JERRI

Monitoring and evaluation concept

Deliverable 8.1

ethics

science & education

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gender

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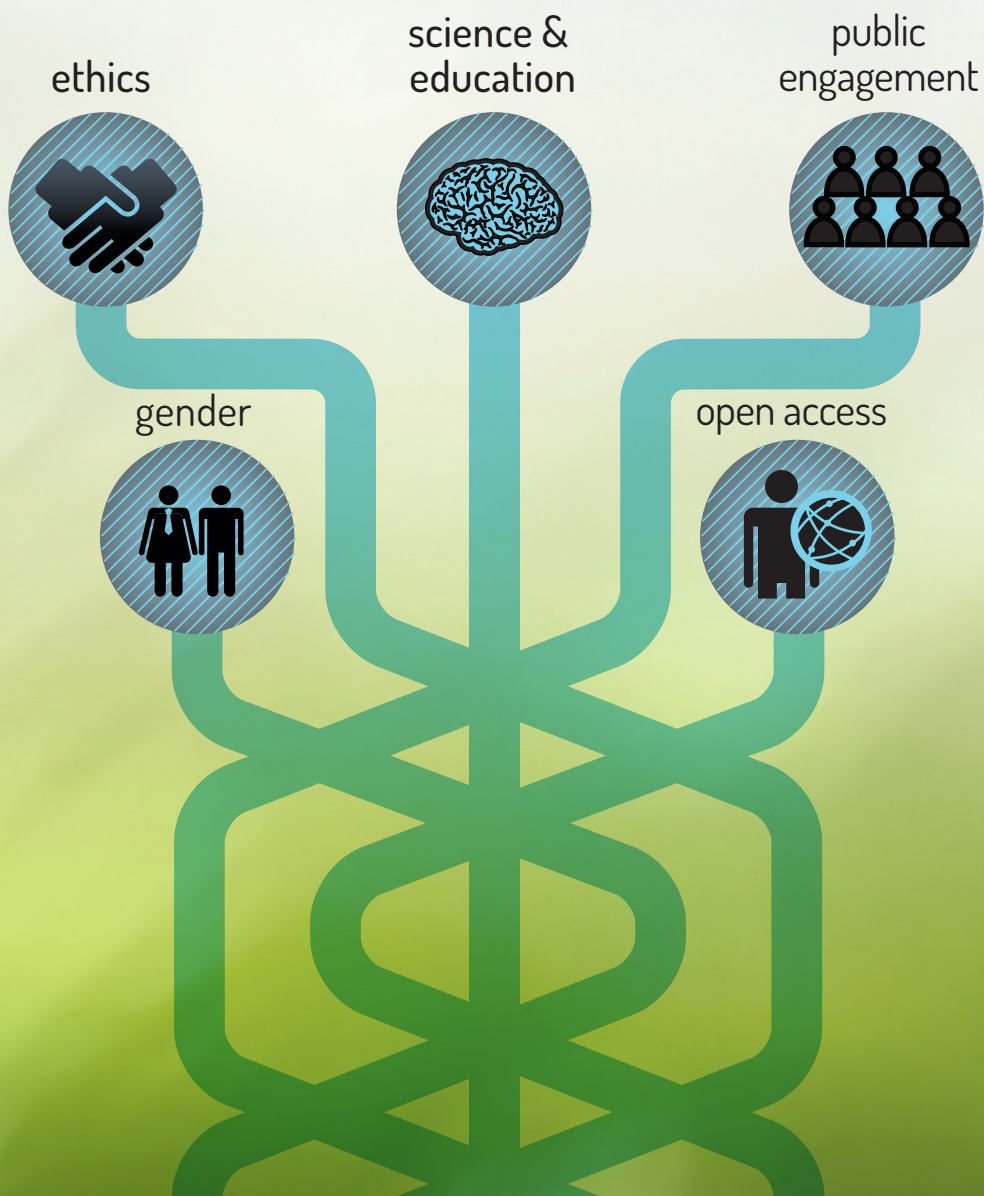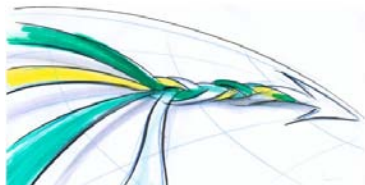
JERRI – Joining Efforts for Responsible Research and Innovation

Deliverable D8.1

Monitoring and evaluation concept

Project Name	Joining Efforts for Responsible Research and Innovation (JERRI)
Project No.	709747
Project Type	Coordination and Support Action
Project Duration	01/06/2016 – 31/05/2019 (36 months)
Project Coordinator	Benjamin Teufel, Fraunhofer ISI
Funded under	Call ISSI-5-2015
Work Package	WP 8 Monitoring
Deliverable	D8.1: Monitoring and evaluation concept
Planned Date	Month 6 (November 2016)
Actual Submission	30/11/2016
Version	Final
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Joining Efforts for Responsible Research and Innovation (JERRI)

Work Package 8 Monitoring

Deliverable D8.1: Monitoring and evaluation concept

Submission date: 30.11.2016

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Content

1 About this deliverable

JERRI Deliverable D8.1 describes the monitoring and evaluation concept which will be used in implementing JERRI WP8 "Monitoring". The monitoring and evaluation concept outlined in this deliverable has been developed in dialogue with the main involved actors at FhG and TNO. In the process of designing the monitoring and evaluation concept outlined, they had several opportunities to suggest improvements and modifications. A first draft design was shared with the consortium in M2 as well as presented and discussed at the official kick-off meeting in September 2016. In several telephone conferences the monitoring and evaluation approach was further discussed and aligned to the organisational contexts and limitations of FhG and TNO as well as the JERRI project architecture.

D8.1 builds on the description of work and further develops and details the purpose, objectives, approaches, methods, and working processes of the monitoring and evaluation activities. Several changes have been necessary in order to further align the monitoring and evaluation processes to the situations at and organisational frameworks of FhG and TNO, e.g. language barriers, the handling of sensitive matters, or the access to certain groups within the organisations. Furthermore, the final design considers the organisational structures of these Research and Technology Organisations (RTOs) stronger. The deliverable addresses and justifies the modifications of aspects outlined in the JERRI project proposal.

First, the deliverable describes the purpose and objectives of JERRI WP8 in general. It deals with why and how WP8 is embedded in the JERRI project and what contribution it will make to the overall project.

Then, second, the approaches and methods to achieve the identified objectives are presented. WP8 will use a combination of different methods to deal with different JERRI activities and to tackle the diverse objectives and levels of the evaluation. The quality of the design and implementation of activities will be assessed using several types of evaluation criteria, which will be outlined in the respective chapter.

Third, the concrete activities and levels of evaluation are presented along the different work packages, as well as the communication strategies between the consortium partners for WP8.

Finally, this D8.1 will present the modes of interaction and will give an overview of the WP8 activities in a detailed time schedule.

2 Purpose and objectives of JERRI WP8

The JERRI project wants to initiate and navigate a process to further institutionalise Responsible Research and Innovation (RRI) at the German Fraunhofer Gesellschaft (FhG) and the Netherlands Organisation for Applied Scientific Research (TNO), the two largest European Research and Technology Organisations (RTOs). This process is set up as a mutual learning process, not only within and between FhG and TNO, but also between these two and other RTOs as well as European R&I stakeholder groups. By this, not only FhG and TNO should be steered towards more RRI, but also other organisations and actors in different R&I areas.

To reach these objectives, FhG and TNO design and implement various activities supported by the University of Manchester (UNIMAN). In short, they identify the state of the art on RRI-related activities in their respective organisations and develop a basic concept of deep-institutionalisation of RRI (WP1), develop organisational RRI goals (WP2 and WP3), identify and analyse organisational barriers and possible solutions to deal with these barriers (WP4 and WP5), and implement RRI practices as pilot cases within their organisations (WP6 and WP7). To facilitate mutual learning, they disseminate their findings and try to upscale practices in an international environment (WP10), and do research on the RRI strategies and practices at other international research organisations (WP9).

In WP 8, the Institute for Advanced Studies (IHS) will monitor and evaluate these different steps and project activities conducted by the JERRI project partners. Considering that FhG and TNO are big R&I organisations that handle sensitive information, IHS will not only comply with data security and confidentiality before and during implementation of WP8, but also share its preliminary insights with other consortium members in every consortium meeting. Since the project deliverables (D8.2, 8.3, 8.4) will become publicly available later on, IHS gives FhG, TNO and UniMan the possibility to comment and point out possible sensitive or confidential information. For that purpose, IHS will send out the draft deliverables to the consortium partners one month before submission to initiate an approval process, giving them three week to react.

WP8 has several purposes and objectives in the different steps of the project which will be accomplished using different evaluation approaches.

On the one hand, a **formative evaluation** aims to support the improvement of the ongoing JERRI working processes by monitoring the project's activities and opening up a critical yet constructive outside perspective. This outside perspective is brought in by the IHS team, which is not part of the RTOs which should undergo institutional change and is therefore not part of the team that is responsible for initiating and steering this change process within the institutions. Still, as part of the JERRI consortium, IHS will gain specific insights necessary for the evaluation of the change process.

In doing so, WP8 will provide information and orientation to the JERRI consortium that will support the overall quality of the different research and RRI activities, their design, their implementation, their output, and their outcomes on different levels. The formative evaluation is accompanying JERRI activities in the different work packages and will especially look at the process of the project. Learning from the results, identifying strengths and weaknesses, and improving/adapting activities and design during the ongoing project if necessary is the idea of such an evaluation (Fteval, 2012; Patton, 1980, 1987) – thus regularly playing back results to the other project partners.

For this purpose, WP8 will assess if and how FhG and TNO manage to implement the activities outlined in the description of work and especially if the JERRI project itself lives up to the commonly shared "standards" of RRI. It will consider if and how well development processes and the action plans incorporate the key principles as well as the concept of deep institutionalisation of RRI as developed in D1.1. One important part of these principles IHS will assess is the co-development process, including stakeholders from within FhG and TNO and from outside, and its openness, both in terms of content (Is it possible to raise issues and are concerns sufficiently answered to?) and in terms of process (How and how far are these stakeholders involved in the development of activities?). WP8 will collect different types of data and material in close collaboration with the other consortium partners and analyse them thoroughly. Based on this analysis, WP8 will make suggestions on how to adapt or refine the design of upcoming tasks, work packages, or the overall workflow of the JERRI project at different stages.

While the formative evaluation will assess the JERRI project on a process level, WP8 will also conduct a **summative evaluation** of different JERRI activities analysing their main outputs and their outcome. Summative evaluations aim to assess effectivity, efficiency, goal attainment, impact, intended and not intended effects of the subject under study on a more comprehensive level – in short, summarising and evaluating the project's achievements and performance (Fitz-Gibbon & Morris, 1987; Fteval, 2012). Summative evaluation will take place particularly towards the end of the project, when WP8 will analyse the overall outcome of JERRI in the participating institutions and beyond (internationalisation and mutual learning).

On the one hand, WP8 aims to conclusively assess if the JERRI project consortium successfully implemented all tasks identified in the description of work and other guiding documents. However, even more important, on the other hand, WP8 will investigate the outcomes of individual JERRI activities on different levels (participants, groups, organisations, etc.). Thus, WP8 will especially consider the overall purpose of JERRI to promote institutional change towards RRI but at the same time will be open to identify and analyse (unintended) effects related to other organisational aspects and/or affecting different stakeholder groups within and outside the participating RTOs.

While the formative evaluation will focus on some immediate outcomes of the different activities (e.g. workshops) and workpackages, and thus provide information and suggestions on how to improve further steps in the ongoing project, the summative evaluation will identify short-termed[1] outcomes of activities and the overall JERRI project.

Table 1 Evaluation criteria in the JERRI project

Level of evaluation	Kind of evaluation	Quality dimensions to be assessed
Input	formative	• quality of research methods and process designs (clarity, transparency, appropriateness, etc.) • extent to which methods and processes align to widely shared RRI "standards" • contribution to further processes and activities (appropriateness for defined purpose, audience, etc.)
Processes and activities	formative	• implementation according to design (input) with appropriate flexibility considering circumstances • quality of research methods and processes • extent to which methods and processes de-facto align to widely shared RRI "standards" • integration of different activities, tasks and WPs
Outputs	formative and summative	• extent to which the outputs (e.g. goals, action plans) align to widely shared RRI "standards" • contribution to the next project steps and the overall goal of deep institutionalisation • quality of research methods and process designs (clarity, transparency, appropriateness) • correspondence to the description of work
Outcomes (short-term)	summative	• actual promotion of institutional change towards RRI (intended effect) / "success" of the pilots • unintended effects

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[1] Since JERRI WP8 will be finished shortly after the end of the project's main activities (M36), it will not be possible to identify and analyse the wider (long-term) impacts since those need time to unfold and spread. It can though focus on short-term qualitative effects of the JERRI projects and give ideas and evidence for further institutionalisation and implementation of RRI (see also Kaufmann et al., 2014).

3 WP8 monitoring and evaluation approach and methods

WP8 will monitor and evaluate the JERRI project, implementing a formative and a summative evaluation approach (see chapter 2). It will focus on different levels of the project, collecting and analysing a variety of data using different methods, and assessing them by means of specific criteria. Since the process of identifying goals and barriers as well as an action plan for RRI is not finally defined (November 2016), the type and characteristics of the JERRI pilot activities at FhG and TNO are not yet entirely clear. Thus, the concrete methods to evaluate their processes, outputs, and outcomes can only be identified and adapted with the progress of the JERRI project – as is the nature of accompanying evaluations (Kaufmann et al., 2014).

3.1 Levels of evaluation

JERRI aims to reach its objective of initiating and navigating a process of institutional development towards RRI in FhG, TNO, and beyond by implementing interrelated activities of different kind. These different activities work towards individual objectives which should in combination yield institutional change in support of RRI. Thus, when looking at the JERRI project, in terms of processes and activities two levels can be separated through applying different perspectives: On the one hand, the JERRI project as an overarching process working towards the goal of institutionalisation of RRI – which is subject of the summative evaluation. On the other hand, different WPs, tasks, sub-tasks, and concrete activities which are part of this overarching process are evaluated in a formative assessment. The following identification of input, process/activity, output, and outcome will be applied to both, to the project level as well as to the level of individual activities within the JERRI project.

It is to note that outputs and inputs are often closely related since the outputs of certain WPs or tasks constitute the inputs for others. This double role will be considered when evaluating an output: it will be put in the broader project perspective and its suitability as an input for another task will be assessed. Different JERRI activities produce inputs to subsequent activities. In workshops, through interviews, and conceptual work best practices of RRI institutionalisation will be identified, and RRI goals for FhG and TNO will be co-developed with stakeholders as well as RRI action plans.

Going deeper into the evaluation, WP8 monitors and assesses the activities in the JERRI project in these different categories. It will investigate and assess the design (input level) and implementation of the JERRI activities (process level), their different results and outputs (output level), as well as the direct and wider effects of these activities and outputs in various areas (outcome level). These categories are often not clearly distinct and depending on the progress of the project, certain objects will change from one category to another (e.g. an output of one activity becoming the input of another one); WP8 will consider these intersections and

transitions. Despite this issue, it is important to clearly define which element is considered as input, process, output, or outcome in different circumstances (see Table 1).

On all of these levels, the JERRI project manifests itself and becomes tangible in different forms. These "manifestations" are the objects to be considered by WP8. Some of them are the direct results of activities by the JERRI consortium developing and implementing RRI strategies and means at FhG and TNO, e.g. internal reports and documentations of activities such as interviews or workshops, and project deliverables. Others have to be brought to light by empirical investigation by the WP8 team using different methods including (participant) observations, qualitative interviews, or surveys. For example, WP8 wants to investigate the perception of the stakeholders involved in the JERRI development process, analysing how they assess their participation and possibility to steer the further progress (clarity of their role, transparency of the process, openness of discussions, etc.).

On the project level, JERRI as a whole is seen as an activity promoting RRI institutionalisation within RTOs and the summative evaluation will analyse its output (workshops, governance measures, etc.) as well as the intended and unintended effects on the participating RTOs. Especially the contribution of the pilot cases to the overall promotion of RRI in the institutions is seen as crucial and will be considered here.

3.1.1 Input

The input provided by the JERRI consortium members in different tasks plays a vital role in the progress and success of different JERRI activities. The input is important, both for research (e.g. identification of good practices of RRI institutionalisation in WP1) and development activities (e.g. goal development workshops in WP2 and WP3) as well for the implementation of concrete measures to support RRI institutionalisation (WP6 and WP7). Only if the quality of the input, the employed research methods, and process designs are appropriate, the methods and processes align to widely shared RRI "standards", and the contribution to further project steps is clear, the project can be successful.

Depending on the considered activity and area, inputs can be of different forms:

For the conduction of **interviews** (e.g. in WP1 or WP9), an important input is the overall interview setup including selection criteria for interviewees, the selection process, structure and topics of interview guidelines/questionnaires, the formulation of questions within these guidelines as well as the mode of analysis of these interviews.

For the various **stakeholder workshops** (e.g. in WP2 to WP5, WP9, and WP10) the workshop designs, each comprised of a workshop programme/structure, criteria for participants selection, and selection process or participatory methods used, are in this regard conceived as a vital input.

In the setup of the **pilot cases** at FhG and TNO (WP7 and WP8), outputs deriving from different preceding activities will merge and come together as input, forming the core activity of the JERRI project.

3.1.2 Processes and activities

As outlined in the description of work and other working documents and deliverables, JERRI will implement several work packages with specific objectives, which are again separated in tasks comprised of certain concrete activities. Examples of JERRI activities are interviews (e.g. in WP9), stakeholder workshops (e.g. in WP2 to WP5) and yet undefined pilot activities at FhG and TNO (WP6 and WP7).

Especially for the formative evaluation these individual activities are crucial. In order to be able to provide information on how to improve the overall JERRI project and upcoming tasks, it is necessary to take a close look at how the activities are implemented by the JERRI consortium partners in the first place. This means, the quality of employed research methods and processes, the extent to which methods and processes align to widely shared RRI "standards" and the overall process integration of different activities, tasks, and WPs will be assessed.

Although it is possible to make some recommendations based on the above described inputs to these activities, it is important to also look at how these workshop designs, interview guidelines, etc. unfold in a given social situation constituted by i.a. the coordinators of these activities, other invited, involved and/or affected actors, as well as the given institutional settings.

3.1.3 Outputs

The different activities of JERRI, such as workshops or empirical research processes, will produce manifold outputs of different format and substance.

Interviews and stakeholder workshops, despite their varying content, will be tangible as documentation or protocols and will further be processed and analysed in official deliverables (and from time to time in internal notes). Depending on the objective of the activity, the outputs will be (respectively for each RRI dimensions and involved RTO) good practice examples, identified goals of RRI institutionalisation, organisational barriers, transformative action plans, or experiences from the implementation of the RRI pilots.

WP8 will not only identify if an activity yielded some sort of concrete output, but will take a closer look at the consideration of RRI aspects within the output and how they came into being, assessing the quality of employed research methods and process designs, contribution to next project steps or the overall goal of deep institutionalisation, and the correspondence to the description of work.

Furthermore, as mentioned before, the double role of outputs of one activity as an input for subsequent activity will be thoroughly considered in the formative evaluation. WP8 will try to

identify the effects of individual activities on subsequent steps and activities. Thus, it will try to assess if the output of certain activities has a concrete effect on the further progress of the project. It is of interest if the bottom-up process of co-developing RRI goals and RRI action plans as well as the identification of organisational barriers together with stakeholders within FhG and TNO are taken seriously and if their voices matter and are considered in the design and actual implementation of further activities.

3.1.4 Outcomes

In the summative evaluation, WP8 will identify and analyse how JERRI affected the organisational strategies, attitudes of involved or affected people, and possibly even structures or practices of FhG and TNO as well as other RTOs through mutual learning processes, if and how an institutionalisation of RRI took place or has been initialised. Thus, it will also look at unintended effects of the JERRI projects on different levels (individual, organisational). As mentioned above, since the evaluation will conclude with the end of the JERRI project activities, long-term impacts cannot be assessed. Short-term qualitative effects and first ideas and evidence for further institutionalisation and implementation of RRI can be collected nonetheless.

3.2 Types of data and data collection

In order to reach its objectives, WP8 has to collect different types of data, which then will be analysed in order to draw conclusions useful for the further JERRI progress (formative evaluation) or to determine the effects and outcomes of the JERRI activities (summative evaluation).

The different types of information and data used in WP8 can be distinguished by the way of collecting/producing them. WP8 will draw on information produced by the JERRI consortium in different WPs to fulfil various tasks (secondary data). These include:

- Working documents such as workshop design papers (designs and programmes, stakeholder recruitment documents), guidelines for interviews (recruitment documents, interview guidelines), internal notes or reports, documentation of workshop and other activities, etc.
- Official JERRI deliverables (draft and final versions).
- Data produced by the organisations but outside the JERRI project (annual reports, company newsletters, strategy documents).
- Routinely collected data by FhG and TNO (number of JERRI homepage visits, JERRI related tweets, number of downloads of JERRI papers, etc.).
- External documents/articles relevant in the development process (e.g. key papers considered as good practices).

In order to be able to obtain and use this data for formative as well as summative evaluation, the close and timely collaboration of FhG, TNO, and IHS is of utmost importance. The IHS team will

routinely connect with the responsible JERRI actors at FhG and TNO and ask for the provision of these different documents and data. By doing so, IHS will comply with all measures in place with regards to intellectual property rights, data security, and privacy. If certain documents cannot be provided by FhG or TNO due to security or other reasons, IHS will ask them to justify their decision. Then, IHS will try to find a reasonable and viable way together with the organisations and actors involved to get the necessary information in another way without compromising data protection and confidentiality. All data collection, processing and storage measures will be in line with Deliverables D12.1 H – Requirement No 1 and D12.2 POPD – Requirement No 2.

Besides these existing documents and data, WP8 will produce and collect primary data itself. Triangulation of qualitative and quantitative methods will be used in order to enhance the quality of gathered data and analysis, and to collect more comprehensive and precise information (Fteval 2012). WP8 will conduct:

- Qualitative interviews with JERRI consortium members responsible for certain tasks as well as with stakeholders within FhG and TNO participating in JERRI workshops and other activities, and actors possibly affected by the JERRI activities. Conducting qualitative interviews aims to assess complex interdependencies and identification of context factors and conditions within the project (Fteval, 2012).
- (Participant) observations at consortium meetings, workshops, and other stakeholder activities within FhG and TNO. This especially aims at evaluating work processes and integration of tasks inside the project (Fteval, 2012).
- Several quantitative surveys via online or paper questionnaires. This aims at gathering a broader data basis and supports conducting the summative evaluation of change processes (Fteval, 2012).

The concrete design of the data collection, including its purpose and scope, will be defined and adjusted according to the different work packages (see chapter 4) and according to the design of key characteristics of the JERRI activities to promote RRI as soon as they are determined.

In the process of developing the JERRI evaluation design and discussing it with the other consortium members, it became apparent that due to confidentiality and company secrecy issues as well as due to language barriers it will not be possible for the core evaluation team (IHS) to conduct all of the above mentioned data collection measures themselves in workshops, internal meetings, or interviews. In such cases, the evaluation team will develop simple data collection instruments in consultation with the involved JERRI partners who will then have to use these instruments to collect necessary data themselves, translate them and share them with the evaluation team. For example, IHS will develop a protocol template for stakeholder workshops, which will be filled out by the organising team of the workshops, as well as a short questionnaire to be filled out by the workshop participants.

3.3 Data analysis

The qualitative and quantitative data collected by different efforts will be analysed applying appropriate social scientific data analysis and interpretation methods and supported by using specific software.

In interpreting the findings, it is important to consider the framework conditions and/or external influences of the object analysed. For example, when analysing the outcome of a JERRI activity on gender equality, it will be necessary to also take wider organisational or regulatory change into account, which might have affected their implementation as well as their results.

3.3.1 Qualitative interviews and participant observations

Depending on the interviewee and purpose of the interview, the interview will be fully or partially transcribed or the key information will be extracted using a predefined analysis sheet, which will be developed for each particular purpose.

Transcribing an interview is particularly important if the analysis focuses on the interviewees' subjective perceptions and assessments of JERRI activities, their understanding of RRI or basic assumptions, and knowledge leading to a certain position. In order to be able to provide an in-depth analysis of such issues a verbatim transcript is necessary; the costs for interview transcription are considered in the JERRI budget. Other more descriptive (parts of) interviews and analysis, e.g. focusing on the progress of past, ongoing, or planned JERRI activities, do not need full transcripts. The decision for/against full transcripts will be made case-related.

All interview transcripts will be anonymised. Full transcripts will not be publicly accessible and not be shared with JERRI consortium members or other members of the participating organisations (FhG, TNO) in order to protect the privacy of the interviewees and to make it possible for them to freely express their opinion without fearing any negative effects. Only excerpts of the interviews will be cited in the presentation of findings.

During participant observations, IHS members on site will take notes and afterwards draft memory minutes. These will then be merged in a systematic observation protocol. Such a protocol will comprise a description of the design and unfolding of the observed event/activity, group dynamics, progression of discussions (including key quotations and themes), etc.

Themes in the interview transcripts and participant observation protocols then will be coded using ATLAS.ti software for qualitative data analysis. In this context, coding is understood as identifying the underlying theme of a text passage and assigning it to a specific category (Schmidt, 2007). These analytical categories are, on the one hand, based on the aspects of interest as defined by the guiding questions of the interviews and, on the other hand, (further) developed through intensive reading and first analysis of the qualitative data. Through this approach it is also possible to capture unexpected topics and issues but without starting from

scratch as with other highly open interpretative methods. It also allows for some flexibility because it does not apply one set of predefined categories to different materials; thus it is possible to consider the topical variety in-between interviews. After coding the material, key categories across interviews will be identified. Interviews will be contrasted and differences as well as similarities analysed.

3.3.2 Quantitative survey

Before using quantitative survey data, data cleansing will be conducted, e.g. by removing grossly incomplete datasets. Depending on the format of the survey[2] (online or paper questionnaire) it will be necessary to first digitalise the collected data.

Reoccurring answers to (semi-) open questions within the questionnaire will be categorised and thus made usable for statistical analysis.

Analysis will be conducted using SPSS Statistics. Statistical analysis will mainly be descriptive. However, the concrete methods of analysis will be selected depending on the concrete design of the survey(s), which will be further elaborated once the concrete characteristics of the JERRI activities are settled.

3.4 Evaluation criteria

In evaluating JERRI, especially with regards to the formative evaluation, WP8 will apply several different types of evaluation criteria in order to assess the quality of the JERRI input, activities, output, and outcomes. By doing so, WP8 does not aim to "grade" the work done by the JERRI consortium, but to make the reason for certain improvement recommendations transparent.

First, WP8 will assess if the WPs, tasks, and activities conducted correspond to the JERRI description of work as well as to internal design documents, including conceptual papers, workshop design, interview guidelines, etc., and if not, if the divergence is sufficiently justified.

Second, WP8 will evaluate if and how activities are conducted in a way that conforms to basic principles of RRI[3], considering the given situation including available resources and possible barriers. WP8 will especially assess if different JERRI activities (workshops, etc.) and different JERRI steps (e.g. goal development) are appropriately transparent and open in terms of content as well as agency: Are there possibilities for different stakeholders to participate (inclusiveness)? Is it possible to freely raise and discuss different issues (openness)? Are activities open-ended/unbiased to the results or are they steered in one or another direction

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[2] This again depends on the context in which the respective survey is used (e.g. on site before/after a JERRI activity or independent of a specific time/location).
[3] One reference point in this regard is the "Responsibility Navigator" developed by the Res-AGorA project (http://res-agora.eu/news/res-agora-responsibility-navigator/). For example, some of the ten "governance principles" identified by this (e.g. principles to "ensure quality of interaction") fit the purpose of evaluating workshop activities.

(non-directivity)? This applies to the input level (e.g. data collection instruments, workshop designs, etc.), to the activity implementation level (e.g. openness of moderation and discussion) as well as to the output level (e.g. consideration of all different insights).

Third, WP8 will evaluate the quality of research methods and processes of the JERRI activities and their results. WP8 will analyse the official deliverables concerning their clarity and comprehensibility, if basic assumptions are declared, and if facts and results presented have a sound empirical basis.

Fourth, WP8 will assess the outcomes of the JERRI project regarding the actual promotion of institutional change towards RRI (intended effect) / "success" of the pilots as well as unintended effects.

Although the summative evaluation will of course assess if the JERRI project followed its own project design and tried to reach all of its objectives, it will focus on the outcomes of the JERRI activities and the project as a whole in a very open way.

4 Implementation: considered levels and activities per work package

Table 2 gives a preliminary overview of the different objects across work packages assessed in the monitoring and evaluation process. Due to the ongoing development process, further elements will be added as with JERRI's progress.

Table 2 Evaluation objects per work package

	Input	Process	Output	Outcome
WP1 State of the art	Interview guidelines	Interviews, stakeholder workshops	Interview protocols/reports, Deliverables D1.1, D1.2	Uptake of concept in further design process
WP2 and WP3 Development of RRI goals	Workshop design (selection/invitation of stakeholders, programme, etc.)	Stakeholder workshops	Deliverables D2.1, D2.2, D3.1, D3.2: RRI goals for FhG and TNO	Use of goals as input for action plan
WP4 and WP5 RRI action plans	Interview guidelines, Workshop design	Interviews, stakeholder workshops	Deliverables D4.1, D4.2, D5.1, D5.2: Barriers, action plan	Consideration of barriers in action plan
WP6 and WP7 Implementation process	Goals and action plans described in Deliverables D1.1, D1.2, D2.1, D2.2, D3.1, D3.2, D4.1, D4.2, D5.1, D5.2: State of the art, identified goals, barriers, action plan	RRI activities at FhG and TNO	Depends on the actual RRI activities; Deliverables 6.1/7.1 and 6.2/7.2	"Success" of the pilots/the actual promotion of institutional change towards RRI (intended effects)
WP9 International mutual learning process	Interview guidelines, workshop design	Interviews, Workshops	Case studies, Deliverables D9.1, D9.2, D9.3	Mutual learning

WP10 Multi-Level Learning and Upscaling	Exchange workshop design, results of other WPs	Project internal and external exchange workshops	Deliverables D10.1 to 10.5, lessons learned and good practices	Usefulness of results for other RTOs

As mentioned above, the concrete evaluation objects to look at on input, process, output, and outcome level have to be partly identified and adapted with the progress of the JERRI project due to the open development process of the project.

4.1 WP1 State of the art

WP1 aims to identify existing good practices inside and outside Europe via desk research and interviews. In addition, a common understanding of RRI and the conceptual state of the art on the deep institutionalisation of RRI will be developed further. Based on the EC concept of the RRI key dimensions but also relying on further approaches, the concept will be adapted to RTOs, and additional cross-cutting features of RRI will be incorporated.

WP8 will evaluate the identification of good RRI practices and the state of the art in the two institutions (D1.1). For this purpose, the process of identifying those good practices will be looked at: interview guidelines, selection criteria for interview partners and of good practices. The results portrayed in D1.1 will be assessed according to their scientific standards.

Regarding the concept of deep institutionalisation of RRI, WP8 will look on the employed research approach. It will also assess how the concept is reflected in the stakeholder workshops, as well as the uptake of the concept in further processes of the project.

Activities of WP8 in the evaluation of WP1:

- Check of interview guidelines and selection criteria of interview partners.
- Assessment of D1.1 (M4) and D1.2 (M6).
- Check of selection criteria for good practices.
- Analysis of collected data and description of interim results.
- Assessment of update of D1.2 (M24).

4.2 WP2 and WP3 Development of RRI goals

WP2 and WP3 are dedicated to the stakeholder-based development of the organisation-specific goals that will guide the development and institutionalisation of RRI at FhG and TNO. In each of the five key dimensions mentioned in the call, a workshop will be carried out with stakeholders within FhG and TNO respectively for further demand specification, vision development and goal formulation.

WP8 will look at which goals are developed for the participating organisations and how this happens. The concept for organisational RRI goal development will be carefully considered and will later be compared to the outcome of goal development. It will be analysed which stakeholder groups are included in the workshops and if all relevant groups are addressed, as well as how open the debate is for the views of the participants. Furthermore, the process and results of the stakeholder workshops will be evaluated. If possible, IHS will participate in some of the workshops. Where this is not possible (e.g. due to language barriers) or not desired (e.g. due to organisational concerns regarding data protection or the openness of the debate), workshop facilitators will be asked to fill in a template in order to understand the processes taking place. Additionally, interviews with the persons responsible for the goal development process will be carried out face to face or by telephone. A central question is if the goal development process and the goals itself correspond to basic RRI principles.

Finally, the deliverables of both organisations will be analysed. In the first deliverable (D2.1, respectively D3.1), planned methods and procedures of goal development will be assessed (M9). This includes workshop methods for the stakeholder-based identification of demands, vision development, and goal formulation of each RRI dimension. Furthermore, the contingencies of the good practices identified in WP1 and the organisational specifities, as well as the alignment of the concepts between the two organisations (FhG and TNO). Deliverable 2.2/3.2 contains a definition of the RRI goals for each RRI dimension specified by each organisation, and the related demands, expectations, and visions. IHS will assess these goals regarding the aforementioned questions.

Activities of WP8 in the evaluation of WP2 and WP3:

- Assessment of the concept for goal development.
- Assessment of workshops and other applied methods.
- Participation in stakeholder workshops.
- Interviews with workshop organisers and possibly participating stakeholders.
- Development and analysis of workshop templates.
- Analysis of collected data and description of interim results.
- Assessment of deliverables (D2.1, D2.2, D3.1, D3.2).

4.3 WP4 and WP5 RRI action plans

Based on state-of-the-art theory in organisational behaviour, WP4 and WP5 aim to analyse the organisational barriers with regard to the transition towards the previously defined goals at FhG and TNO. Empirical information will be gathered by qualitative interviews with change agents, e.g. the organisations' employees (stakeholders already involved in WP2 and WP3 and further actors in different institutes, departments, organisational levels). Results will feed into the

stakeholder-/workshop-based development of RRI action plans for each of the five key dimensions.

WP8 will evaluate and accompany the process of the development of action plans at the two organisations. For that purpose, the conceptual definition and empirical identification of institutional barriers and drivers will be looked into, as well as if this logically builds upon the developed concept of deep institutionalisation. The organisation will carry out interviews with change agents and IHS will look into interview guidelines, who is being interviewed and the results, which will be delivered in D4.1.

The development of transformative RRI action plans for each RRI dimension and organisation, their adaption to institutional structures and the way this is done are other points to assess, as well as the translation of the developed RRI goals of WP 2 and 3 into the action plans.

Activities of WP8 in the evaluation of WP4 and WP5:

- Assessment of interviews with change agents.
- Assessment of stakeholder workshops (via template or participation).
- Interviews with workshop organisers and possibly participating stakeholders.
- Analysis of collected data and description of interim results.
- Assessment of deliverables (D4.1, D4.2, D5.1, D5.2).

4.4 WP6 and WP7 Implementation process

In WP6 and WP7, the activities set out in the RRI action plans will be specified and rolled out in a first step. At both FhG and TNO, these work packages involve an extensive engagement of the actors involved (examples: setting out of ethical guidelines, open days to promote societal engagement, establishing an open data repository as well as other adaptations and expansions of technical and information infrastructures). The organisations will implement activities in pilot cases on the different RRI dimensions, which will also be evaluated by IHS.

WP8 will accompany and assess these pilot cases and look at which members and departments of the organisations are addressed or not addressed, and who are the target groups of the activities (inside and outside the organisations). Furthermore, IHS will assess the implementation of the activities and if the implementation reflects the general and specific RRI goals previously defined in WP2 and WP3. Based on evaluation data, IHS will describe the output and outcomes of the activities drawing on the previous work packages of goal setting and action plans (WP2 to WP5).

Not only the pilot cases will be different for every organisation and every dimension – meaning that IHS will have to be flexible in its evaluation of these activities –, but also the access to the involved departments and affected persons. It is intended to conduct quantitative surveys and

qualitative interviews before and after the implementation of the pilot cases in order to determine possible changes. If and to which extend this is possible partly depends on inner-organisational logics and structures and IHS might not be able to conduct evaluation activities in the same depth for all pilot cases and has to adapt to given circumstances.

Activities of WP8 in the evaluation of WP6 and WP7:

- Interviews with responsible persons for pilot cases at each organisation and for each RRI dimension.
- Quantitative survey and interviews with persons affected by pilot cases.
- Observations of pilot case activities such as workshops.
- Analysis of collected data and description of interim results.
- Assessment of deliverables (D6.1, D6.2, D7.1, D7.2) and further documents developed during the implementation stage.

4.5 WP9 International mutual learning process

WP9 will serve to conduct a systematic exchange and analysis of information on international good RRI practices in the form of case studies within the Chinese Academy of Science (CAS) and Arizona State University (ASU). Case studies will be conducted in a two-stage process respectively, with one exchange workshop with representatives of CAS and ASU at the end of the first stage. During the first stage, desk research and interviews will be employed to analyse existing good practices. The second stage is dedicated to a deeper analysis of implementation practices. A second workshop on the results will take place at the project's end.

WP8 will assess the identification and selection of interviewees in the international case studies. Furthermore, the empirical foundation of the cases and their reflection of the aims defined in the project will be considered.

Activities of WP8 in the evaluation of WP9:

- Interviews with case study conductors from FhG after each interview round.
- Participation and observation in two International Mutual Learning workshops.
- Assessment of deliverables including desk research, document analysis, interview synthesis and workshop input (D9.1, D9.2).
- Assessment of final recommendations (D9.3).

4.6 WP10 Multi-Level Learning and Upscaling

In WP10, a systematic mutual exchange between FhG and TNO will be organised: Case-based comparative analyses will be employed to identify lessons learned and good practices from WP1 to WP7. The uptake of these results across further RTOs and similar research organisations across the EU-28 will be initiated. At the beginning of the project, a user board

consisting of similar European RTOs will be established for mutual exchange throughout the project. In addition, the European Association of Research and Technology Organizations (EARTO) will serve as an information channel for further upscaling. Dissemination and upscaling actions will comprise exchange workshops with these bodies as well as further information channels (e.g. a user brief, articles in selected media) to address other RTOs and further RRI stakeholders within the European Research Area.

WP8 will assess how mutual learning between the consortium partners and between the JERRI consortium and other RTOs are organised. For that purpose, design and implementation of exchange workshops will be looked at. Also, the quality of employed research methods and the scientific papers written and published out of WP10 will be evaluated. Regarding the dissemination activities, IHS will compare the dissemination plan (D10.1) and the conducted outreach activities, especially focussing on groups that were actually reached and which other groups should be addressed.

Furthermore, stakeholders of other RTOs and similar research organisations that take part in the user board and in the exchange workshops will be questioned about the usefulness of the project results for the initiation of the uptake of RRI in their respective organisation, also considering the results D10.2 lessons learned and D10.3 good practices.

Activities of WP8 in the evaluation of WP10:

- Assessment and participant observation of exchange workshops (methods, RRI "standards").
- Assessment of quality of research methods and output (scientific papers)
- Assessment of outreach activities
- Interviews with RTO stakeholders
- Assessment of deliverables (D10.1 to 10.5).

5 Modes of interaction

The success of WP8 depends on the close collaboration of all JERRI consortium partners. At the same time it is clear that the other work packages dealing with developing and implementing good RRI practices at FhG and TNO are already challenging. WP8 and its modes of interaction will be designed in a way that makes the exchange between partners and WPs efficient and time-saving without compromising quality.

There are four basic modes of interaction between IHS as responsible partner for WP8 and the other consortium members:

1) IHS will analyse relevant documents and materials produced in other JERRI WPs and comment on them. Therefore, it heavily relies on the early inclusion into the design processes of the different WPs and on having insight into draft versions of JERRI working documents, including interview guidelines and lists of interviewees, workshop programmes, stakeholder lists (selection criteria) as well as draft deliverables (considering RRI aspects). Only if the WP8 team receives these documents in time it will be possible to engage in a dialogue with the responsible partner and to comment on the content (comprehensiveness, quality, suitability, etc.) of these documents, thus possibly improving the processes, output, and outcome of the JERRI project. However, WP8 will only analyse key documents with regards to the further progress of the JERRI project and not every single internal note; the main focus will be on the official project deliverables.

2) IHS will actively collect further data with different qualitative and quantitative methods (participant observation in workshops, qualitative interviews, quantitative survey, etc.). IHS depends on the cooperation of consortium partners and stakeholders and their possibility to openly share the genuine perception of the project and related activities. At the same time, IHS is aware of and will respect security issues and will comply with data protection standards set up in the project.

- The IHS team will conduct interviews with JERRI consortium partners leading and working on different WPs. These interviews aim to gather further information about planned activities that are not included or visible in the documentations (deliverables), e.g. basic assumptions, rationales, expectations regarding the implementation or outcomes, etc. At a later point, after the implementation of these activities, interviews will focus on the consortium partners' assessments of these activities (inputs, process, outputs, and outcomes) and the conclusions they will have drawn from them.
- Furthermore, consortium partners will be asked to establish contact with certain key personnel and stakeholders at TNO and FhG. IHS plans to conduct qualitative interviews with key personnel responsible for (the support of) the implementation of RRI activities

as well as other affected stakeholders. Contact to potential interviewees will be established via Benjamin Teufel at FhG ISI and Joram Nauta at TNO.

3) IHS/WP8 will be present in every consortium meeting, will present preliminary insights and findings on a regular basis, and will get new results first-hand. In this way, a continuous reflection process will give immediate feedback on implemented and upcoming activities and thus enhance the quality of the JERRI efforts.

4) IHS will not only share its preliminary insights with the other consortium members in every consortium meeting, but will also give FhG and TNO the timely possibility to comment on and make suggestions for the WP8 Evaluation reports I & II (D8.2, D8.3) and the Summative Evaluation report (D8.4) before submitting them. This will not affect the neutrality of evaluation and not be an opportunity to steer the evaluation findings in one or another (desired) direction. However, this measure is particularly important to protect company secrecy, maintain confidentiality of specific internal information, and to avoid misrepresentations of the organisations and JERRI activities. The warrant of this possibility is a key measure in order to facilitate trust between the evaluation team and the involved RTOs.

JERRI WP8 will use different common ways of communicating with the other partners, including face to face, e-mail, telephone conferences, or secure voice-over-IP solutions.

5.1 Information needs

There are different kinds of information necessary to be able to implement the formative and summative evaluation of the JERRI project.

- WP8 needs information about the progress and schedule of the different WPs and the individual tasks within them in order to adjust its own time-schedule, thus to be able to collect certain data and to give timely feedback. In order to be able to attend stakeholder workshops (participant observation) or other on-site activities, IHS has to be included in finding a common date or has to be informed about a set date well in advance.
- On the other hand, the JERRI project will produce or collect various types of material that will be another basis for the evaluation of the JERRI efforts and output. Some of these documents have fixed deadlines, e.g. official deliverables. Others are internal documents that are drafted in order to guide the further working process (e.g. case study design, workshop design, selection criteria for interview partners, etc.). WP8 will provide a formative evaluation of draft versions of key materials (especially regarding the consideration of RRI aspects), which can then be included into the final versions by the consortium partners.
  However, to be able to give comments and feedback there needs to be adequate time to read, analyse, and reflect the content. Table 3 indicates the approximate time the IHS team will need to evaluate and respond to different types of material; the indicated

responding time might vary according to the extent of the respective material. The JERRI consortium partners are asked to consider these time periods in their own schedule and to hand in documents in time. For other materials, such as final deliverables or workshop minutes, which do not need immediate reaction but are part of the summative evaluation this time schedule does not apply.

Table 3 Responding time for different types of material for a formative evaluation

Types of material	Necessary responding time (feedback)
Selection criteria for interview partners, for literature and document analysis, workshop participants, etc.	5 working days.
Lists of interview partners, literature and documents for analysis, workshop participants, etc.	5 working days.
Workshop design/concept.	5 working days.
Interview guidelines.	5 working days.
Case study designs, conceptual frameworks.	8 working days.
Draft deliverables.	10–15 working days (depending on the extent).

6 Time schedule

The time schedule of JERRI WP8 is aligned with the overall JERRI time schedule. For the success of WP8, the timing of its own activities according to the JERRI dates and activities, is crucial:

Table 4 Time Schedule WP8

	Project months																																			
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36
Activities of WP8 in WP1	WP1																																			
Check of interview guidelines	▓	▓	▓																																	
Check of selection criteria for interview partners	▓	▓	▓																																	
Check of selection criteria for good practices	▓	▓	▓																																	
Analysis of gathered data (WP1) and description of interim results	▓	▓	▓	▓	▓	▓																														
Assessment of D1.1 and D1.2					D1.1	D.1.2																														
Assessment of update of D1.2																								D1.2												
Activities of WP8 in WP2 and WP3							WP2 and WP3																													
Assessment of the concept for goal development							▓																													
Assessment of WS and other applied methods							▓																													
Participation in stakeholder WSs								▓	▓	▓	▓																									
Interviews with WS organiser									▓	▓	▓																									
Interviews with stakeholders taking part in WS									▓	▓	▓																									
Development and analysis of WS templates								▓	▓	▓	▓	▓	▓	▓																						
Analysis of gathered data (WP2 and WP3) and description of interim results								▓	▓	▓	▓	▓	▓	▓																						
Assessment of D2.1/D3.1 and D.2.2/D3.2									D2.1 D3.1					D2.2 D3.2																						

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	Project months																																			
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36
Activities of WP8 in WP4 and WP5															WP4 and WP5																					
Assessment of interviews with change agents																																				
Assessment of stakeholder WSs																																				
Interviews with workshop organisers																																				
Interviews with stakeholder taking part in WS																																				
Analysis of gathered data (WP4 & WP5) and description of interim results																																				
Assessment of D4.1/D5.1 and D4.2/D5.2																		D4.1 D5.1					D4.2 D5.2													
Activities of WP8 in WP6 and WP7											WP6																									
																								WP7												
Interviews with persons responsible for pilot cases for each RRI dimension																																				
Quantitative survey with people affected by pilot cases																																				
Interviews with people affected by pilot cases																																				
Participatory observation in WS																																				
Assessments of documents developed during the implementation stage																																				
Analysis of gathered data (WP6 and WP7) and description of interim results																																				
Assessment of D6.1/D7.1 and D6.2/D7.2																																	D6.1 D7.1	D6.2 D7.2	

Activity	Project months																																			
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36
Activities in WP8	WP8																																			
						D8.1									D8.2										D8.3											D8.4
Activities of WP8 in WP9																																				
Interviews with case study operators of FhG after 1st and 2nd interview round																																				
Participatory observation in two International Mutual Learning WS																																				
Analysis of gathered data (WP9) and description of interim results																																				
Assessment of D9.1, D9.2 and D9.3								D9.1											D9.2																	D9.3
Activities of WP10	WP10																																			
Assessment of WSs																																				
Assessment of quality of research methods																																				
Assessment of outreach activities																																				
Analysis of gathered data (WP10) and description of interim results																																				
Assessment of D10.1 to D10.5	D10.1					D10.5								D10.2																					D10.3	D10.4

7 Literature

Fitz-Gibbon, C., & Morris, L. L. (1987). *How to design a program evaluation.* Newbury Park/London/New Delhi: Sage.

Fteval (2012). *Research and Technology Policy Evaluation. Evaluation Standards in Research and Technology Policy.* Vienna: Platform Research and Technology Policy Evaluation.

Kaufmann, P., Fischl, I., & Sheikh, S. (2014). *Die Rolle von begleitender Evaluation und Begleitforschung in der FTI-Politik. Eine Bestandsaufnahme* [The role of accompanying evalution and accompanying research in FTI policies]. *Fteval Journal for Research and Technology Policy Evaluation, 40*, 20–26.

Patton, M. Q. (2003). Qualitative Evaluation Checklist. Evaluation Checklist Project. Retrieved 28 November 2016, from http://dmeforpeace.org/sites/default/files/Patton_Qualitative%20Evaluation%20Checklist.pdf

Patton, M. Q. (1991). *How to use qualitative Methods in Evaluation.* Newbury Park/London/New Delhi: Sage.

Patton, M. Q. (1980/1988). *Qualitative Evaluation Methods.* Beverly Hills/London: Sage.

Saldana, J. (2016). *The Coding Manual for Qualitative Researchers.* Third Edition. London/Thousand Oaks/New Delhi/Singapore: Sage.

Schmidt, C. (2007). The Analysis of Semi-structured Interviews. In U. Flick, E. v. Kardoff & I. Steinke (Eds.), *A Companion to Qualitative Research* (pp. 253–258). London/Thousand Oaks/New Delhi/Singapore: Sage.