Promoting Integrity as an Integral Dimension of Excellence in Research

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Tools for research leaders and managers: addressing and stimulating integrity in research organisations

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Introduction and approach

In this report, we will systematically present leadership tools that can be used for organisational integrity work. The motivation is that research integrity is not only a matter of individual researchers and their moral dispositions, but also a matter of leadership (Breit & Forsberg, 2016). The main target group for the tools presented here is managers with a formal administrative and/or professional responsibility for researchers and ongoing research.

We have sought to comprise a selection of accessible and "hands-on" tools that can be used more or less readily by research leaders. The tools have generally been adopted and operationalised from other areas of study. Theoretically, they draw on the model of Scott (1995), which involves three pillars of institutions: regulative (legislative frameworks, protocols etc.), normative (values, expectations) and cognitive (culture, learning).

We argued that successful organisational integrity work it is not only about what types of tools are used, but also how they are used, i.e. how new elements are implemented and received by the researchers in the organisation. Therefore, the tools listed below are not meant to be used as formal blueprints, but rather as points of departure for the research organisations' own development process.

We describe two forms of tools: process tools and content tools. The process tools are *generic tools* for organizational development. The content tools are specific workplace dimensions to be developed, through the use of one or more process tools.

Process tools

We describe three types of process tools: Integrity café, value visioning workshop, and integrity workshop. These are similar in their focus on organizational development and mutual reflection and dialogue, but represent different ways of undertaking it.

- A first *tool is Integrity Café*, which designed to facilitate and stimulate dialogue between different stakeholders, also around cumbersome and potentially sensitive ethical issues. It focuses on creating a safe atmosphere to motivate open conversation and reflection. We list central dimensions in facilitating a café: (a) Set the contexts (e.g. objective), (b) create hospitable space (i.e. safe and inviting), (c) explore questions that matter (i.e. clear, focused, relevant), (d) encourage everyone's contribution, (e) connect diverse perspectives, (f) listen together for patterns and insights, and (g) share collective discoveries. We also provide a concrete list of how to conduct an Integrity café.
- A second tool is *value visioning workshops*. This is a form of team building exercise centered around values and ideals in the organization. It is a way to create visions or imaginaries of the organization (department, research group, etc.) as a value collective and of how it ideally meets challenging situations. An objective of such workshops may be to cultivate (young) researchers' identification with the goals and values of the organization. It involvers using an adequately large number of images, and discussion and reflection about how ideals and virtues connect with the images. We provide a check-list for a facilitator of such workshops,

and emphasize how it should lead to summary statements such as “integrity for us [the organization] means ...”.

- A third tool is *ethics reflection workshops*. The main purposes of such workshops is to raise awareness about research integrity and what it means to be a “good” researcher. Reflection workshops may take different forms, but the central point is that they are crafted in order to facilitate a systematic dialogue and reflection. A range of topics may be discussed, such as forms of dilemma games, concrete cases, or issues brought up by the researchers themselves.

Content tools

In contrast with the process tools which are ‘empty’ methods that need to be filled with specific topics, the content tools refer to specific elements in an organizational infrastructure.

- *Local integrity officer role*. This is a representative that researchers can talk with about issues related to research integrity, such as about ethical challenges, dilemmas, etc. The person should be a member of the research organization, experienced, have a clear mandate and responsibilities, provide low threshold and full confidentiality, and not replace existing formal lines of reporting.
- *Employee appraisal conversations*: This formal dialogue between employer and employee represents a largely untapped opportunity to discuss and raise questions of research ethics/integrity. We suggest adding the following questions: (a) Are there areas tied with the proper conduct of your research in which you feel that you require additional competence or information?, (b) Are there work-related ethical challenges that you would like management support in tackling?, (c) Are there work-related ethical challenges that require organizational responses?
- *Managerial assessments of performance criteria*: Assessments should draw on initiatives such as the Leiden Manifesto for research metrics and the San Francisco Declaration on Research Assessment (DORA), involving alternatives to journal-based metrics for evaluation of researchers’ performance.
- *Ethics guidelines*. Ethical guidelines function as a normative framework for guiding behavior. We give some example of the ethics guidelines, but guidelines must be adapted to the individual organization, preferably in a dialogue process with the whole organization. Management is responsible for ensuring that the guidelines are actively used and materialized in the research practices.
- *Work environment mapping*. Working towards creating a positive work environment can thus help develop a culture of research integrity. Management should be aware of levels of well-being, potential sources of discontent, etc. in order to develop targeted measures. This can be done through (systematic) work environment mapping.
- *Quality assurance system*. There is a risk that many researchers, especially younger researchers, will not have adequate knowledge of research integrity. To minimize risk, a quality system that can identify possible breaches. The quality system may be general but it may also focus specifically on certain risk areas.

1 Introduction

In this report, we will systematically present leadership tools that can be used for organisational integrity work. The motivation is that research integrity is not only a matter of individual researchers and their moral dispositions, but also a matter of leadership (Breit & Forsberg, 2016). Given that research integrity is manifested in the daily lives of researchers, research leaders and managers have a special role in developing and facilitating integrity through managing the research organisations.

In our earlier PRINTEGER work, our level of analysis has thus been on the "work floor" of research. Likewise, the main target group for the tools presented here is managers with a formal administrative and/or professional responsibility for researchers and ongoing research. This may be department or institute managers, research group/team managers and project managers. For our purposes, we will use the term leader and manager interchangeably and focus on tools that have a broader applicability.

A general finding in the project is the potentially important role played by research organisations regarding research integrity and misconduct. More specifically, findings from our multinational survey indicated that issues around workplace satisfaction and identification were related with potential misconduct (Mamelund, Breit, & Forsberg, 2018). In addition, the findings show that there is widespread uncertainty about the existence of organisational policies on research misconduct and integrity, either because these do not exist or are not well-known. Almost half of all respondents report that they do not receive any particular introduction to research integrity. Other PRINTEGER outcomes, such as the Consensus Statement "Working with Research Integrity – Guidance for Research Performing Organisations" (Forsberg et al., 2018), highlight the importance of issues like wise incentive management, having a research integrity ombudsperson and conducting quality assurance.

We use these insights as a primary method of tool selection. This means that we have sought to select tools for research leaders and managers from the area of organisational and workplace development and 'translated' them into the context of research integrity. We have done so by describing the original method and providing an example of how it could be operationalised. The hypothesis, derived from our empirical studies, is that the better research organisations are in organisational development the better likely they are in developing and working with research integrity.

1.1 Our analytical perspective

An underlying theoretical assumption for the managerial tools is that research integrity is not only a located in the minds of individual researchers. Rather it is also a characteristic of organisations, such as research departments, universities, or networks (Palazzo, 2007). Furthermore, it is not a stable trait of organisations but represents ongoing processes in organisations. This means that (organisational) integrity can be developed and nurtured – by managers as well as by the members of the organisation. According to Paine (1994):

> an integrity strategy is characterized by a conception of ethics as a driving force of an enterprise. Ethical values shape the search for opportunities, the design of organizational systems, and the decision-making process used by individuals and groups. […] Above all, organizational ethics is seen as the work of management" (1994: 111).

In a previous conceptual and empirical work in PRINTEGER, we have developed the concept of "organisational integrity work", which we described as "the ongoing organizational activities and strategies associated with developing, repairing and/or maintaining integrity" (Breit & Forsberg, 2016). The work has drawn on the theoretical model of Scott (1995), involving three pillars of institutions (i.e. of repeated and institutionalised patterns of behaviour): regulative, normative and cognitive pillar. The regulative pillar is about mandates, legislative frameworks, governance systems, protocols, standards, etc. The normative pillar is about values, expectations, authority systems, conformity, pressures from key stakeholders (owners, the public, etc.), etc. Finally, the cognitive is about culture, pedagogy, legitimation and learning, reward systems, and focus on management. We argued that integrity work must involve or take into account these three pillars. We also argued that it was not only about *what* was developed, but also about *how* new elements were implemented and received by the researchers in the organisation.

The managerial tools in this report can be understood as a distinct form of integrity work. This means that it involves ongoing, processual work rather than isolated 'stunts'. It also means that the tools should address regulative, normative, and/or cognitive elements of research integrity in order to influence or change the behaviour or attitudes of researchers. Further, a requirement for effective organisational integrity work is mutual reflection and dialogue among (all) members of the research organisation – not least between the managers and the researchers. If integrity tools are not perceived as relevant by the researchers, they will be hard to implement and will thus be of little use. Conversely, if researchers contribute in developing and/or implanting them, there is a higher likelihood that they will be perceived as relevant.

To the degree that organisational integrity work is an ongoing process – and not only a one-time stunt – it will resemble traits of 'learning organisations' (Argote & Miron-Spektor, 2011). These are organisations that are capable of working with their own integrity culture on their own and not necessarily needing help from outside stakeholders or being forced to react due to external shocks or such as a potential case of misconduct. From a perspective of organisational integrity work, such a processual approach will help research organisations in mitigating risks of research misconduct among their members.

1.2 How the tools should be read and applied

We have not sought to list all possible tools. Rather, we have sought to comprise a selection of accessible and "hands-on" tools that can be used more or less readily by research leaders. The tools have generally been adopted and operationalised from other areas of study. Therefore, they are not meant to be used as formal blueprints, but rather as points of departure for the research organisations' own development process. Rather than describing the tools in great detail, the idea has been that they may provide new insights or motivation to research leaders in adopting some of them. The description of the tools should therefore first and foremost be regarded as inspiration for own processes. A necessary condition for applying the tools, however, is that they are recognised and embedded by managers at higher levels.

2 Process tools

Process tools are rather generic tools for organizational development. This means that they are 'empty' tools that can be filled with specific content. Their primary function is to facilitate processes in the organization, including dialogue between members as well as setting common objectives and means of reaching the objectives. They are simple in use, and do generally not require much preparation, although there is also some leeway regarding their application and design.

We will in the following describe three types of process tools: Integrity café, value visioning workshop, and integrity workshop. These are similar in their focus on organizational development and mutual reflection and dialogue, but represent different ways of undertaking it.

2.1 Integrity Café

The concept of Integrity Café draws on the design principles of the World Café.[1] A World Café is a tool designed to facilitate and stimulate dialogue between different stakeholders – such as between researchers, managers and other stakeholders. It is an easy-to-use method for creating a living network of collaborative dialogue, active engagement and constructive possibilities for action around specific questions. It can thus be conceived as an operationalisation of the broader method of dialogue conferences (Ekman Philips & Huzzard, 2007; Gustavsen, 2001)

The Integrity Café is designed to function in the context of research organisation, where the focus is on developing common cultures and policies of research integrity. Given the sensitive nature of the topic of research integrity, where there is the risk that some researcher may feel intimidated or (unnecessarily) scrutinised, the relaxed and informal nature of the café setting is precisely designed to create a safe atmosphere and an intimate setup for conversations – even if the number of participants is high. The idea is thus to create (as closely as possible) a café setting, where participants feel free to speak and "think aloud".

Within this quite general design principle, it is only the imagination that limits what might be the specific content to be discussed in an Integrity Café. We believe that the content tools (see chapter 3) are useful possible topics in an Integrity Café.

The Integrity Café consists of the following elements:

2.1.1 Set the context

The key element here is to pay attention to the reason for bringing people together, and what the objective of the café is. For the purpose of developing an integrity culture – or perhaps more accurately, to build consensus around how such a culture can be developed – managers should consider whether such dialogues only should include members internal to the organisation (for instance a department), or also external stakeholders (such as faculty level, central university level, or even outside the university if relevant). The benefits of only involving the department is that the discussion is kept "internal", whereas benefits of including other stakeholders is that new perspectives can be brought in.

[1] The method has been developed by the World Café Community Foundation (www.worldcafe.com)

2.1.2 Create hospitable space

Café hosts around the world emphasize the power and importance of creating a hospitable space, i.e. one that feels safe and inviting. When people feel comfortable to be themselves, they do their most creative thinking, speaking, and listening. In particular, consider how your invitation and your physical set-up contribute to creating a welcoming atmosphere. When the participants arrive, it is useful if they immediately understand that this is no ordinary meeting or gathering.

The following elements can be used for inspiration:

- If possible, select a space with natural light and an outdoor view to create a more welcoming atmosphere.
- Make the space look like an actual Café, with small tables that seat four or five people. Less than four at a table may not provide enough diversity of perspectives, more than five limits the amount of personal interaction.
- Arrange the Cafe tables in a staggered, random fashion rather than in neat rows. Tables in a sidewalk café after it has been open for a few hours look relaxed and inviting.
- Use tablecloths and a small vase of flowers on each table. Place at least two large sheets of paper over each tablecloth along with a mug or wineglass filled with colorful markers. Paper and pens encourage scribbling, drawing, and connecting ideas. In this way people will jot down ideas as they emerge.
- Put one additional Café table in the front of the room for the Host's and any presenter's material.
- Consider displaying art or adding posters to the walls (as simple as flip chart sheets with quotes), and play music as people arrive and you welcome them.
- To honor the tradition of community and hospitality provide beverages and snacks.

2.1.3 Explore questions that matter

It is important to have compelling questions to be used as the basis for the Integrity Café. Good questions are simple and clear, thought-provoking, generate energy, focus inquiry, surface unconscious assumptions, and open new possibilities. Depending on the context, the Café can use one or a few overarching questions or use a processual line of development through several rounds of conversation. In the latter, questions that emerge at the Café may be used as basis for subsequent conversations. Questions can be broad, such as "What is an integrity culture?", "What type of integrity culture do we want?", or "How do we develop an integrity culture?". Questions can also be more specific, depending on pertinent issues or viewpoints of managers or the researchers.

2.1.4 Encourage everyone's contribution

It is important to encourage everyone to contribute their ideas and perspectives. This is partly done through creating a welcoming atmosphere in the Café, but can also be communicated explicitly. In facilitating the Café, specific attention should be made that everyone has the possibility to contribute.

2.1.5 Connect diverse perspectives

The opportunity to move between tables, meet new people, actively contribute with one's thinking, and link the essence of one's discoveries to ever-widening circles of thought is one of the distinguishing characteristics of the Café. As participants carry key ideas or themes to new tables, they exchange perspectives, greatly enriching the possibility for surprising new insights.

Different strategies can be used for seating the participants. One strategy is to start with homogenous groups, i.e. groups consisting of people with the same affiliation in the organization, and then continuing with heterogeneous groups. Homogenous groups may be professors, mid-career researchers such as associate professors or postdocs, early career researchers such as PhD students, and administrative personnel. Another strategy is to have a more free seating, but with more frequent/flexible moving between tables.

2.1.6 Listen together for patterns and insights

The quality of listening is perhaps the most important factor determining the success of a Café. Through practicing shared listening and paying attention to themes, patterns and insights, we begin to sense a connection to the larger whole. Encourage people to listen for what is not being spoken along with what is being shared.

2.1.7 Harvest: Share collective discoveries

The last phase of the Café, often called the "harvest", involves articulating senses of wholeness across the different conversations. Make sure you have a way to capture the harvest – working with a graphic recorder is very helpful. The harvest can be facilitated by the manager, or by any other person, preferably with some experience, or even an outside professional. The harvest should end up in written material such as minutes sent out to all participants. Managers should also ensure that the harvest is taken seriously and used actively, and thus not only being "talk".

2.1.8 Conducting an Integrity Café

- Seat four (five max) people at small Café-style tables or in conversation clusters.
- Set up progressive (at least three) rounds of conversation, approximately 20 minutes each.
- Engage questions or issues that genuinely matter to your life, work, or community.
- Encourage participants to write, doodle and draw key ideas on their tablecloths (and/or note key ideas on large index cards or placemats in the center of the table).
- Upon completing the initial round of conversation, you may ask one person to remain at the table as a "table host" for the next round, while the others serve as travelers or "ambassadors of meaning." The travelers carry key ideas, themes and questions into their new conversations, while the table host welcomes the new set of travelers.
- By providing opportunities for people to move in several rounds of conversation, ideas, questions, and themes begin to link and connect. At the end of the second or third round, all of the tables or conversation clusters in the room will be cross-pollinated with insights from prior conversations.
- In the last round of conversation, people can return to their first table to synthesize their discoveries, or they may continue traveling to new tables.

- You may use the same question for one or more rounds of conversation, or you may pose different questions in each round to build on and help deepen the exploration.
- After at least three rounds of conversation, initiate a period of sharing discoveries & insights in a whole group conversation. It is in these town meeting-style conversations that patterns can be identified, collective knowledge grows, and possibilities for action emerge.

2.2 Value visioning workshops

Team building may create cohesion, and organisations may choose to engage in such activities. Here, we will be more specific about a specific type of team building centered around values and ideals in the organization. We will call this 'value visioning workshops'. Value visioning is a way to create visions or imaginaries of the organization (department, research group, etc.) as a value collective and of how it ideally meets challenging situations. The techniques are based on more traditional visioning approaches as a tool for strategic planning, but have a stronger element of virtue ethics. In the context of research integrity, an objective of such workshops may be to cultivate (young) researchers' identification with the goals and values of the organization. However, it is not given that the current identity and visions of research organizations are coherent and/or beneficial. Hence, deliberations on values and identity may be an important aspect of an organisation's integrity work.

2.2.1 Traditional visioning approaches

The approach of Sustainable Sanitation and Water Management Toolbox (SSWM)[2] can serve as a good example of a visioning approach and we will thus here refer to their approach, but outline how a *value visioning exercise* slightly differs. SSWM says:

> Visioning is a participatory tool that brings citizens and stakeholders together and is used to assist a group of stakeholders in developing a shared vision of the future. By asking the group where they are now and where they can realistically expect to be in the future, you can develop a vision together. The goal of visioning is to develop written and visualised statements of a community's long term goals and strategic objectives […].

Visioning is typically done at the beginning step of any planning process at all levels. It can be used in:

- Activity planning. What will be the end result of the activity?
- Organisational change. What kind of organisation do we want? How will it be structured? How will effectiveness be improved?
- Formulating an overarching development vision or strategy."

As can be seen, this traditional visioning approach includes questions such as 'what kind of organization do we want?', but without the explicit focus on ethics and values that the value visioning approach seeks. Common in both approaches, though, is that some steps should precede the visioning activity. There should be a problem and situation analysis, conducted by management or in an ethics workshop, to identify realistic challenging situations that will give a concrete context to the value visioning. As SSWM says: 'The results of the problem and situation analysis help the participants to define State A (Where are we now?). The outcomes of the visioning workshop describe State B (Where do we want to be?)'. In our case, this means to have a preliminary reflection

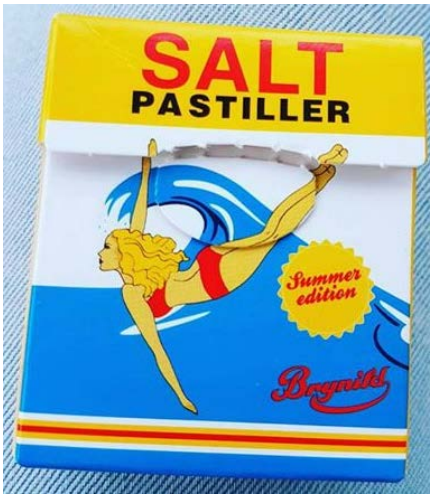
[2] https://www.sswm.info

on whether the organisation currently has a shared and explicit value identity, and whether there is a need to develop one.

2.2.2 Actual visioning workshop

In the actual visioning workshop the discussions may be organised in different ways. Depending on the number of participants, there should be sub-groups of maximum 8 participants. It is important that the groups are mixed with regard to seniority, gender, organisational function, etc. There should be alternating group and plenary discussions, but the workshop should end with a concluding plenary session where the visions and ideals developed in the process should be consolidated.

The actual visioning process may use pictures or photos as tools, or even videos, poetry or theatre techniques. The most important is to get the participants to visualise ideal situations where the organisations manifest values. Here we will present a method where the facilitator has prepared the discussions by cutting out images from popular culture or advertisements. For instance:



The facilitator should cut (or print) out an adequately large number of images, depending on the number of people involved. Each participant can be allowed to pick out 1-3 images he/she believes represent values he/she believes the organisation should endorse (for instance quality, courage, and/or wisdom) and then all participants will present and argue for the importance of their images/values in their groups. The groups can then select 3-5 images they all believe should be prioritised; i.e. that represent the values and ideals of their organisation.

Discussing the overall ideals and virtues should only be the first step, though. The second step should be to discuss what these ideals mean in certain situations – for example authorship, supervision, data analysis, or contract research. These situations can be predefined in order to adequately target the organisation's main context and challenges.

The value visioning exercise is a participatory exercise, which requires a facilitator. Here is how SSWM describes the duties of the facilitator:

- Producing a comfortable atmosphere for learning: warm, open, friendly, and encouraging.
- Introducing written materials such as agendas, minutes, and general information.
- Guiding problem solving.

- Stimulating discussions and asking questions.
- Keeping discussions on track.
- Explaining the goals and methods.
- Setting out the ground rules and agenda.
- Making links to previous exercises.
- Being aware of and sensitive to group dynamics.
- Summarising and clarifying key points.
- Motivating participants.

They also emphasise that 'visioning is not a one-time activity, and self-limitations by participants – such as 'I couldn't possibly suggest that' – may harm the outcomes, The facilitator must not be afraid of having repeated attempts, using different visioning techniques, to create a common vision, if the initial results are unsatisfactory'.

2.2.3 The output of the value visioning exercise

The aim of the exercise is to achieve a greater sense of commitment shared values and ideals. Moreover, an important output will be the awareness raised in all participants. However, we recommend to also summarise the discussions in value statements, such as

- 'Integrity for us [the organisation] means transparency, respect and prudence.'
- 'Transparency means being open about research projects, about funding sources, about scientific doubt and uncertainty. In our organisation we don't keep secrets for colleagues unless this is to protect the privacy of our research subject or fellows, or because of contractual obligations to funders.'
- 'For us, respect means to treat everyone respectfully, including colleagues, students, research subjects, animals, the environment and tax-payers. '
- 'With regard to authorship, courage means to say no to pressures of including undeserved authors'
- Etc.

Visioning workshops can be used at certain intervals, such as yearly, or in specific situations, such as when two departments are merged into one and there is a need to develop a common identity and values.

2.3 Ethics reflection workshops

Here we focus on ethics reflection workshops as a concrete tool for putting integrity on the agenda in the organization. The main purposes of such workshops is to raise awareness about research integrity and what it means to be a "good" researcher, facilitate learning and reflection, provide an arena where "taken for granted" issues or attitudes and/or forms of questionable research practices (QRP) are identified and discussed, and generate input to management about problem areas and measures for action.

Reflection workshops may take different forms, but the central point is that they are crafted in order to facilitate a systematic dialogue and reflection. By systematic is meant here that they are not only arenas where researchers and others can discuss things; rather, discussions are based on planned –

and open – questions. The workshops thus build on the same platform as the integrity café, but are smaller in scale and have a less formal process design.

The ethics workshops could in principle be conducted at any point in time, but it is important that the whole organization is present. By whole organization is meant in our case researchers, research administrators, and managers. They could be conducted annually or semi-annually, or on a more ad-hoc basis, perhaps in connection with other events in which the organization is gathered.

The workshops can involve different topics, such as research integrity guidelines, or more generally research ethics guidelines,[3] real-life cases involving dilemmas and dilemma handling for researchers and managers, and online training tools.

There is a broad array of online tools and cases and that may be found online and which may be used as point of departure in a research ethics workshop. What is especially useful are topics that highlight the real-life dilemmas and complexities associated with research, i.e. where there are no obvious or clear-cut solution. This also includes highlighting potentially difficult situations that researchers may find themselves in, such as conflicts of interest, pressure from funders or other stakeholders, or authorship or ownership disputes with colleagues and/or supervisor.

Some examples of possible topics are:

- The Dilemma Game from the Erasmus University Rotterdam. They have produced a set of 75 integrity dilemmas that can be discussed in groups. Alongside these dilemmas are four possible solutions/courses of actions.[4]
- Part of this dilemma game is also reused in the PRINTEGER tool Upright, which is a dilemma game targeted at students.
- A toolbox method for research integrity which links principles from good research to statements on research practices.[5]
- The film 'On Being A Scientist' in which a story on research integrity is told through a 55 minute film.[6]

In addition, it is also possible to discuss topics that are brought up by researchers themselves.

It is important that the workshops are based on an open and inviting atmosphere in which all researchers, perhaps especially younger and less experienced researchers, are provided the possibility to participate. In this respect, the management may take a somewhat distant approach, in which their role is more to listen and facilitate rather than steer or control. At the same time, it is also important that the management communicates commitment and that will ensure follow-up if there are clear/concrete recommendations from the discussions. This means that management needs to balance the need to show commitment and the need to provide some distance.

[3] See section 3.4 for more information on ethics and integrity guidelines and annex 1 for a specific example.
[4] See https://www.eur.nl/en/about-eur/corporate-publications/dilemma-game
[5] See Berling, McLeskey, O'Rourke, and Pennock (2018)
[6] See https://www.youtube.com/watch?v=tCgZSjoxF7c

3 Content tools

In addition to the process tools, we have also identified a number of content tools. In contrast with the process tools which are 'empty' methods that need to be filled with specific topics, the content tools refer to specific elements in an organizational infrastructure.

3.1 Local integrity officer role

In our studies we have identified a need for having a representative that researchers can talk with about issues related to research integrity. Many universities have a general ethics or integrity officer, but it seems that often this role is perceived by researchers as too distant, and many are also unaware of the role and functions of such offices. Hence, here we aim at outlining some key characteristics of an integrity officer or representative role at the level of research departments.

Such a role may fill an important void in contemporary research environments that are filled with (young) researchers being unsure or unaware of ethical challenges, dilemmas, etc. regarding their everyday research activities. Such challenges may include difficult matters with other researchers, even in their own organization. Examples may be situations of co-authorship, and data or idea ownership.

We do not aim at creating a formal blueprint of necessary components; rather, we believe that such a role should be developed based on local needs and contingencies. For example, the specific components of the role could be a topic for discussion in an integrity café (see section 2.1). The overall point is that the role should be a low threshold point where researchers can go in order to have a competent – and objective – person to talk to about research in general and ethical/integrity issues in particular.

We believe the following characteristics should form the basics of a local integrity officer role, adapted to local needs.

- The role should be taken by an identifiable member of the research department. The reason is that a member of the department will have familiarity with the research and work culture at the department, and also be familiar to the researchers. It will not be just a 'person' somewhere, but a trusted colleague.
- The person should be an experienced researcher. The reason is that the person should have personal experience with conducting research at a high level, and thus have considerable experiential knowledge of many of the pitfalls of research and how to deal with and mitigate them.
- The role should have a clear mandate, stating what the expectations are and what means are at the role's disposal. The reason for a clear mandate is to avoid that the role ends up being 'empty' with no real power in the organization.
- The role should be low threshold. It should be a place where researchers may bring in a broad range of topics, thus avoiding excluding potentially crucial research behaviors.
- The role should have defined relations and responsibilities to other key organizational institutions, such as management, unions, research integrity committee or officer, or safety representative, if existing. The reasons is to ensure coordinating the work on research integrity with other work processes in the organization.

- The role should be given full confidentiality. The reason is to ensure a low threshold for potential matters to be raised.
- The role should not replace existing formal lines of reporting. The role is to be a frontline dialogue partner in cases of doubt, not a formal reporting line.
- The role should involve proper training and updating in relevant research integrity procedures and guidelines. The reason is to ensure that it involves necessary competence to operate as a dialogue partner.

3.2 Employee appraisal conversations

Employee appraisal conversations comprise an important, and in many places institutionalized and formalized, dialogue between employees and their managers. In principle, the conversations may provide useful arenas for confidential discussions between researchers and managers about research ethics and integrity. However, to the best of our knowledge, it seems that questions of research ethics/integrity generally have little – if any – role in the conversations. Hence, we believe that adding a few questions about research ethics/integrity may be a useful way for research organisations in working with these matters.

Employee appraisal conversations are ideally a prepared, systematic and personal conversation focused on the development of the employees and planning of the relationship between the leader and the employee. A central objective of the conversations is to increase the development and well-being of the employees, by ensuring that they have adequate information about their work and about expectations from the management. Another objective is that the management obtains information about the employees' perceptions of their work and of the management.

A commonly used 'method' of the conversations is that the leader and employee together develop strategies for how the work situation and the goal obtainment of the employees can develop, and how both parties can contribute to the development. It is thus important that the dialogue is open and that both parties focus on issues that are of importance to them, and that the form and frequency of the dialogue is adjusted according to the circumstances.

An important issue is that the employee appraisal conversation is not to be an arena for discussing salary or the actual content of performance measures etc. They are to be a separate arena where researchers (and managers) can speak more freely

Some specific objectives or functions of employee appraisal conversations are:[7]

- Setting objectives: This involves both concrete work objectives as well as objective for development of work tasks and the handling of the work tasks.
- Evaluation of results: Involves feedback on the goal obtainment, as well as an agreement on how results are to be evaluated and for what they are to be used.
- Feedback: Involves information about work-related performances.
- Competence and career development: Involves a plan for how the employee can use his or her competences, and agree on a plan for how to develop the competences further.
- Work environment: Involves a discussion of elements that promote and hinder experiences of a positive work environment for the researcher

[7] The points are based on AFI's own guidelines for employee appraisals.

- Feedback: Involves providing constructive feedback on each other, to be used in plan for improvement if needed

Appraisal conversations are typically based on a predefined list of topics. Common topics are work environment (e.g. perceptions of psychosocial aspects), collaboration with others (e.g. with colleagues, externals), management (e.g., expectations towards nearest leader), professional and personal development (e.g., ambitions for the future). In addition, appraisal conversations may involve listing a plan for the upcoming year, as well as specific work tasks and responsibilities. For reserachers, this may involve current and planned research projects, teaching, and publications.

When seeking to develop research integrity, we suggest adding a few questions specifically about ethics and integrity to this list of questions. It is important to mention that this is a suggestion only – ideally, the content and the formulation of the questions should be discussed in local context. We suggest adding the following questions

- Are there areas tied with the proper conduct of your research in which you feel that you require additional competence or information?
- Are there work-related ethical challenges that you would like management support in tackling?
- Are there work-related ethical challenges that require organizational responses?

3.3 Managerial assessments of performance criteria

The last years, increasing concerns about research assessment and incentives have been voiced by key scholarly communities. The most important initiatives are probably the Leiden Manifesto for research metrics[8] and the San Francisco Declaration on Research Assessment (DORA) [9].

Most importantly for a research manager is the general recommendation from DORA:

> "1. Do not use journal-based metrics, such as Journal Impact Factors, as a surrogate measure of the quality of individual research articles, to assess an individual scientist's contributions, or in hiring, promotion, or funding decisions."

In addition, they have specific recommendations for research institutions:

> "4. Be explicit about the criteria used to reach hiring, tenure, and promotion decisions, clearly highlighting, especially for early-stage investigators, that the scientific content of a paper is much more important than publication metrics or the identity of the journal in which it was published.
>
> 5. For the purposes of research assessment, consider the value and impact of all research outputs (including datasets and software) in addition to research publications, and consider a broad range of impact measures including qualitative indicators of research impact, such as influence on policy and practice."

[8] (https://www.nature.com/news/bibliometrics-the-leiden-manifesto-for-research-metrics-1.17351), 'The Metric Tide. Report of the Independent Review of the Role of Metrics in Research Assessment and Management' (http://www.hefce.ac.uk/media/HEFCE,2014/Content/Pubs/Independentresearch/2015/The,Metric,Tide/2015_metric_tide.pdf)

[9] https://sfdora.org/read/

Because incentives work, managers should be careful in providing directly to researchers monetary bonuses for publications. This may give production incentives that may put integrity at risk, especially with regard to questionable research practices such as salami slicing and self-plagiarisation.

Although quantitative research assessment can be important to reduce potential bias in purely qualitative assessment (ref. the first principles in the Leiden manifesto), other qualitative measures can also be used in promotion assessment, etc. to provide incentives for integrity and responsible research conduct in general. In addition to the impact on policy or practice (mentioned above), these can also consider whether the researcher has been involved in public engagement or science communication activities, ethics training, open collegial activities, mentoring, etc.

3.4 Ethics guidelines

Ethical guidelines function as a normative framework for guiding behavior. Here we give some example of the ethics guidelines, but guidelines must be adapted to the individual organisation, preferably in a dialogue process with the whole organization. Management is responsible for ensuring that the guidelines are actively used and materialized in the research practices.

Examples of ethics guidelines can be found at:

- https://www.research-integrity.admin.cam.ac.uk/files/good_research_practice_guidelines_11.14.pdf
- https://www.ucc.ie/en/media/research/researchatucc/documents/UCC-CodeofResearchConductV2.111thApril2017.pdf
- http://www.bath.ac.uk/corporate-information/code-of-good-practice-in-research-integrity/
- Ethical Guidelines for Research at Oslo Metropolitan University (OsloMet). See annex 1.

3.5 Work environment mapping

An important experience from the empirical research in PRINTEGER is the possible relationship between researchers' conceptions of their work environment and the likelihood of observed scientific misconduct (Mamelund et al., 2018). Working towards creating a positive work environment can thus help develop a culture of research integrity. Management should be aware of levels of well-being, potential sources of discontent, etc. in order to develop targeted measures.

There are many understandings of work environment, but it generally involves the psychosocial experiences of members of a given workplace. Key factors in assessments of psychosocial experiences of members involve health, well-being, creativity and performance – in short, whether they feel that their work environment (e.g., colleagues, managers, work tasks) is good for them and for the work they are doing. For researchers, work environment may thus involve managers and colleagues at the department, the responsibilities they have at the department and how it is managed (e.g., publication measurements), their broader network of fellow researchers, students, etc.

It is possible to identify two fundaments of developing a good work environment. One is having a good understanding of the central attributes of the work environment. How do the different members feel about their work environment, and how can this be traced over time? For instance,

how do PhDs and other staff on temporary contracts experience their integration in the organization? To what extent do staff work in isolation on projects? Where are the main potentials for development of the work environment? In short, where should management focus be when seeking to improve the work environment conditions for the researchers?

The other fundament is to involve the members of the work organization in dialogue and decision-making about the desired work environment as well as the processes of obtaining this desired work environment. The reason is that it is difficult to define objective criteria for what constitutes a good work environment; it needs to be based on some kind of consensus among the members and among the management and the workers/researchers. In these processes, a tool such as the integrity café (see section 2.1) may be useful to facilitate the processes and to ensure that everyone has been given the possibility to exert their opinion.

There is a vast literature on work environment mapping, and it could be done in many ways. A key topic is that of work engagement, understood as "a positive, fulfilling, affective-motivational state of work-related well-being that is characterized by vigour, dedication, and absorption" (Bakker, Schaufeli, Leiter, & Taris, 2008: 187-188). Studies have suggested that work engagement comprises job resources (e.g., autonomy, supervisory coaching, performance feedback) and personal resources (e.g., optimism, self-efficacy, self-esteem). Common validated instruments are the Utrecht Work Engagement Scale[10] and QPS Nordic[11].

It is important that these questionnaires are not explicitly linked to misconduct, this is not the point. There is a risk that employees will feel that they are being suspected of misbehavior, which will in turn have the risk of creating unnecessary tensions. The point is to facilitate a broader discussion of the work environment, which in turn may improve the integrity through reflexive and deliberative processes.

Based on these instruments, we have included in annex 2 a selection of questions as an example of how a work environment mapping instrument could look like in an academic setting.

3.6 Quality assurance system

Another tool concerns the development of a quality assurance system. We know from our empirical studies that there is a risk that many researchers, especially younger researchers, will not have adequate knowledge of research integrity, including the ethical codes of conduct of their institutions. There is also the likelihood that individual researchers for various reasons may take short cuts or otherwise engage in research misconduct. Hence, there is an inherent need in research organizations of quality system that can identify possible breaches.

The nature and type of such a quality system may differ depending on the objective and conditions of the organisations. Some central characteristics are nevertheless that it:

- Is developed in conjunction between leaders and researchers in the research organization
- Seeks to avoid unnecessary bureaucracy and use of resources
- Is (more or less) equal to all researchers in the organisation

[10] See Schaufeli and Bakker (2003)
[11] See https://www.qps-nordic.org/en/.

- Is known, recognized and understood by all members of the organization
- Is continuously developed based on new circumstances and needs.
- Is practically used and followed up by management
- Is used not (only) as a control tool, but as a basis for reflection and learning[12]
- Assigns tasks and responsibilities to specific people or groups of people in order to ensure accountability

The quality system may be general but it may also focus specifically on certain risk areas. Examples of such focus may be:

- the avoidance of the situation where access to data or data analyses are restricted to individual researchers
- efforts to provide knowledge to younger and less experienced researchers
- efforts to integrate researchers or groups being in risk of being isolated from the broader research organization
- efforts to make researchers aware of not only FFP (fabrication, falsification, plagiarism), but also various forms of QRP (questionable research practices) such as authorship, conflicts of interest, 'cherrypicking' analyses, etc.

See also in annex 3, the quality assessment system at the Work Research Institute (AFI), as inspiration.

[12] See e.g. the Integrity café in section 3.1

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5 Annexes

5.1 Annex 1: Ethical Guidelines for Research at Oslo Metropolitan University (OsloMet).

5.1.1 I Introduction

All research and scientific activities are based on trust. The research community and wider society should feel confident that research is conducted in compliance with generally accepted requirements to integrity and objectivity. The abovementioned requirements are stated in the general guidelines developed for our sector by the Norwegian National Committees for Research Ethics in 2014.

The guidelines for research ethics issued by Oslo Metropolitan University (OsloMet) are based on the Act relating to Universities and University Colleges, the Act relating to Ethics and Integrity in Research and pursuant regulations, and on the ethical norms prepared by the Norwegian National Committees for Research Ethics. These guidelines shall apply for academic staff, visiting researchers, PhD candidates, and students conducting research at OsloMet (hereinafter referred to as 'researcher' or 'researchers').

The University, represented by the Rector, is responsible for ensuring that research is conducted in compliance with current laws, regulations, and guidelines.

The Deans/Centre Directors are delegated responsibility for ensuring that the regulations are observed and continually assessed; see Roles and Responsibilities of Persons/Entities Responsible for Research at Oslo and Akershus University College of Applied Sciences.

Leaders at all levels are responsible for entrenching the regulations among researchers, providing guidance in research ethics, finding a good balance between trust and control, and for developing an open and transparent research culture that makes it difficult to get away with misconduct.

Project managers are responsible for ensuring that research is conducted in compliance with good research practice and recognised academic and ethical principles in their respective disciplines and within the established framework.

Supervisors have a particular responsibility for informing PhD candidates and students of the regulations for research ethics that apply in their respective disciplines.

Project team members, students, and PhD candidates are personally responsible for familiarising themselves with issues concerning research ethics.

5.2 II Scientific misconduct

- OsloMet accepts no form of scientific misconduct.
- Scientific misconduct includes serious breaches of recognised standards of research ethics; see the Act concerning Ethics and Integrity in Research, section 8. It covers but is not limited

to falsifying or fabricating data, plagiarism, and gross negligence during the application phase or while conducting or reporting on research. It also covers:

- deliberate suppression of undesirable results
- deliberately misleading use of statistical methods
- deliberately misleading information about who contributed to the research and the number of contributors
- deliberately or through gross negligence withholding details of methodology
- deliberate misinformation about academic qualifications in applications
- deliberate destruction of research information to hamper investigation in the event of suspected fraud.[13]

- Staff and students at OsloMet have the right and duty to report scientific misconduct.
- The requirement of scientific integrity applies to all types of research. OsloMet has rules for handling cases of scientific misconduct

5.2.1 III Good scientific practice

Research ethics involve ethical issues concerning the role of the researcher and the practice of research:

- Integrity: The researcher is responsible for the credibility of his or her own research. Fabrication, falsification, plagiarism, and similar serious violations of good scientific practice are incompatible with such credibility.[14]
- Impartiality: The researcher must avoid confusing roles and relationships in a way that may give rise to reasonable doubt concerning conflicts of interest; see the Act relating to Procedure in Cases concerning Public Administration, section 6. Impartiality may also arise after a discretionary assessment. Openness about relevant roles and relationships in which the researcher is involved must be clarified with colleagues, research participants, sources of finance and other relevant parties.[15,16]
- Independence: The researcher must be ensured freedom of choice of topic, method, how to conduct the research, and publication of results.[17]
- Openness: The researcher must make available research results to ensure verifiability and to give something back to the research subjects and to wider society.[18]

OsloMet has a particular responsibility for ensuring that students and others receive training in these areas.

[13] http://www.regjeringen.no/nb/dep/kd/dok/regpubl/otprp/20052006/otprp-nr-58-2005-2006-.html?id&id=187808
[14] https://www.etikkom.no/Forskningsetikk/Etiske-retningslinjer/Generelle-forskningsetiske-retningslinjer/" \h
[15] See General Guidelines for Research Ethics, section 6
[16] Research Council of Norway's Regulations on Impartiality and Confidence
[17] See Act relating to Universities and University Colleges, sections 1-5 (5) and (6)
[18] See General Guidelines for Research Ethics, section 11

5.2.2 IV Publication, authorship and co-authorship

- The researcher must respect the contributions of other researchers or students and must observe standards for authorship and cooperation. Individual areas of responsibility should be clarified as early as possible in the process and in consultation with all parties involved.
- In accordance with the Vancouver Protocol, three main criteria must be fulfilled to legitimately entitle co-authorship:
    - significant contribution to the idea and design or data collection, or data analysis and interpretation
    - preparation of the manuscript or significant portions of the manuscript or critical revision of the intellectual content
    - approval of the article to be published
    - agreement to be accountable for all aspects of the work in ensuring that questions related to accuracy or integrity of any part of the work are appropriately investigated and resolved.
- Researchers employed at two institutions are responsible for ensuring that both institutions are correctly accredited; see the Norwegian Association of Higher Education Institutions' Recommended Guidelines for accrediting institutions in scientific publications.
- The general rule is that results must be published in both academic and popularised form, though subject to the restrictions of confidentiality and duty of confidentiality. Nonetheless, no permanent restrictions may be agreed upon or laid down regarding the right to disclose research results beyond those that follow from or are pursuant to laws; see the Act relating to Universities and University Colleges, section 1-5 (6). When time-limited, exclusive right of use by the contracting party has been agreed, the researcher has the right and duty to ensure that the research findings be made public once the time limit expires.[19]
- A supervisor wishing to use the unpublished research results of a student/PhD candidate he/she is supervising in his or her own publications or research must obtain the consent of the student/PhD candidate. Likewise, a student/PhD candidate wishing to use the unpublished results of a supervisor must first obtain the supervisor's consent.

5.2.3 V Contract research

- All the ethical guidelines that apply to research also apply to contract research.
- To protect the credibility of the research, one must be aware of the relationship with the contracting party. The interests of the contracting party must not compromise the integrity of the research. See the Norwegian National Committees for Research Ethics' web page regarding contract research.
- The sources of funding for research must be clearly stated in all publications. The underlying conditions for the project must be clarified in advance, and important information must not be omitted.
- A contract research project must facilitate freedom to design the way in which the problem is solved to ensure that it is scientifically sound. Contract research must be conducted without undue outside influence being placed on the results. The Standard Agreement for Research and Report Assignments issued by the Ministry of Education and Research must be used.

[19] Ethical Guidelines for the University of Life Sciences

5.2.4 VII Protection of research subjects

- OsloMet researchers who use individuals in their research must familiarise themselves with the Norwegian National Research Ethics Committees' ethical guidelines to protect individuals involved in research. This concerns issues such as:
    - informant integrity, freedom and co-determination
    - the requirements of voluntariness, informed consent, and the right to withdraw
    - anonymity, de-identification, and presentation and publication of results
    - payment of research subjects
    - confidentiality and duty of confidentiality
    - research conducted on vulnerable groups and on groups/individuals with no or reduced capacity to consent.
    - storage of tape recordings, video recordings, and code lists that may help identify research subjects
    - obtaining necessary approval from the Data Protection Official for Research, the Norwegian Social Science Data Services, the Norwegian Data Protection Authority, and the Regional Committees for Medical and Health Research Ethics or similar bodies

Researchers who conduct health research must familiarise themselves with the Declaration of Helsinki.

- OsloMet researchers must endeavour to ensure that their research will benefit the research subjects and will not cause harm.
- Action research and intervention research set specific requirements to clarification of roles, publication, etc. The Work Research Institute specifically mentions action research in its ethical guidelines.

5.2.5 VIII Protection of animals

Animals have an inherent value and must be treated with respect. Staff and students must demonstrate due care and respect for animal welfare and must justify the necessity for experiments.

Current legislation and guidelines for using experimental animals must be complied with.[20]

5.2.6 IX Protection of the environment

OsloMet's research activities must not harm the environment. Researchers must endeavour to ensure that their research contribute to protecting or creating a healthy environment in the short and long term. This includes taking into consideration biodiversity, ecosystem stability[21], and the impacts on landscapes and urban environments.

[20] Ref. Animal Welfare Act and Regulations concerning Animal Experimentation
[21] See NOU 2004:28: Act relating to the Management of Biological, Geological and Landscape Diversity.

It is normal practice to adhere to the precautionary principle when assessing the environmental impacts of research.[22]

5.2.7 X Global responsibility[23]

OsloMet has a responsibility to disseminate relevant knowledge to regions which would otherwise be excluded because of economic disparity.

OsloMet's research must contribute to counteracting global injustices and protecting biodiversity.

5.2.8 XI Sources

It is important that ethical principles and guidelines be perceived as reasonable and to align with those of equivalent institutions. This document has therefore been based on the Act relating to Universities and University Colleges and on other codes of ethics:

- Act relating to Ethics and Integrity in Research, section 8
- Act relating to Universities and University Colleges, sections 1-5 (5) and (6)
- Guidelines for Research Ethics in the Social Sciences, Law and the Humanities, prepared by the National Committee for Research Ethics in the Social Sciences and the Humanities in 2006.
- General Guidelines for Research Ethics prepared by the Norwegian National Committees for Research Ethics in 2014.
- Ethical Guidelines for the University of Life Sciences, 2008.
- Guidelines for Good Research Practice at Oslo University College, 2010.
- Ethical Guidelines for the Work Research Institute, 2009.
- Guidelines for Research Ethics for Akershus University College, 2008.

5.2.9 XI Relevant literature

- **Research ethical checklist**
  The research ethical checklist is a five-point list prepared by the National Committee for Research Ethics in Science and Technology. It is general in nature, covers all disciplines, and summarises what the Committee considers important issues to clarify when conducting a research project. The checklist is also used in connection with applications for project funding from the Research Council of Norway. Norwegian National Committees for Research Ethics: Research ethical checklist (last revised: 23 June 2014).

- **University of Oslo's 10 commandments for ethical practice in research**

[22] There are many versions of the precautionary principle, but one of the most cited is that stated in the Rio Declaration: "Where there are threats of serious or irreversible damage, lack of full scientific certainty shall not be used as a reason for postponing cost-effective measures to prevent environmental degradation." (UNEP, 1992). (www.unep.org). In recent years this principle has been reworded to include health and social impacts.
[23] General Guidelines for Research Ethics, section 13.

The University of Oslo's 10 commandments for ethical practice in research presents a clear summary of what researchers should do to make sure they comply with good research practice.

- **The Research Council of Norway's Regulations on Impartiality and Confidence**
  The Research Council of Norway's Regulations on Impartiality and Confidence, 2004, last revised 2013.

5.3 Annex 2: Example – work environment questionnaire[24]

5.3.1 Personal background

Some background characteristics are necessary. However, it is important not to collect too many due to privacy issues.

(Options: very high degree | high degree | some degree | minor degree | very small extent)

- Department unit/section
- Title of occupation (professor, associate professor, PhD student, etc.)
- Employment contract (permanent, temporary)
- How many hours do you usually work per week?
- Gender
- Year of birth

5.3.2 Work autonomy

(Options: very high degree | high degree | some degree | minor degree | very small extent)

- Du you have adequate autonomy to solve the work tasks in a proper manner?
- Do you have easy access to professional advice and counseling if you need so?
- Do you have the necessary information to do a proper job?
- Is your work designed and facilitated in such a way that you can exert your responsibilities in a proper manner?

5.3.3 Quantitative demands

(Options: very high degree | high degree | some degree | minor degree | very small extent)

- Are there too high production demands in your work?
- Do you have enough time to do the work tasks with the required level of quality?
- Do you sometimes have such a work load that you are falling behind with your work tasks?
- Is your workload unevenly distributed so that there are 'work peaks'?
- Do you sometimes skip lunch or breaks to get the work done?

5.3.4 Quantitative demands

(Options: very high degree | high degree | some degree | minor degree | very small extent)

- Do you have work tasks you think are too difficult?
- Does your work require the constant acquisition of new tasks?
- Does your work require that you need to engage yourself emotionally in a strenuous way?
- Do you sometimes return from work with a bad conscience or with worries for what you have done or not done at work?

[24] The questions have been adapted from a questionnaire developed by AFI based on QPS Nordic and the Copenhagen Psychosocial Questionnaire.

5.3.5 **Work demands taken together**

(Options: very high degree | high degree | some degree | minor degree | very small extent)

- Are the demands in your work collectively manageable?

5.3.6 **Role expectancies**

(Options: very high degree | high degree | some degree | minor degree | very small extent)

- Do you know what you areas of responsibility are?
- Do you know what is expected of you in your work?
- Are you squeezed because of contradictory demands or expectations by e.g. superiors, co-workers, external partners?
- Do you perform work tasks that you mean should have been done in a different way?'

5.3.7 **Research integrity**

(Scale: 1-10)

- How confident are you in your understanding of research misconduct?

(Options: Not at all | Somewhat | Moderately | Very | Completely | No basis for judging)

- How consistently do managers in your department communicate high expectations for research integrity?
- To what degree would you feel responsible to report internally or externally the suspected misconduct if you witness any of the following?
    - Fabrication of data
    - Plagiarism
    - Falsification of data
    - Selective dropping of "outlier" cases without transparent explanation
    - Trying out a variety of different methods until one is found that yields a result that is statistically significant
    - Withholding data from the research community
    - Falsifcation of bio-sketch, resume or personal reference statements
    - Non-disclosure of conflicts of interest
    - Pressure from a study sponsor or contractor to engage in unethical research conduct or skewed presentation of research
- Do you agree with the following statement about whistleblowing?
    - I know the appropriate routines for whistleblowing in the event of witnessing misconduct
    - I feel confident that I would be protected as a whistleblower
    - I feel confident that the faculty (or other relevant bodies in the university) would take seriously the whistleblowing and act accordingly.

(Options: yes | no | not sure)

- Does the quality of your research
    - Suffer due to strict time constraints?
    - Suffer due to insufficient available data?
    - Suffer due to other reasons? (If yes, specify qualitatively)

5.3.8 Work influence

(Options: very high degree | high degree | some degree | minor degree | very small extent)

- Do you have an influence on which concrete work activities in which you are involved?
- Do you have an influence on the amount of work you have?
- Do you have an influence on deadlines and time management in your work?
- Do you have the opportunity to use your own evaluations and discretion in your work?
- Do you have the opportunity to decide when you can take a break from work?
- Do you have the opportunity to decide when your workday begins and ends?
- Do you have an influence on where you perform your work tasks (e.g. home office or other places away from the regular workplace)?

5.3.9 Training and learning

(Options: very high degree | high degree | some degree | minor degree | very small extent)

- Do you have the opportunity to use your professional competence in your work?
- Do you have opportunities for professional development in your work?
- Do you receive adequate training to do a proper job when you receive new work tasks?
- Are you assigned to work tasks outside of your professional expertise?
- Do you have a plan for your professional development and learning (competence plan?)
- Do you miss professional development offers due to work pressure?
- Is the work organized to facilitate everyday learning and development?

5.3.10 Physical work environment

(Options: very high degree | high degree | some degree | minor degree | very small extent)

- To what degree are you satisfied with the...
    - …physical work conditions like noise, air quality, lighting, temperature, etc.
    - …physical facilitation, inventory, room design, etc.
    - …ergonomical design of your work place
- What type of office design to you normally work in? (options: single office, double office, shared office (3-8 persons), shared office (9-20 persons), shared office with more than 20 persons, other)
- To what degree does your office situation contribute to a good quality of work?

To what degree are the following expressions true in your work department:

(Options: very high degree | high degree | some degree | minor degree | very small extent)

- There is a too high turnover and temporality among the workers to have a good work environment.
- I must constantly help others that cannot handle their job.
- New digital solutions give more effective work processes
- New digital solutions enable me to do perform my work in a good way.

5.3.11 Support from colleagues

(Options: very high degree | high degree | some degree | minor degree | very small extent)

- Do you receive the help and support from your colleagues that you need?
- Is there a good collaboration among the colleagues in your workplace?
- Do you feel as part of a community in your workplace?

(options: often | sometimes | rarely | never)

- Have you in the past 12 months…
    - …been in burdensome conflicts with one or more colleagues?
    - …been subject to harassment or improper conduct from colleagues in your workplace?
    - …been in burdensome conflicts with superiors in your workplace?
    - …been subject to harassment or improper conduct from superiors in your workplace?

(Options: very high degree | high degree | some degree | minor degree | very small extent)

- Are conflicts and harassment in your workplace handled properly?

5.3.12 Managerial support

(Options: very high degree | high degree | some degree | minor degree | very small extent)

- Do you receive useful feedback from your closest superior?
- Do you receive the help and support you need from your superior?
- Does your closest superior ask how you feel at work?
- Does your closest superior talk to you about the quality of your work?
- Can you raise personal requirements to your closest manager about facilitation of your work?
- Does your closest superior motivate the employees to come up with ideas?
- Is you closest superior valuating the efforts of the employees?
- Does your closest superior treat employees in a just and impartial manner?

- Does your closest superior focus more on the handling of the work tasks than on reporting of results?

5.3.13 Management

(Options: very high degree | high degree | some degree | minor degree | very small extent)

- To what degree do you experience that you department is measured on relevant work matters?

(Options: Daily | 1 time per week | 2-4 times per week | 1-3 times per month | 1-5 times per 6 months | rarer)

- How often is the department's achievement of objectives presented for the employees?
- How often do you experience to be measured on your individual results?

5.3.14 Integrity

(Options: very high degree | high degree | some degree | minor degree | very small extent)

- Does your work contain tasks that contradict your personal values?
- Do you have to negotiate or transgress your professional standards to get the work done?
- Are you treated with respect and acknowledgement in your workplace?
- Are you able to use your strong sides in your work?
- Do you feel that you are doing an important work effort?
- Is the main organisation's main objectives reached through your department's way of solving the tasks?

5.3.15 Changes

(Options: very high degree | high degree | some degree | minor degree | very small extent)

- Do you receive information in advance about important decisions, changes and future plans?
- Do you have the possibility to contribute to the restructuring or changes that affect your work?
- Do you receive proper learning in advance of changes and restructurings in your workplace?

5.3.16 Future expectations

(Options: very high degree | high degree | some degree | minor degree | very small extent)

- Is your work in such a way that you would like to continue in your current workplace in five years or more?
- Does your work situation give you worries with regards to your future health?
- Do you feel safe that you will have a job that is as good as your current job in two years?
- I have experienced unwanted changes in my work situation

5.3.17 Illness

(Options: No | yes)

- Have you in the past 12 moths been away from work due to own illness?

[If yes…]

(Options: None | 1 time | 2-3 times | 4 or more time)

- How often have you had the following types of illness:
    - 1-3 days
    - 4 days or more

(Options: Yes | no)

- Do you feel that parts of your sickness absence was due to your work situation?
- Could some of the absence have been reduced if the work was facilitated better?

5.4 Annex 3: Example – Quality assessment system at AFI

The following is a translation of the general quality assessment system at the Work Research Institute (AFI) at OsloMet. It is not specifically focused on research integrity, but targets quality assessment in general. However, it is likely to be conducive for better monitoring of research integrity issues as well. The particular example here has been developed based on a dialogue between researches and management, and has also been revised. AFI is a contract research institute, and this is also reflected in the quality system. We provide it here as an example of how such a system may be designed.

5.4.1 Research ethics

- AFI has endorsed the research ethical guidelines adopted by the National Research Ethics Committee for Social Sciences and Humanities. This implies requirements for transparency and verifiability relating to methodology and implementation
- AFI has developed its own ethical guidelines. These are based on general research ethics and the actual circumstances of contract research. The guidelines are discussed among researchers and administrative staff and have been approved by the board

AFI's quality assurance system has two main elements; a quality assessment of the researchers and a quality assessment of the research process from design to reporting.

5.4.2 Routines for processing confidential information

- Our employees must sign the confidentiality statement
- Notifiable projects are reported to the Norwegian Centre for research data (NSD) and, if appropriate, to the Regional Committee for Medical and Health Research Ethics (REK) and we follow the Data Inspectorate/NSD's guidelines for processing and storing confidential information/personal data

AFIs quality assurance system has two main elements: a quality assessment of researchers and a quality assurance of the research process from project planning to reporting.

5.4.3 Quality assessment of researchers

- AFI's researchers are assigned competence in the categories researcher 1 (senior researcher with professional qualification), researcher 2 (senior researcher with doctorate or equivalent) and researcher 3 (master's degree plus independent scientific work). Promotion to researcher 1 or researcher 2 at AFI is done on the basis of explicit criteria that follow the criteria of the higher education sector and are conducted by an assessment committee with external researchers participating.

Research management, proposal development and quality assurance of applications and reports are largely distributed to senior researchers and project managers within the various thematic areas of AFI.

5.4.4 Quality assurance of projects

- Project proposals and estimated use of resource must always be quality assured by the nearest manager, colleague or others
- The main rule is that projects should be staffed with more than one researcher
- Budget and contractual agreements must be quality assured by the Finance and Administration Manager

5.4.5 Quality assurance of reports

In contract research projects and in projects where the final product is a report that is not evaluated in scientific journals or similar, an internal quality assurer with relevant background and research interests must be appointed. The quality assurer does not participate in the project's regular work.

- Draft reports are reviewed by the quality assurer prior to completion. The quality assurer considers research quality and suggests improvements
- The quality assurer must be informed about the framework for the work and on that basis assess whether delivery is according to the contractual obligations
- In case of disagreement between the project manager and the quality assurer, the case is discussed in AFI’s management.

It is expected of all AFI's employees to be available for such quality assurance. Costs for quality assurance are to be included in all projects’ budget.

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