

# MUTUAL LEARNING EXERCISE

## Open Science: Altmetrics and Rewards

Horizon 2020 Policy Support Facility

### *Modus Operandi*

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1. CONTEXT .....	2
2. BACKGROUND INFORMATION .....	3
3. SCOPE OF THE MLE .....	3
4. OBJECTIVES AND OUTCOMES .....	4
5. WORKING APPROACH AND METHODOLOGY .....	5
6. DISTRIBUTION OF WORK.....	7
7. TIME SCHEDULE, MEETINGS AND REPORTS .....	7

## 1. CONTEXT

### 1.1. Horizon 2020 Policy Support Facility (PSF)

To support countries in reforming their research and innovation (R&I) systems, DG Research and Innovation has set up a 'Policy Support Facility' (PSF) under Horizon 2020, aimed at **"improving the design, implementation and evaluation of R&I policies"**. The PSF provides best practice, leading expertise and guidance to Member States and Associated Countries (on a voluntary basis) through a broad range of services to address their specific needs.

In this way, the Horizon 2020 Policy Support Facility responds to the strong need expressed by the Member States (i.e. ERAC consultations) to offer customer-oriented services to support evidence-based policymaking.

There are three main services offered by the Horizon 2020 PSF to the Member States and Associated Countries:

- **Peer reviews of national R&I systems** which are in-depth assessments of a country's R&I system carried out by a panel of experts and leading to concrete recommendations to the national authorities on reforms necessary to strengthen their R&I system.
- **Specific support to countries** which can take form of 'pre-peer review' (providing a solid evidence-base and focus areas for a subsequent full peer review), 'post peer review' (providing concrete advice on how to adjust and strengthen the implementation of peer review recommendations) and 'ad-hoc requests' (providing a set of concrete recommendations on how to tackle a specific issue R&I policy issue and how to implement the accompanying reforms).
- **Mutual learning exercises** which are demand-oriented, focused on specific R&I topics of interest to several volunteering countries, more hands-on, and translated into a project-based exchange of good practice.

### 1.2. Open Science

***Open Science*** represents a new approach to the scientific process based on cooperative work and new ways of diffusing knowledge by using digital technologies and new collaborative online tools. The idea captures a systemic change to the way science and research have been carried out for the last fifty years: shifting from the standard practices of publishing research results in scientific publications as fast as possible, towards sharing and using all available knowledge at an earlier stage in the research process.

**The current trend towards 'Open Science' results predominantly from a bottom-up process driven by the increasing number of researchers operating in a globally networked digital system and by the increasing societal demand to address global challenges.** Institutions such as universities, research funders, libraries, and publishers at national and international levels find themselves in various stages of responding or adapting to the evolving situation. For example, universities are considering new ways to evaluate researchers' careers and requiring new types of research skills from researchers. The societal impact of research is also of growing importance to research funding organisations. Publishers are active as they are moving towards models of Open Access to publications and research data. New institutions (altmetric.com, PlumX, ImpactStory, etc., but also formal research assessment systems at

national levels) emerge with regard to determining the impact of research resulting among other in a call to include the use of altmetrics for research assessments.

## **2. BACKGROUND INFORMATION**

At its meeting in May 2016, the Competitiveness Council adopted conclusions on 'The transition towards an Open Science system' where it acknowledges that 'open science has the potential to increase the quality, impact and benefits of science and to accelerate advancement of knowledge by making it more reliable, more efficient and accurate, better understandable by society and responsive to societal challenges, and has the potential to enable growth and innovation through reuse of scientific results by all stakeholders at all levels of society, and ultimately contribute to growth and competitiveness of Europe'.

The Council considers in particular that 'assessing scientific quality should be based on the work itself and be broadened to include an assessment of the impact of science on society at large, while the current focus is on indicators based on impact of journals and publication citation counts' and stresses that 'incentive mechanisms need to be put in place to reward researchers (and research stakeholders) for sharing the results of their research for reuse'.

A call for interest was launched in July 2016 asking ERAC delegates who wished to participate to an MLE on Open Science to express their interest and to briefly describe the major challenge(s) they wished to address and their expectations. Responses to the Scoping Paper were received from thirteen countries (Austria, Armenia, Belgium, Bulgaria, Croatia, France, Latvia, Lithuania, Moldova, Portugal, Slovenia, Spain, Sweden and Switzerland).

## **3. SCOPE OF THE MLE**

### **3.1. Overall scope**

Reflecting the priority subjects mentioned by the Member States at the occasion at the call for interest to ERAC of July 2016, the scope of this first MLE on Open Science was narrowed down to address the national policies and practices relating to the two following issues:

#### **a) Altmetrics**

Altmetrics are here to be understood as alternative (i.e. non-traditional) metrics that go beyond citations of articles and include various forms of social media shares, web-downloads or any other measure of the qualities and impact of research outputs and outcomes. Research assessments using a variety of altmetrics are based on the assumption that the 'measured' impacts should reflect the impact of the research outputs or be related to the reputation of scientists and that they can be credited for engagement with open science resulting in impacts of their research beyond the scientific community itself.

#### **b) Incentives and rewards for researchers to engage in Open Science activities**

While most researchers appreciate the benefits of Open Science, on an individual basis they are often reluctant to engage in Open Science. This is partly because of lack of relevant skills and support, and partly because of the lack of incentives and rewards.<sup>1</sup> There is therefore a need to motivate researchers and experts to engage in Open Science activities, especially in works

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<sup>1</sup> Van den Eynden, V. and Bishop, L. (2014). Incentives and motivations for sharing research data, a researcher's perspective. A Knowledge Exchange Report

essential to drive the research data eco-system, by setting out the expectations and commitments of research funders, public employers, and relevant stakeholders in an appropriate framework. This could be done, for example, through guidelines, new policies and standards. This framework should provide incentives and rewards in terms of direct career benefits and individual reputation.

Both issues have been identified as key elements of the *European Open Science Agenda* and the Commission has been collecting external advice from high-level experts in the context of Commission's expert groups (<http://ec.europa.eu/research/openscience/index.cfm>).

### **3.2. Topics/sessions of the MLE on Open Science**

The main topics that would be discussed are described in this section (the topics are labelled A, B, C and D in the remainder of the document). Please note that these topics may be organised differently based on the feedback from the participants during the *kick-off meeting*, and of the experts whose services are requested in this document.

#### **Topic A: Different types of altmetrics**

Identify and discuss different types of altmetrics that are being used or developed by universities or research funding bodies. The aim is to explore new ways/standards of evaluating research proposals and research outcome taking into consideration all Open Science activities of researchers. Evaluation criteria should take due account of the engagement of researchers in Open Science.

#### **Topic B: How to use altmetrics in the context of Open Science**

Identify and discuss practical examples / best practices of how altmetrics is being used for evaluating research and rewarding researchers for engagement with Open Science. The aim is to review/assess the current reputation system and adapt researcher career reward systems to take engagement with Open Science practices into account.

#### **Topic C: Incentives and rewards to engage with Open Science activities**

Identify and discuss 'good' practices for incentivising and rewarding researchers and their institutions to engage with open science activities. The aim is to credit activities which are important for Open Science, such as open review and evaluation, as well as citation, curation and management of research data; and to provide institutional incentives for the provision of relevant training and support by research institutions.

#### **Topic D: Implementing open science, experiences, strategies, models**

Review current state of play and share experiences in developing and implementing national policies and related actions for incentivising researchers and research institutions to engage with Open Science. The aim is to contribute to the ongoing discussion on whether/which/how common Open Science principles and requirements could be set up to affect the roles, responsibilities and entitlements of researchers, their employers and funders.

## **4. OBJECTIVES AND OUTCOMES**

The final aim of this MLE is to support MS in designing, implementing and/or evaluating different policy instruments in relation to the focussed topics. **The exercise will adopt a hands-on "learning by doing" approach supported by external expertise**, especially on the topics for which limited practical experience exist.

In addition to the tacit learning, **a written report drawing lessons for policy design/implementation/evaluation covering the topics will be produced**. The report will identify good practices, include a set of concrete operational recommendations, lessons learned and success factors based on robust evidence about the impacts of the measures and the contextual factors that may explain the impacts. It will contain a policy-oriented Executive Summary.

## **5. WORKING APPROACH AND METHODOLOGY**

### **5.1. Working approach**

The MLE will follow the standard methodology for conducting Mutual Learning Exercises in the context of the Horizon 2020 Policy Support Facility "Mutual Learning Exercise- a new methodology"<sup>2</sup>.

As a Member State driven and policy challenge-based activity the MLE will promote mutual learning between the participating countries. The learning will be built on concrete experiences, both in failure and best practice. Adopting a common concept of open science (and related terminology) will help to track good and not so good practice and make it possible to learn from each other taking into consideration the differences in the objectives and epistemic/academic cultures of the various stakeholders.

The participating countries will get together to explore the best ways to tackle the identified challenges acknowledging a need of change or optimisation in the design and/or implementation of policy instruments and wishing to learn from experiences in other countries.

It will take the form of a project-type of collaboration for a set period of time, in principle, up to 16 months, with defined resources and goals.

Each participating country is expected to gain tailored information and expertise from the process, and it is also open to other participants to learn from their circumstances/experiences.

Thus, the project is based on open, frank, and confidential knowledge exchange among the participating countries. All participating countries are expected to participate actively, in a forthright manner, and to collect and synthesise the necessary empirical evidence in a timely manner and provide friendly peer support for mutual learning.

The specific knowledge interests around the identified policy challenges may vary to some extent between the participating MS, but they are sufficiently close in order that the process can benefit all participants and that learning is mutual. This process is called *peer-supported learning*.

### **5.2. Themes for discussion in the working sessions and country visits**

- **Impact**
  - What is “good impact” from different perspectives (stakeholders, domains, etc.)
  - Is it true: if you engage in OS, you will automatically engage with external stakeholders as well?
  - Trade-offs impact driven research, e.g. basic vs applied science

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<sup>2</sup> Mutual Learning Exercises in the context of the Horizon 2020 Policy Support Facility "Mutual Learning Exercise- a new methodology, Terttu Luukkonen, DG RTD

- How to measure impact: Process indicators are important maybe even more than output indicators, but how to measure process impact?
  - Most metrics (also alternative) measure attention, not impact! Need to be clear on what impact is, and what we mean by societal and economic impact across Europe
  - Concepts of impact are mostly based on a linear model of research communication and translation into social outcomes; maybe we need to replace impact by ‘engagement’, ability of researchers to trigger a conversation (e.g. integrating annotations and conversations around books into book metrics)
  - Discussion Engagement vs. Impact brings about the question engagement by whom for whom? We also have to look to different levels of engagement (access, appraisal, application,...)
  - Potential way to tackle impact = measuring engagement throughout the research process (not only relating to publications)
  - Impact factors are more equal than other metrics?
  - OS is still connected to “market failure” for many, how to correct the misunderstanding of exclusivity of OS or IPR/commercial exploitability
  - How to measure impact of “public goods” and “knowledge commons” with a long-term perspective?
- **Incentives and Rewards**
    - Considering the different types and modes of rewards and incentives: For sharing, reuse, open licensing, collaboration, open infrastructures, evaluation, engagement and participation one could get methods, data, results, funding, reputation, job, more engagement, better networking, goods, IPR, etc.
    - Role of funders in implementing altmetrics and OS (“people follow the money”, funders need to demand OS)
    - What kinds of cultural changes are required for OS adoption
    - Transition periods need to be considered, incentives need to be adapted to long-term (e.g. issue of OS rewarded in one institution (of moving to OA), while penalized in another; funding agencies policies vs. tradition/culture at institutes lead to contradictory messages, especially for young researchers.)
    - Open review/opening evaluation procedures might be essential in future discussions.
- **Skills**
    - What skills and training in OS is necessary at what education and professional level?
- **Evaluation and alternative open metrics**
    - Alternative and **open** metrics
    - Altmetrics as push to OS (e.g. making it more visible) and science communication in general?
    - Altmetrics should not be just another metrics system, and they will not fully replace traditional metric systems, rather they should be regarded as complementary.
    - How to exploit the complementarities of metrics? Discuss how altmetrics mix with traditional metrics, and the different modes of uptake of this mixture (e.g. bottom up: researchers indicate which kind of metrics should be used to evaluate their work)
    - Are altmetrics comparable? Is there a kind of standardisation already adopted? How to harmonise the many approaches? See NISO standards (ref)
    - How to deal with the data to handle the evaluation, at the level of organizations (and how to bring OS related data into open public data repositories, e.g. open government data)

- How to evaluate Data Management Plans, and what are they useful for (e.g. could they be made open as well?)
- Metrics and awards for data interoperability issues solutions?
- Using compound indicators for altmetrics is questionable as using a single number to demonstrate impact is too much of a simplification of a complex matter. Merging different altmetric indicators (NISO on altmetrics) is not recommended because altmetrics are tracked and collected from such a wide variety of different sources that they cannot be merged and simplified to a single number.
- Evaluation and open peer review: should be a central subject, connecting impact and assessment (starting with publications, but more generally)
- **Other topics:**
  - Rising administrative costs of OS, e.g. of keeping the data.
  - Open Science as a way to escape “leadership”, authoritarian (senior) research leaders/professors. Young researchers can take advantage of open science and social media to connect with colleagues and share their work.
  - Monitoring of OS transition

### **Further information to be collected**

- What different stakeholders (in different countries) think about OS and altmetrics in MS.
- Stocktaking of what is already measured and how it is measured (and monitored for compliance)
- Perspectives on legislation for each case for change (which laws have what kind of impact on OS practices?)
- Perspectives/approaches from scholarly associations/scientific societies (i.e. the Royal Society of Chemistry have an extensive OS agenda)
- Learning from repository use, and metrics deriving from it? (see what has been discussed within COST action ENRESSH and OPENAIRE)

### **5.3. Issues for the final report and follow-up**

The following issues need to be considered for the final report or a follow-up:

- Explain the reasons and the benefits of addressing the issue.
- Create knowledge repository for accompanying evidence and materials of the MLE.
- Define and map the problem/issue space to make a case for change.
- Compile a modular list of convincing reasons for change (backed by studies or experiences/good practices) for different publics, such as researchers, policy makers, legislators, research institutions.
- Compile list of OS principles and guidelines.
- Define what are good examples to follow (not just the “big stories” which are hard to relate to e.g. small budgets), collect local examples of all participant countries.
- Create cases for different stakeholders (policy makers, libraries, universities, etc.)
- Raise visibility of the topic in general and attention of policymakers in particular.

## **6. DISTRIBUTION OF WORK**

The MLE on Open Science will require:

- **Participating countries:** Austria, Armenia, Belgium, Bulgaria, Croatia, France, Latvia, Lithuania, Moldova, Portugal, Slovenia, Spain, Sweden and Switzerland (14 countries) have expressed their interest to actively participate in the MLE on Open Science. Participating countries will appoint as their participant a sufficiently high-level person with experience and knowledge on the policy challenge, providing resources -in terms of labour- to

contribute, provide data and information as the process require, allotting time to attend meetings and potential country visits, among others.

- **Independent Experts:** The MLE will be supported by the Chair (Frank Miedema), selected by the Commission, a Rapporteur and Expert (Katja Mayer), and two other experts (Sabina Leonelli and Kim Holmberg).
- **Commission services:** The Directorate General for Research & Innovation will actively support the work of this MLE. Unit A4 ‘Analysis and monitoring of national research policies’ will closely cooperate with Unit A6 – ‘Data, Open Access and Foresight’. The contacts are Ana Correia from Unit A4, and René von Schomberg from Unit A6.
- **PSF Contractor:** The role of the PSF contractor is defined in the framework contract. In line with its provisions, the PSF contractor will provide full support to the Chair, and notably be in charge of the operational and logistic tasks in relation to the organisation of meetings, country visits and overall development of the MLE. Moreover, full deployment by the PSF contractor of very substantial quality control measures at all stages (including the final proofreading, editing and formatting) will be crucial for the success of this exercise. After the approval of the Commission, all official and working (non-confidential) documents will be prepared for upload on the RIO/PSF website by the contractor. An e-book version of the final report will also be prepared by the contractor. In addition, the contractor will also prepare an article about this activity and its findings (two A4 pages) for the RIO/PSF website (after the approval of the final report by the Commission).

## 7. TIME SCHEDULE, MEETINGS AND REPORTS

In the diagrams and tables below, **the agreed dates for the meetings** are defined.

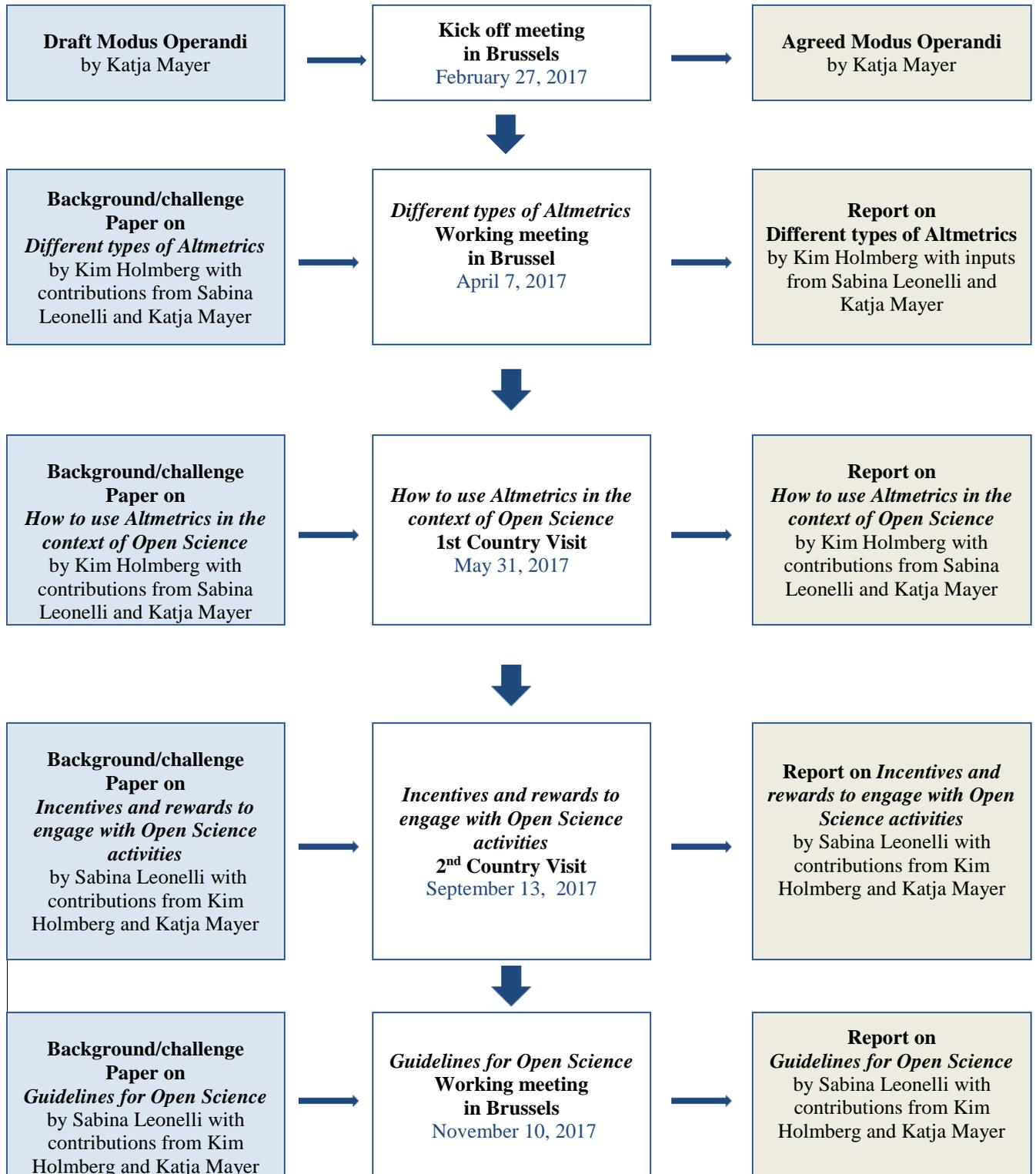
The **sequence of the topics** covered in the meetings need to be considered as indicative. The final decision will be taken during the kick-off meeting.

The final sequence will depend on the most appropriate topic to cover during the country visits.

A brief overview of the indicative time schedule is shown in the table below.

Indicative time schedule		
Date	Topic	Place
February 27, 2017	Kick off meeting MLE with participant countries and independent experts	Brussels
April 7, 2017	Different types of Altmetrics	Brussels
May 31, 2017	How to use Altmetrics in the context of Open Science	1 <sup>st</sup> country visit
September 13, 2017	Incentives and rewards to engage with Open Science activities	2 <sup>nd</sup> country visit
November 10, 2017	Guidelines for Open Science	Brussels
January 2018	Wrap up	Brussels

The flow of meetings and reports is as follows:





The table below sets out the **indicative time schedule for the reports**.

Indicative time schedule for the reports		
Deadline	Reports	Main author
March, 10	Agreed Modus Operandi	EC/ Katja Mayer
March, 31	Background / challenge paper on <i>Different types of Altmetrics</i>	Kim Holmberg
April, 28	Report on <i>Different types of Altmetrics</i>	Kim Holmberg
May, 24	Background/challenge Paper on <i>How to use Altmetrics in the context of Open Science</i>	Kim Holmberg
June, 16	Report on <i>How to use Altmetrics in the context of Open Science</i>	Kim Holmberg
September, 6	Background/challenge Paper on <i>Incentives and rewards to engage with Open Science activities</i>	Sabina Leonelli
September, 29	Report on <i>Incentives and rewards to engage with Open Science activities</i>	Sabina Leonelli
November, 3	Background/challenge on <i>Guidelines for Open Science</i>	Sabina Leonelli
November 27	Report on <i>Guidelines for Open Science</i>	Sabina Leonelli
January 2 <sup>nd</sup> week, 2018	Draft Report on <i>Open Science</i>	Katja Mayer
February 1 <sup>st</sup> week, 2018	Final report on <i>Open Science</i>	Katja Mayer

The expected content of the reports as indicated in the Terms of Reference is as follows:

- The **Background / challenge paper on ‘Different types of Altmetrics’**: the main policy challenge and those practices and instruments in place in participating countries. It may suggest preliminary assessment of their validity and relevance.
- The **report on ‘Different types of Altmetrics’**: an overview of the overall challenge, identified good practices, lessons learned and success factors – wherever possible based on robust evidence about the impacts of the measures available to the participants
- The **Background / challenge paper on ‘How to use Altmetrics in a context of Open Science’**: the main policy challenge and those practices and instruments (including related data issues) in place in participating countries. It may suggest preliminary assessment of their validity and relevance
- The **report on ‘How to use Altmetrics in a context of Open Science’**: good practices, relevant emerging practices, lessons learned and success factors based on robust evidence about the impacts of the measures
- The **background / challenge paper on ‘Incentives and Rewards to engage in Open Science activities’**: the main policy challenge and those practices and instruments in place in participating countries. It may suggest preliminary assessment of their validity and relevance
- The **report on ‘Incentives and Rewards to engage in Open Science activities’**: good practices, relevant emerging practices, lessons learned and success factors based on robust evidence about the impacts of the measures for peer review, in connection with RPBF
- The **background / challenge paper on ‘Guidelines for Open Science’**: the main policy challenge and those practices and instruments in place in participating countries. It may suggest preliminary assessment of their validity and relevance
- The **report on ‘Guidelines for Open Science’**: good practices, emerging practices, lessons learned and success factors based on robust evidence about the impacts of the measures.
- The **Draft and final Report on MLE Open Science**: good practices, lessons learned and success factors – wherever possible based on robust evidence about the impacts of the measures available to the participants.