher attitude will slightly change because of the acquired knowledge and equipped with this, you might **apply for grants and awards** more successfully
3. you may attract **more funds or investors** with this knowledge
4. we help you prepare your **elevator speech** (i.e., you will be able to introduce and **explain hard science topics clearly** and promote yourself)
5. we can help the **science popularization, which** is a key task in the presentation of research work to the public, political authorities or laymen (you will be able to approach the community in a simpler way)
6. you will be able to carry out your work even more efficiently if you let us go into your lab and think together about **optimizing the work processes, or the negative/positive effect of the project, research area, etc.**
7. You get the **unique feedback on the functionality of your research team/department** from outside, which allows you to lead and develop your research team more successfully
8. because science becomes increasingly **multidisciplinary and interdisciplinary**, this knowledge you acquire is going to be a **competitive advantage for you**, in addition, an essential skill
9. you will learn a **critical perspective** that only a few scientists have
10. you are going to be a researcher who can answer research questions in a **more complex way**
11. you can **become acquainted** your research project in a way that you have never thought about
12. you will be able to sense the possible **future effects, risks, and unexpected negative results** of your research your intellectual horizon widens, therefore you will **recognize completely new research questions**, which can improve the product or the project
13. you will increase the **number of your research outcomes**, which will become into practice or real market

## 4. 2. Business Motivation

### **Free Innovation Process Management Advisory Services to Your R&D&I Work**

**For the first time in Eastern Europe, you can try the method, which was tested in 30 countries in the world.**

Even more responsible decisions, the recognition of new possibilities (e.g., better understanding of the wider public, decrease of negative effect in early stages, community acceptance etc.), decreasing frame dependency, long-term, complex, and more focused thinking, as well as science marketing. According to the experiences gained, these are the results of the innovation process management method developed at the Arizona State University in the United States of America.

Until now, this method – that maps, analyzes, and manages innovation processes – was only tested in the innovation environment of developed countries. Therefore, its test in Eastern Europe counts as groundbreaking. The well-documented Social-Technical Integration Research (STIR) method integrates social and economic and environmental aspects into scientific research and decision-making processes within a 12-week long interaction. By applying STIR, the intellectual horizon of researchers involved broadens by environmental, economic, psychological, philosophical, ethical, and other sociological aspects. This complex thinking increases the researcher's added value at the level of the researcher, the research group, and the research institute. The talks during the interactions help researchers to collect their thoughts and find critical decision-making points. In this way, the daily work becomes even more systematized and embedded in the socio-economic environment, enabling the utilization of scientific results and further successful applications to additional resources.

## 5. Pre- and post-study interview questions in academia

### INSTRUCTIONS TO THE INTERVIEWER:

Before you conduct this interview, please read carefully (and follow) the following instructions:

- The following questionnaire is a guide for the interviewer, and you must not send the questions to the interviewee in advance! The main aims of the pre-study and post-study interviews are to observe interviewee's primary and honest reactions.
- Before you conduct the interview, get familiar with questions and please spend time to understand the logic of the questionnaire.
- There are some questions when the interviewee has to evaluate on a scale how much he/she finds something important. In the case of these questions, clearly ask the interviewee to scale the answer on a 1-6 rank.
- The interview is an **oral** interview with mainly open questions. This questionnaire is prepared in a form which ease note-taking. During the interview, please take notes. Be open to the answers.
- The interview takes approximately 1 hour, but it can be longer.
- **Before you start asking questions, please raise the attention of the interviewee that we are not looking for good answers and he/she should not change his/her mind to seem better. He/she should give honest answers!**

### INTERVIEW GUIDE

#### START OF THE INTERVIEW:

Ask the interviewee about:

|  |  |
|--|--|
| <b>Name</b>                              |  |
| <b>Workplace</b>                         |  |
| <b>Department name</b>                   |  |
| <b>Position</b>                          |  |
| <b>Qualification</b>                     |  |
| <b>Summary of his/her work</b>           |  |
| <b>Disciplinary program / department</b> |  |
| <b>Project area</b>                      |  |
| <b>Lab type (e.g. academic)</b>          |  |
| <b>Country of work</b>                   |  |

## MAIN QUESTIONS OF THE INTERVIEW:

### 1. What does innovation mean in your interpretation?

|  |
|--|
|  |
|--|

### 2. What does research and development (R&D) mean in your interpretation?

|  |
|--|
|  |
|--|

### 3. How many decisions do you make a day?

|  |                       |      |
|--|-----------------------|------|
| None   | 1 – 2 – 3 – 4 – 5 – 6 | Many |
| Because<br>(If you suddenly cannot think of anything, feel free to leave it empty) |                       |      |

### 4. Is it important to a natural scientist to be able to summarize his/her research topic in one easily understandable sentence?

|  |                       |                |
|--|-----------------------|----------------|
| Not important at all   | 1 – 2 – 3 – 4 – 5 – 6 | Very important |
| Because<br>(If you suddenly cannot think of anything, feel free to leave it empty) |                       |                |

### 5. Could you summarize your own research topic in one easily understandable sentence?

|   |                       |                                   |
|---|-----------------------|-----------------------------------|
| I could not do it   | 1 – 2 – 3 – 4 – 5 – 6 | I could do it without any problem |
| My research topic in an easily understandable sentence is the following:<br>(If you suddenly cannot think of anything, feel free to leave it empty) |                       |                                   |



**6. Is it important to involve some social science aspects (sociology, psychology, philosophy, ethics, etc.) in the thinking of natural sciences?**

|  |                       |                |
|--|-----------------------|----------------|
| Not important at all   | 1 – 2 – 3 – 4 – 5 – 6 | Very important |
| Because<br>(If you suddenly cannot think of anything, feel free to leave it empty) |                       |                |

**7. Does it make a sense to involve social scientists into natural science researches?**

|   |                       |                |
|---|-----------------------|----------------|
| It makes no sense   | 1 – 2 – 3 – 4 – 5 – 6 | Very important |
| Because:<br>(If you suddenly cannot think of anything, feel free to leave it empty) |                       |                |

**8. Is it important to involve environmental aspects into natural science researches?**

|   |                       |                |
|---|-----------------------|----------------|
| Irrelevant  | 1 – 2 – 3 – 4 – 5 – 6 | Very important |
| Because:<br>(If you suddenly cannot think of anything, feel free to leave it empty) |                       |                |

**9. Is it important to involve social aspects into natural science researches?**

|   |                       |                |
|---|-----------------------|----------------|
| Irrelevant  | 1 – 2 – 3 – 4 – 5 – 6 | Very important |
| Because:<br>(If you suddenly cannot think of anything, feel free to leave it empty) |                       |                |

**10. Is it important to involve economic aspects into natural science researches?**

|   |                       |                |
|---|-----------------------|----------------|
| Irrelevant  | 1 – 2 – 3 – 4 – 5 – 6 | Very important |
| Because:<br>(If you suddenly cannot think of anything, feel free to leave it empty) |                       |                |

**11. Is it important to involve ethical aspects into natural science researches?**

|   |                       |                |
|---|-----------------------|----------------|
| Irrelevant  | 1 – 2 – 3 – 4 – 5 – 6 | Very important |
| <p>Because:<br/>(If you suddenly cannot think of anything, feel free to leave it empty)</p> |                       |                |

**12. Can social, economic, ethical, and environmental aspects influence the R&D&I process in natural sciences?**

|   |                       |            |
|---|-----------------------|------------|
| Not at all  | 1 – 2 – 3 – 4 – 5 – 6 | Completely |
| <p>Because:<br/>(If you suddenly cannot think of anything, feel free to leave it empty)</p> |                       |            |

**13. Would it be useful to integrate social, economic, and ethical aspects into the R&D&I process of natural sciences?**

|   |                       |            |
|---|-----------------------|------------|
| Not at all  | 1 – 2 – 3 – 4 – 5 – 6 | Completely |
| <p>Because:<br/>(If you suddenly cannot think of anything, feel free to leave it empty)</p> |                       |            |

**14. Does it have any sense to improve the abilities of a research group to consider social, economic, environmental, and ethical aspects during the whole research?**

|   |                       |            |
|---|-----------------------|------------|
| Not at all  | 1 – 2 – 3 – 4 – 5 – 6 | Completely |
| <p>Because:<br/>(If you suddenly cannot think of anything, feel free to leave it empty)</p> |                       |            |

**15. Could be cooperation between natural scientists and humanist during the R&D&I activities useful?**

|   |                       |            |
|---|-----------------------|------------|
| Not at all  | 1 – 2 – 3 – 4 – 5 – 6 | Completely |
| <p>Because:<br/>(If you suddenly cannot think of anything, feel free to leave it empty)</p> |                       |            |

**16. In your opinion, what makes the research/innovation responsible?**  
(If you suddenly cannot think of anything, feel free to leave it empty)

**17. How responsible do you consider yourself?**

| Not at all  | 1 – 2 – 3 – 4 – 5 – 6 | Completely |
|---|-----------------------|------------|
| Because:<br>(If you suddenly cannot think of anything, feel free to leave it empty) |                       |            |

## 6. Pre- and post-study interview questions in the business sector

### INSTRUCTIONS TO THE INTERVIEWER:

Before you conduct this interview, please read carefully (and follow) the following instructions:

- The following questionnaire is a guide for the interviewer, and you must not send the questions to the interviewee in advance! The main aims of the pre-study and post-study interviews are to observe interviewee's primary and honest reactions.
- Before you conduct the interview, get familiar with questions and please spend time to understand the logic of the questionnaire.
- There are some questions when the interviewee has to evaluate on a scale how much he/she finds something important. In the case of these questions, clearly ask the interviewee to scale the answer on a 1-6 rank.
- The interview is an **oral** interview with mainly open questions. This questionnaire is prepared in a form which ease note-taking. During the interview, please take notes. Be open to the answers.
- The interview takes approximately 1 hour, but it can be longer.
- **Before you start asking questions, please raise the attention of the interviewee that we are not looking for good answers and he/she should not change his/her mind to seem better. He/she should give honest answers!**

### INTERVIEW GUIDE

#### START OF THE INTERVIEW:

Ask the interviewee about:

|  |  |
|--|--|
| Name                                   |  |
| Company name                           |  |
| Department name                        |  |
| Position in the company/department     |  |
| Qualification                          |  |
| Summary of his/her work in the company |  |
| Country of work                        |  |

**MAIN QUESTIONS OF THE INTERVIEW:**

**Please emphasize for your interviewee that innovation does not mean research and development in a lab or a launch of a new product, but can be an organization change. In this respect, please ask the interviewee about the impacts of innovation.**

**1. What does innovation mean in your interpretation?**

|  |
|--|
|  |
|--|

**2. What does research and development (R&D) mean in your interpretation?**

|  |
|--|
|  |
|--|

**3. How many decisions do you make a day?**

|  |                       |      |
|--|-----------------------|------|
| None   | 1 – 2 – 3 – 4 – 5 – 6 | Many |
| Because<br>(If you suddenly cannot think of anything, feel free to leave it empty) |                       |      |

**4. Is it important for an innovator to be able to summarize his/her work in one easily understandable sentence?**

|   |                       |                |
|---|-----------------------|----------------|
| It makes no sense   | 1 – 2 – 3 – 4 – 5 – 6 | Very important |
| Because:<br>(If you suddenly cannot think of anything, feel free to leave it empty) |                       |                |

**5. If the company is a research company: Could you summarize the main research and/or innovation area of your company in one easily understandable sentence?  
If the company is not a research company: Can you summarize the last innovation implemented in your company in one easily understandable sentence?**

|   |                       |                                   |
|---|-----------------------|-----------------------------------|
| I could not do it   | 1 – 2 – 3 – 4 – 5 – 6 | I could do it without any problem |
| This area in an easily understandable sentence is the following:<br>(If you suddenly cannot think of anything, feel free to leave it empty) |                       |                                   |

**6. If you have a degree in**

- a. **natural sciences: Is it important to involve social science aspects (sociology, psychology, philosophy, ethics, etc.) in your work?**
- b. **social sciences: Is it important to acquire natural science knowledge (chemistry, physics, mathematics, biology, life science, etc.) in your work?**

|   |                       |                |
|---|-----------------------|----------------|
| Irrelevant  | 1 – 2 – 3 – 4 – 5 – 6 | Very important |
| Because:<br>(If you suddenly cannot think of anything, feel free to leave it empty) |                       |                |

**7. If you have a degree in**

- a. **natural sciences: Does it make a sense to involve social scientists in research activities/innovation processes of your company?**
- b. **social sciences: Does it make a sense to involve natural scientists in research activities/innovation processes of your company?**

|   |                       |                |
|---|-----------------------|----------------|
| It makes no sense   | 1 – 2 – 3 – 4 – 5 – 6 | Very important |
| Because:<br>(If you suddenly cannot think of anything, feel free to leave it empty) |                       |                |

**8. Is it important to involve environmental aspects into the research/innovation process of your company?**

|   |                       |                |
|---|-----------------------|----------------|
| Irrelevant  | 1 – 2 – 3 – 4 – 5 – 6 | Very important |
| Because:<br>(If you suddenly cannot think of anything, feel free to leave it empty) |                       |                |

**9. If you have a degree in**

- a. **natural sciences: Is it important to involve social aspects into research/innovation process of your company?**
- b. **social sciences: Is it important to involve natural science aspects into research/innovation process of your company?**

|   |                       |            |
|---|-----------------------|------------|
| Not at all  | 1 – 2 – 3 – 4 – 5 – 6 | Completely |
| Because:<br>(If you suddenly cannot think of anything, feel free to leave it empty) |                       |            |

**10. Is it important to involve economic aspects into the research/innovation process in your company?**

|  |                       |            |
|--|-----------------------|------------|
| Not at all   | 1 – 2 – 3 – 4 – 5 – 6 | Completely |
| <p>Because:<br/>If you suddenly cannot think of anything, feel free to leave it empty ()</p> |                       |            |

**11. Is it important to involve ethical aspects into the research/innovation process in your company?**

|   |                       |            |
|---|-----------------------|------------|
| Not at all  | 1 – 2 – 3 – 4 – 5 – 6 | Completely |
| <p>Because:<br/>(If you suddenly cannot think of anything, feel free to leave it empty)</p> |                       |            |

**12. Can social, economic, ethical, and environmental aspects influence the R&D&I process in your company?**

|   |                       |            |
|---|-----------------------|------------|
| Not at all  | 1 – 2 – 3 – 4 – 5 – 6 | Completely |
| <p>Because:<br/>(If you suddenly cannot think of anything, feel free to leave it empty)</p> |                       |            |

**13. Would it be useful to integrate social, economic, and ethical aspects into the R&D&I process of your company?**

|  |                       |            |
|--|-----------------------|------------|
| Not at all   | 1 – 2 – 3 – 4 – 5 – 6 | Completely |
| <p>Because:<br/>If you suddenly cannot think of anything, feel free to leave it empty ()</p> |                       |            |

**14. Does it have any sense to improve the abilities of a research group to consider social, economic, environmental, and ethical aspects during the whole research in your company?**

|   |                       |            |
|---|-----------------------|------------|
| Not at all  | 1 – 2 – 3 – 4 – 5 – 6 | Completely |
| <p>Because:<br/>(If you suddenly cannot think of anything, feel free to leave it empty)</p> |                       |            |

**15. In your opinion, what makes the research/innovation responsible?**

(If you suddenly cannot think of anything, feel free to leave it empty)

**16. How responsible do you consider yourself?**

| Not at all  | 1 – 2 – 3 – 4 – 5 – 6 | Completely |
|---|-----------------------|------------|
| Because:<br>(If you suddenly cannot think of anything, feel free to leave it empty) |                       |            |

