Annex: NewHoRRlzon Diagnosis Report, Social Lab 3, Marie Skłodowska-Curie Actions (MSCA)

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Published in:
D2.1: Diagnosis: RRI in Excellent Science

Citation for published version (APA):

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8.1 Executive Summary

In place since 1996, Marie Skłodowska-Curie Actions (MSCA) is now part of the Excellent Science Pillar of Horizon2020. It seeks to strengthen career opportunities of promising academics, by enabling worldwide and cross-sector mobility, and supporting research training, training in innovation and in other skills. MSCA is comprised of five support schemes: 1. Individual Fellowships (EF / GF), 2. Innovative Training Networks, (ITN) 3. Research and Innovation Staff Exchange (RISE), 4. Co-funding of regional, national and international programmes (CO-FUND), and 5. European Researcher’s Night (NIGHT). Responsible for MSCA is a Unit within the European Commission Directorate-General for Education, Youth, Sport and Culture (Dir C), Innovation, International Cooperation and Sport. During H2020, MSCA will mobilize E6.1 billion. The programme is highly competitive, with a threshold score of about 80%, and success rate for applicants of about 15%. Successful applications are of Higher or Secondary Education Institutes (67.3% of the total budget), Research Organisations (19,1%), Private for Profit (10,3%) and Public Bodies (10,8%).

This report presents the results from a diagnostic inquiry into the current status of RRI in MSCA. The analysis is based on document study and interviewing (see Appendix 1). It concludes that aspects of the 6 ‘keys’ by which the EC operationalizes RRI are traceable in the leading documents outlining the programme. RRI is explicitly mentioned from the second H2020 Work Programme onward, while Gender equality, Science Literacy and Open Access as well as attention for Ethics have been integrated in the formal application procedures. In addition, there is increasing attention for Public engagement in particular in MSCA based training schemes. Furthermore, while as an Excellent Science programme MSCA does not address a particular ‘societal challenge’, global/societal/sustainability and economical challenges are increasingly mentioned in MSCA-related documents. A specific mention is made of the Migration-issue, which is related to the programme’s focus on enhancing mobility. MSCA is the best ranking programme within H2020 in regard to gender (47% of its grantees are female). The logic capture in the 3 O’s abbreviation (Open Science, Open Innovation and Open to the world) permeates the MSCA programme entirely, from policy documents to evaluation criteria. Openness in this sense is viewed as MSCA’s raison d’être, with its focus on stimulating the circulation of knowledge notably via stimulating the mobility of knowledge (via knowledge producers) from an inter-/transdisciplinary, inter-/cross sectoral and trans/inter-national perspective.

The relative high extent of institutionalisation of RRI-related aspects does not produce consensus among MSCA related stakeholders about the concept’s exact meaning, nor does it produce a high level of awareness. Awareness of RRI varies greatly between types of actors involved. Officials in the EC Unit and individual researchers, among them individuals involved with the Marie Curie Alumni Association express a genuine interest in RRI and RRI-related issues. However, the impression is that among evaluators and grantees awareness is little awareness to absent. Furthermore, the report concludes, the various forms in which RRI has been institutionalised in MSCA may actually form a barrier in further integrating RRI in the programme line. The current focus on Gender Equality may
hide from view the experience of gender based discrimination that grantees report to experience; the focus on Science Literacy and Public Engagement is currently interpreted from a ‘knowledge deficit’ perspective, implying that engagement with non-scientists involves the dissemination of information about the scientific process and scientific findings mainly; and the integration of ethics in the MSCA grant application forms may in practice reduce attention to the issue to a tick-box exercise.

RRI is present in MSCA, in other words, but the way it is interpreted and acted upon varies widely across the funding scheme. Furthermore, there appears to be a discrepancy between the paper reality of RRI in MSCA and RRI in MSCA-related practices. For a further integration of RRI in the programme line, incentives should be in place that urge a reflection on standing interpretations of RRI-keys and the notions of responsibility, excellence and impact, in order to question their current institutionalisation in the programme line. Given the active network of grantee alumni (MCAA), of NCPs and dedicated evaluators, and the keen interest at EC-level among the actors responsible for the programme line in RRI (and in the developments in the NewHoRRizon project), MSCA is potentially well set to further integrate RRI. Moreover, as a major programme in the Excellent science pillar, and given the wide spread of MSCA grantees in knowledge institutes around the globe, MSCA may serve as a catalyst in inciting reflection within academia per se on responsibility/society-oriented Research and Innovation.

8.2 Scope of this document
This report is not an official Deliverable. It is for internal use and informs Social Lab 3 on the Marie Skłodowska-Curie Actions (MSCA) that is an integral part of the Excellent Science Pillar of Horizon2020. It provides insight into the programme line and related activities and stakeholders and explores how they relate to RRI. Moreover, it may provide a baseline for evaluation. The report also provides the members of the Consortium with research input, providing data collected in a systematic and therefore comparable way.

8.3 Methods
The diagnosis report is based on desk research on relevant programme documents and online materials. It incorporates work programmes and calls, a scoping paper, evaluation guidelines, proposal templates and other relevant materials from EU websites. Using qualitative analysis software (Atlas.ti), these documents have been coded with codes referring to the 6 keys of RRI (public engagement, gender equality, science education, open access (open science), ethics and governance), process dimensions such as (anticipation, inclusiveness, reflexivity and responsiveness) and societal (including ethical), technological and economic challenges.

Next to desktop research, semi-structured in-depth interviews have been held through online communication channels with experts and other stakeholders related to the programme line of MSCA. Among the respondents were a member of the EC Unit responsible for the programme line, (former) representatives of MSCA related Associations and NCPs. We have also made use of the CORDIS key word analysis and manual validation of presence of RRI and sustainable development goals related key words in MSCA related projects to describe some RRI-case briefs of MSCA related projects.
8.3.1. General scope of the programme

General scope
Along with individual fellowships, the MSCA funding helps develop training networks, promote staff exchanges and support mobility programmes with an international flavour. (EC, 2018i)

8.3.2. What is the programme about?

Objectives
The main organisational objective of the MSCA is the following:
‘The main objective of the MSCA is to invest in the people who drive research and innovation in Europe, to enhance the skills and competences of the researchers and to deliver on innovation, growth and competitiveness. Highly-trained researchers are necessary to advance science and business competitiveness, which, in turn, are important factors in attracting and sustaining investment in Europe’ (EC, 2017d, p. 133)

More concretely, this boils down to the following objectives:

Awarding €6.16 billion in the period to 2020, the MSCA support research training and career development focused on innovation skills. The programme funds worldwide and cross-sector mobility that implements excellent research in any field (a "bottom-up" approach). There are MSCA grants for all stages of a researcher’s career, from PhD candidates to highly experienced researchers, which encourage transnational, intersectoral and interdisciplinary mobility. The MSCA will become the main EU programme for doctoral training, financing 25,000 PhDs. Endowing researchers with new skills and a wider range of competences, while offering them attractive working conditions, is a crucial aspect of the MSCA. In addition to fostering mobility between countries, the MSCA also seek to break the real and perceived barriers between academic and other sectors, especially business. Several MSCA initiatives promote the involvement of industry etc. in doctoral and post-doctoral research. (EC, 2018i)

For whom
The programme seeks to promote the careers and cross-sectorial international mobility of promising academics. In other words, the programme gives promising academics from all types of scientific sectors the opportunity to conduct research inside and/or outside academia and to develop themselves as researchers.

What purpose
The purpose is to improve mobility and skills to further careers, increase exchange of scientific personnel and cooperation between European knowledge institutes and even private firms (in some of the funding programmes). As described in detail:

Because they encourage individuals to work in other countries, the MSCA make the whole world a learning environment. They encourage collaboration and sharing of ideas between different industrial sectors and research disciplines – all to the benefit of the wider European economy. MSCA also back initiatives that break down barriers between academia,
industry and business. In addition, they reach out to the public with events that promote the value – and fun side – of science. (EC, 2018i)

8.3.3. What is the size and structure of the programme in terms of budget, applications and projects?

General size, budget and proposals
MSCA-like funding possibilities are *de facto* in place since 1996 when the first frontrunner programmes were there. Since 2014, it is an integral part of Horizon2020, as part of the Excellent science pillar. The DG expects that a total of 6.1 billion euros will be spent within the current Horizon2020-programme. There have been 134,030 applications (24,40% of the total applications of Horizon2020) for a total of 27,35B Euros. Only 26,59% (41,632) of these proposals were eligible. Of these, only 6,061 were retained, which leads to a success rate of just 15% of the eligible proposals (EC, 2018l). In total, thus far, the EU has contributed 3,35B Euros (10.29% of the total budget of H2020 now spent) to about 6,154 projects (32,49% of the total) that are comprised of 17,477 participants (19,82% of the total).

As you can see in figure 1, the largest share was requested by Higher or Secondary Education Institutes (67.3% or 2.253 Million Euros) followed by Research Organisations (19,1% or 640 Million), Private for Profit (10,3% or 345 Million) and Public Bodies (10,8% or 62 Million). Relevant to observe is that quite some proposals do reach the threshold score of about 80% but are not funded because of a lack of funds.

*Figure 4 Requested EU Contribution for RI related Projects by Type of Organisation (Million EUR) (EC, 2018l) (for MSCA)*

As can be seen in figure 2, most eligible proposals come from Western Europe, with Poland as the first Eastern European country on the 18th place.
Structure and particular sizes

As said, the MSCA seeks to promote the careers of promising academics, by supporting research training and career development, training in innovation and other skills, and by funding worldwide and cross-sector mobility. To that end there are five main types of MSCA:

- **Innovative Training Networks (divided into ETN/EID and EJD)**
- **Individual Fellowships (EF and GF)**
- **Research and Innovation Staff Exchange (RISE)**
- **Co-funding of regional, national and international programmes (COFUND)**
- **European Researcher’s Night (NIGHT).**


We will now discuss how MSCAs differ in terms of potential applicants, topics and what is covered exactly.

**Innovative Training Networks**
First of all, there are the Innovative Training Networks (ITN). Innovative training networks bring together employees of universities, research institutions, research infrastructures, businesses (among them SMEs) and relevant others from different countries. The funding is supposed to boost scientific excellence and business innovation, and should enhance young promising researchers’ career prospects through developing skills in entrepreneurship, creativity and innovation.

The ITN actions are multi-beneficiary actions and are differentiated in three separate actions which can take the form of networks and/or doctoral programmes for early-stage researchers:

- **European Training Networks (ETN):**
  'help researchers gain experience of different working environments while developing transferable skills. They must involve at least three partners from inside and outside academia. Organisations managing such a network should be established in at least three different EU or associated countries, though additional participants can join from across the world’ (EC, 2018m). These networks are set-up so that multiple researchers can be trained to doctorate level.

- **European Industrial Doctorates (EID):**
  These doctorates allow PhD candidates to step outside of academia and develop skills in industry and business. The joint doctoral training is delivered by at least one academic partner entitled to award doctoral degrees, and at least one partner from outside academia, primarily enterprise. Each participating researcher is enrolled in a doctoral programme and is jointly supervised by supervisors from the academic and non-academic sector, where they spend at least 50% of their time. The final aim is for the doctoral candidates to develop skills inside and outside academia that respond to public and private sector needs. The organisations should be established in at least two different EU or associated countries. A wider set of partner organisations from anywhere in the world may also complement the training (idem).

- **European Joint Doctorates (EJD):**
  A minimum of three academic organisations form a network with the aim of delivering joint, double or multiple degrees. Joint supervision of the research fellow and a joint governance structure are mandatory. The aim is to promote international, intersectoral and multi/interdisciplinary collaboration in doctoral training in Europe. The organisations should be from different EU or associated countries. The participation of additional organisations from anywhere in the world, including from the non-academic sector, is encouraged (idem).

All research areas can apply, except EURATOM. This action is meant primarily for organisations such as universities, research centres or companies, that propose a research training network. Individuals can apply for the specific positions created by these networks. These are advertised on Euraxess.

The proposed research training or doctoral programme should respond to well-identified multi- and interdisciplinary needs in scientific and technological research areas, expose the researcher to different sectors, and offer a comprehensive set of transferable skills (such as entrepreneurship and communication). Proposals should reflect existing or planned research cooperation among the partners, involving the researchers through individual, personalised research projects. Mobility across borders is a must. Grants cover recruitment and training per researcher up to four years, research costs and management and overhead costs. The researcher is hired under an employment
contract and benefits from a monthly living allowance, social security cover, plus a mobility and family allowance.

In total 548 ITN’s have been funded (2,89% of the total of Horizon 2020) with 7,335 participants (8,32% of the total) and a contribution of 1,77B Euros (5,44% of the total). The bulk of this is comprised of the ordinary ETN’s (486 projects or 1,65B Euros) (EC, 2018k).\footnote{These figures seem to exclude the last round of funding in which 442 million euros were spent to support 123 networks benefitting 1271 participating organizations and 1600 PhD candidates (with a success rate of a mere 7.4% (EC, 2018d)}

**Individual Fellowships**

The second distinct part of MSCA consists of the **Individual fellowships (IF)**: these Fellowships offer support for experienced researchers to move between countries, with the option to work outside academia. These are advertised as being ‘a great option if you are an experienced researcher looking to give your career a boost by working abroad. They offer exciting new learning opportunities and a chance to add some sparkle to your CV’ (EC, 2018h).

There are two types of IFs, dependent on the geographical location of the host organization:

- **European Fellowships (EF):**
  These are open to researchers moving within Europe, as well as those coming in from other parts of the world. They can allow for the restart of a research career after a break, such as parental leave, or can help researchers coming back to Europe to find a new position. They can be held in the EU or associated countries (sixteen in total, among them Norway, Albania, Switzerland, Israel and Ukraine) and last for one or two years. Grantees are awarded the title of MSCA Fellow. Moreover: within the European Fellowship, recently there has been a differentiation between **Standard European Fellowships**, a **Society and Enterprise Panel**, a **Reintegration Panel** and a **Career Restart Panel**.

- **Global Fellowships (GF):**
  These are open to fund positions outside of Europe for researchers based in the EU or the earlier mentioned associated countries and may last from two to three years. They have the requirement that the researcher has to come back for one year to an organization based in the EU or one of the associated countries.

Both Fellowship-types can include a secondment period of up to three or six months in another organisation in Europe. As opposed to the earlier mentioned doctoral training networks, only experienced researchers (from across the world) can apply: applicants need a doctoral degree and at least four years full-time research experience by the time of the call deadline (idem).

All research areas are funded and the funding provides allowance to cover living, travel and family reunion costs. In addition, the grant provided by the EC contributes ‘to the training, networking and research costs of the fellow, as well as to the management and indirect costs of the project. The grant is awarded to the host organisation, usually a university, research centre or a company in Europe’ (idem) The research proposal is therefore written jointly with the chosen host organization.
In total, 5,140 IF’s have been funded (27.13% of the total of Horizon 2020) with 5,761 project participants (6.53% of the total) and a contribution of 943.5 Million Euros (2.9% of the total) and the bulk being European Fellowships (EC, 2018k).

Research and Innovation Staff Exchanges

The third distinct type of action under the MSCA funding scheme is comprised by the Research and Innovation Staff Exchanges (RISE) for international and inter-sectoral cooperation. It ‘funds short-term exchanges of personnel between academic, industrial and commercial organisations throughout the world. It helps people develop their knowledge, skills and careers, while building links between organisations working in different sectors of the economy, including universities, research institutes and SMEs’ (EC, 2018n).

At least three partner organizations (academic and non-academic from three different countries) must be included in the proposal and at least two of these should be from the EU or associated countries. Exchanges between organizations in the EU/associated countries must be inter-sectorial but worldwide exchanges may be intra-sectorial. According to the advertisement, proposals should pay ample attention to ‘knowledge creation, sharing know-how and skills development’ (idem).

What sets this action apart from the previous ones is that ‘Staff members working in managerial, technical or administrative roles can also take part’ (idem).

‘The grant supports the secondment of staff members for one month to one year. They must be engaged in or linked to research and innovation activities at their home organisation for a certain time prior to the secondment. They return to their home organisation after the secondment, to pass on their knowledge. Funding for a RISE project can last up to four years’ (idem).

In total, 355 RISE projects have been funded (1.87% of the total of Horizon 2020) with 3,526 project participants (4% of the total) and a contribution of 308.3 Million Euros (0.95% of the total) (EC, 2018k).

Co-funding of regional, national and international programmes

The fourth distinct MSCA scheme is called Co-funding of regional, national and international programmes (COFUND) and is set up to co-finance doctoral research training or fellowships for experienced researchers. The extra funds are made available for new or existing schemes for training researchers abroad and across various sectors. Each COFUND proposal is written by one main participant such as a ‘government ministry; regional authority; funding agency; university research organization or an enterprise’ (EC, 2018f).

Researchers may directly apply to the organization through job offers posted on Euraxess. Again, all research areas can be funded, and the funding covers a part of the living allowance (a fixed amount per researcher) as well as management costs. If a programme is selected, the co-funding may last up to five years and for a maximum total amount of 10 million euros (idem).

These figures seem to exclude the last round of funding in which 80 million Euros were spent benefitting a total of 741 organizations (EC, 2018l).
In total, 111 COFUND projects have been funded (0.59% of the total of Horizon 2020) with 855 project participants (0.97% of the total) and a contribution of 324.1 Million Euros (1% of the total) (EC, 2018k).

*European Researchers’ Night*

The final action under the MSCA scheme is called *European Researchers’ Night* or *NIGHT* and has the goal to ‘promote science’ (EC, 2018g). It involves coordination between regional, national or international partners and any legal entity that is capable to organize events and hails from an EU Member State or associated country can apply ‘For example: private and public research organisations, companies, public authorities, schools, science museums, parent-teacher organisations, EU mobility centres for researchers, foundations or the media may apply’ (idem).

The main goal is to show the positive impact of European funded research on the daily lives of citizens: ‘Any event that boosts public awareness of the positive role of research in society, especially among young people, can be supported. European Union funded researchers should interact as much as possible with visitors and show how their research has an impact on people’s daily lives’ (idem).

The grants can cover up to two years, with actual value depending on the scale of the events proposed and are put out every two years. Funding covers expenses related to the organization of a research outreach event and can be spent on preparations, advertisement, the event and later evaluation of the impact. Some activities that are eligible to be supported are: ‘hands-on experiments conducted by researchers; science shows with public participation; debates; "researchers' dating" (meet researchers and ask them questions); competitions (science quizzes, games, puzzles, photo and art contests, etc.); workshops for children and guided visits of labs, research institutes, and other relevant places that are usually closed to the public’ (idem). Applicants are however encouraged to be creative in their approach and go beyond suggestions.

If proposals pass the evaluation threshold but cannot be funded because of insufficient budgets, they are encouraged to associate their events with NIGHT so that they will be advertised on the event page. NIGHT has been taking place in September since 2005; in 2017 about 1.1 million citizens and over 21000 researchers took part (idem).

As it is advertised on the EC website: ‘The events showcase what researchers really do for society in interactive and engaging ways, promoting research careers to young people and their parents. Fight cancer, stop global warming, prevent hunger and drought, invent devices for disabled people, and make human life easy in space! This could be the fascinating, life-changing daily work of the faces behind science who you can meet at the European Researchers’ Night 2017. With family, friends, your school or on your own, become a scientist for the evening and participate in science activities – great entertainment is guaranteed!’ (idem).

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141 This year (2018), events will take place on Friday 28 September in over 340 cities across Europe and in neighbouring countries. In Brussels, the European Commission and the European Parliament will organise a special event from Tuesday 25 to Wednesday 26 September called “Science is Wonder-full - European Researchers' Night.”
In total (not including the last round), 89 NIGHT projects have been funded (0.47% of the total of Horizon 2020) with 399 project participants (0.45% of the total) and a contribution of 15.93 Million Euros (0.05% of the total) (EC, 2018k).142

Marie Curie Alumni Association
As concerns the structure of the programme, the Marie Curie Alumni Association (MCAA) deserves mentioning here too. This association run by volunteers of former and current beneficiaries of the programme line plays a notable role contributing to the MSCA’s various objectives. It is an international not-for-profit organization that ‘envisions a future in which knowledge will be used to benefit society’ (MCAA, 2018). Moreover, its strategy is to ‘connect researchers throughout Europe, and around the world, to enable international transdisciplinary collaborations’ (idem). The goals are stipulated as follows: ‘Enhance the flow of knowledge across different countries, sectors of the economy, and scientific disciplines; Encourage networking, cooperation, and mutual understanding among MCAA members, and external stakeholders; Serve as a forum of debate for researchers and citizens’ (idem). The current association is in effect since 2014, supported by the EC (with which it closely co-operates), replacing the earlier Marie Curie Fellows Association (MCFA, 2018) for which funding stopped some time ago. Interesting about the composition of its membership is that only 13.7% of the members come from the Social Sciences, something that equally is the case with MSCA beneficiaries according to a former vice-president of the MCAA (Int. 7). As we will see, this association plays an interesting role in furthering particular aspects in MSCA-related research that could be subsumed under the label ‘RRI’.

142 These figures seem to exclude the last round of funding in which 55 projects received a total of 12 million euros (EC, 2018c).
8.4 Current situation of RRI in the programme

8.4.1 RRI in brief
MSCA seems to offer a promising context for expanding and mainstreaming RRI. It is one of the most diverse and bottom-up programme lines of Horizon 2020. Moreover, it is one of the few European funding schemes that educate young and promising researchers to become the academics of tomorrow. It has produced, over the years, a network of scholars that are, because of the funding arrangements, relatively independent from their respective institutional work environments, which might prove instrumental in inciting a change in academic culture to reflect RRI-related views on responsibility issues. Vice versa, ‘RRI’ promises to offer a suitable label to integrate various developments within the context of MSCA, which speak of a keen awareness of societal and ethical issues among involved researchers. Because of these two interrelated dynamics, the MSCA programme line seems to provide fertile ground for (further) integrating (discussions on) the RRI concept. As will be discussed below, indeed there are many on-going developments related to Gender Equality, Science Literacy and the ‘three O’s’: Open Science/Open Innovation/Open to the world.

8.4.2 Desktop findings
In our analysis of the current status of RRI(-related aspects) in MSCA, we aimed at comprehensiveness in regard to the level of discussion. In the desktop analysis, we have analysed the MSCA part of the regulation that establishes Horizon 2020 on policy level. This has been complemented with an analysis of three Work Programme documents for MSCA, including the calls related to the last two Work Programmes. We have furthermore included related available proposal templates, for ITN (2018); IF (2018); RISE (2018), COFUND (2018) and NIGHT (2018). In addition, we have looked at the available evaluation criteria for the same calls. Finally, we have incorporated the CORDIS analysis and manual validation from CWTS for MSCA, so as to include MSCA on project level in the analysis.

8.4.2.1 Role of RRI on MSCA programme levels

Policy document level: Regulation of Establishment of H2020 – MSCA section

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Summary - Keys:
On policy document level, there are a few mentions of specific keys. Of these, Gender equality, dissemination (Open Access/Science Literacy) and Governance are centre stage in MSCA on policy (document) level. Given the absence of the other keys, on average, we assess explicit awareness of RRI on policy document level as ‘modest’.

143 With the exception of NIGHT, for which the evaluation criteria could not be traced.
144 The WP Leader may want to focus only on the bold text for synthesizing purposes because these explain and summarize the content. Underneath the bold texts are illustrative quotes that illuminate the basis on which conclusions were reached.
Gender equality:
‘Marie Skłodowska-Curie actions will ensure effective equal opportunities for the mobility of male and female researchers, including through specific measures to remove barriers. [...] Gender equality, high-quality and reliable employment and working conditions and recognition are crucial aspects that must be secured in a consistent way across the whole of Europe.’ (European Parliament & the Council of the EU, 2013, p. 347/129).

Open Access/Science literacy:
‘The activity shall further aim at raising awareness of the importance and attractiveness of a research career and at disseminating research and innovation results emanating from work supported by Marie Skłodowska-Curie actions.’ (idem, p.347/131)

Governance:
‘All the activities under this challenge will contribute to creating a whole new mindset in Europe that is crucial for creativity and innovation. Marie Skłodowska-Curie funding measures will strengthen pooling of resources in Europe and thereby lead to improvements in coordination and governance of researchers' training, mobility and career development.’ (idem, p.347/130).

3 O’s:
Inter-sectoral and transnational mobility, which are key to MSCA, can be understood as core issues of Open Innovation which as a policy goal seeks to stimulate the free circulation of knowledge and to foster a culture of entrepreneurship. As such what is central to MSCA can be considered de facto manifestations of Open Innovation and Open to the world.

Open innovation/ Open to the World:
‘the best researchers in Europe and in the world need to work together across countries, sectors and disciplines. Marie Skłodowska-Curie actions will play a key role in this respect by supporting staff exchanges that will foster collaborative thinking through international and intersectoral knowledge-sharing that is so crucial for open innovation.’ (idem, p. 347/129).

Huge amount of constantly repeated references to intersectoral and transnational mobility (Open Science/Open to the World), e.g.:
‘Significant involvement of businesses, including SMEs and other socio-economic actors, will be needed to equip researchers with the cross-cutting innovation and entrepreneurial skills demanded by the jobs of tomorrow and encourage them to consider their careers in industry or in the most innovative companies.’ (idem, p.347/128)
‘It will also be important to enhance the mobility of these researchers, as it currently remains at a too modest level: in 2008, only 7 % of European doctoral candidates were trained in another Member State, whereas the target is 20 % by 2030’ (idem).
Summary - Implicit understandings of RRI

There are indications of an implicit understanding of (anticipation of) Societal/Sustainability/Economical Challenges, interdisciplinarity and cooperation with third countries. These come into play notably in the interpretations in MSCA context of the Principles of Innovative Doctoral Training, the European Charter for Researchers and the Code of Conduct for the Recruitment of Researchers.

(Anticipation of) Economical challenge:
‘Although Europe hosts a large and diversified pool of skilled human resources for research and innovation, this needs to be constantly replenished, improved and adapted to the rapidly evolving needs of the labour market. [...] This, combined with the need for many more high-quality research jobs as the research intensity of the European economy increases, will be one of the main challenges facing European research, innovation and education systems in the years ahead’ (idem, p. 347/127).

(Anticipation of) Societal/sustainability challenge:
‘The human factor is the backbone of sustainable cooperation which is the key driver for an innovative and creative Europe able to face societal challenges, and key to overcoming fragmentation of national policies. Collaborating and sharing knowledge, through individual mobility at all stages of a career and through exchanges of highly skilled R&I staff, are essential for Europe to re-take the path to sustainable growth, to tackle societal challenges and thereby contribute to overcoming disparities in research and innovation capacities’ (idem, p.347/129)

(Anticipation of) Societal challenge:
‘the societal challenges to be addressed by highly skilled R&I staff are not just Europe’s problem.’
(idem, p.347/130)

Interdisciplinarity and cooperation with third countries:
‘Key activities shall be to provide excellent and innovative training to early-stage researchers at post-graduate level through interdisciplinary projects, including mentoring to transfer knowledge and experience between researchers or doctoral programmes, helping researchers to develop their research career and involving universities, research institutions, research infrastructures, businesses, SMEs and other socio-economic groups from different Member States, associated countries and/or third countries.’ (idem, p.347/130)

Principles of Innovative Doctoral Training (idem, p.347/129)


**Mention of other relevant policy agendas:**

‘Innovation Union’, 'Youth on the Move' and 'Agenda for New Skills and Jobs’ […]’the Erasmus+ programme and the KICs of the EIT.’ (idem, p.347/130).


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**Explicit**

**Summary - Keys:**

**Work programme 2014-2015**

From the start, there was a high awareness of **Gender** as a key issue, both in terms of gender equality as well as in the sense of gender dimensions of research and training on these aspects. There is some use of language (‘dissemination’) related to **Science Literacy/Public Engagement** and **Open Access**.

**Gender:**

‘Marie Skłodowska-Curie actions pay particular attention to gender balance. In line with the Charter and Code, all Marie Skłodowska-Curie proposals are encouraged to take appropriate measures to facilitate mobility and counter-act gender-related barriers to it. Equal opportunities are to be ensured, both at the level of supported researchers and that of decision-making/supervision. In research activities where human beings are involved as subjects or end-users, gender differences may exist. In these cases, the gender dimension in the research content has to be addressed as an integral part of the proposal to ensure the highest level of scientific quality. As training researchers on gender issues serves the policy objectives of Horizon 2020 and is necessary for the implementation of R&I actions, applicants may include in their proposals such activity.’ (EC, 2014, p. 3)

**Open Access/Science education/public engagement**

‘To further enhance dissemination and public engagement, beneficiaries of the Marie Skłodowska-Curie actions are required to plan suitable public outreach activities’ (idem, p. 4)

**Open Access:**

‘A novelty in Horizon 2020 is the Open Research Data Pilot which aims to improve and maximise access to and re-use of research data generated by projects. While certain Work Programme parts and areas have been explicitly identified as participating in the Pilot on Open Research Data, individual actions funded under the other Horizon 2020 parts and areas can choose to participate in the Pilot on a voluntary basis. The use of a Data Management Plan is required for projects participating in the Open Research Data Pilot’ (ibid., p. 4).
Work programme 2016-2017

An explicit mention of all keys of RRI and the concept itself has now been added. Science Literacy and Public Engagement are now phrased in terms of coping with Sustainability Challenges and Public Engagement is seen in a more differentiated way, even mentioning citizen science as an option. Research integrity is also added, which points to Ethics.

All:
‘The Marie Skłodowska-Curie actions endorse the Horizon 2020 Responsible Research and Innovation (RRI) cross-cutting issue, engaging society, integrating the gender and ethical dimensions, ensuring the access to research outcomes and encouraging formal and informal science education. All applicants to the Marie Skłodowska-Curie calls are encouraged to adopt an RRI approach into their proposals’ (EC, 2016, p. 5).

Gender:
Same as in previous WP.

Open Access:
Same.

Science education/public engagement:
Has been coupled more to sustainability challenges:
‘To further enhance dissemination and public engagement, beneficiaries of the Marie Skłodowska-Curie actions are required to plan suitable public outreach activities. In this way, they can also contribute to the cross-cutting objectives of Horizon 2020, such as climate action, sustainable development and biodiversity’ (idem).

Public engagement:
‘This can include participation of MSCA fellows in the European Researcher’s Night (NIGHT), presenting their work and personal experience in schools (e.g. within the 'Researchers at school and at university' [Re@ct] initiative), creating blogs, participating in radio or TV programmes, setting-up exhibitions or other engagements and dialogue with the general public, such as through citizen science’ (ibid.).

Open Access:
Rephrased into:
‘A novelty in Horizon 2020 is the Pilot on Open Research Data which aims to improve and maximise access to and re-use of research data generated by projects. Applicants to the Marie Sklodowska-Curie actions may participate in the Open Research Data Pilot on a voluntary basis. Participation in the Pilot is not taken into account during the evaluation procedure. In other words, proposals will not be evaluated favourably because they are part of the Pilot. More information can be found under General Annex L of the work programme. A further new element in Horizon 2020 is the use of Data Management
Plans (DMPs) detailing what data the project will generate, whether and how it will be exploited or made accessible for verification and re-use, and how it will be curated and preserved. The use of a DMP is required for projects participating in the Open Research Data Pilot. Other projects are invited to submit a DMP if relevant for their planned research. Only funded projects are required to submit a DMP’ (ibid.).

Ethics:
‘Principles of research integrity - as set out, for instance, in the European Code of Conduct for Research Integrity – will apply throughout all Marie Skłodowska-Curie actions’ (idem, p. 4)
‘The ethical dimension of the activities undertaken should be analysed and taken into account, including relevant socio-economic implications. This implies the respect of ethical principles and related legislation during the implementation. Whenever possible, the activities should also include in their objectives a better understanding and handling of the ethical aspects as well as the promotion of the highest ethical standards in the field and among the actors and stakeholders’ (idem, p. 5).

Work Programme 2018-2020
Extra attention to Science Literacy, but – please note – it is explicated that this should not hurt the research.

Science Education:
‘Both early-stage and experienced researchers may choose to lecture, tutor, and supervise students, and follow training in order to perform such tasks. Time spent on these activities should be of a reasonable amount which, in the opinion of both the researcher and his/her supervisor would not jeopardise the execution of the research project and is considered to be part of the MSCA action similarly to dissemination and communication activities, including public outreach’ (EC, 2017e, p. 5)

Others:
Same.

Summary - 3 O’s:
Work programme 2014-2015
Some references to opening up to people from different institutes, socio-economic actors and industry and cross-border, cross-sector mobility pointing to Open Science, Open Innovation and Open to the world.
Adding to what’s already been said:
Open Science/Open Innovation/Open to the world:
‘The Marie Skłodowska-Curie actions are open to researchers and innovation staff at all stages of their career, as well as to universities, research institutions, research infrastructures, businesses, and other socio-economic actors from all countries, including third countries under the conditions defined in Horizon 2020 Rules for Participation and in part A of the General Annexes to the Work Programme. Attention is paid to encouraging the strong participation of industry, in particular SMEs, for the successful
implementation and impact of the Marie Skłodowska-Curie actions’ (ibid., p.3).
The Marie Skłodowska-Curie actions ensure excellent and innovative research training as well as attractive career and knowledge-exchange opportunities through cross-border and cross-sector mobility of researchers …’ (ibid).

**Work programme 2016-2017**
*Civil Society Organisations* is now included as potential beneficiary.
*Open Innovation/Open to the world:*
This has been added: ‘including civil society organisations’ (idem, p. 4)

**Work programme 2018-2020**
What has been achieved until now is now also discussed in terms of addressing international and cross-sectoral mobility (*Open Science/Open Innovation/Open to the world*). There is an extra emphasis on entrepreneurial activities.
*Open Innovation/Open to the world* and MSCA contributing to *Societal Challenges* stays the same but is elaborated upon by showing what has been achieved until now:
‘The MSCA account for more than half of all third country participations in Horizon 2020 and one in four MSCA fellows are researchers attracted to Europe from countries outside the EU Member States or Horizon 2020 Associated Countries. An estimated 45% of fellows benefit from some form of cross-sectoral mobility out of or into an academic setting.’ (idem, p. 65).

*Open Innovation:*
‘Experienced researchers may opt to work part-time on their MSCA action in order to pursue supplementary activities. These might include creating a company, pursuing another research project, or engaging in advanced studies not related to the MSCA grant’ (ibid.).

Rest is the same.

**Summary - Implicit:***
**Work programme 2014-2015**
There is mentioning of *Societal Challenges*, the European Charter for Researchers and the Code of conduct for the Recruitment of Researchers.
*(Anticipation of) Societal challenges:*
... to better prepare them for current and future societal challenges’ (idem, 2014, p.3)

*Other relevant policies:*
‘The principles of the European Charter for Researchers and Code of Conduct for the Recruitment of Researchers1 (Charter and Code) promoting open recruitment and attractive working and employment conditions are recommended to be endorsed and applied by all the funded participants.’ (ibid, p. 3)
Work programme 2016-2017

Same.

(Anticipation of) Societal challenges:
Same as in the previous WP.

Other relevant policies:
The same as in the previous WP.

Work programme 2018-2020

There is now an emphasis on the Societal Impact that the programme has generated yet this seems to be viewed in terms of publications. Sustainable Development Goals are mentioned. Inclusiveness towards migrants and Widening countries is added.

Societal impact (but from a very particular perspective):
‘there is also strong evidence of the longer-term scientific value and societal impact of the programme. To date, there have been 1 114 publications in MSCA projects, of which 740 in peer-reviewed journals. This is the highest number of all areas in the Framework Programme’ (ibid.).

Societal Challenges and Sustainable Development Goals:
‘Although a bottom-up programme, the Marie Skłodowska-Curie Actions also significantly contribute to achieving the Sustainable Development Goals (SDG) as evidenced by the H2020 interim evaluation: "MSCA funding addresses societal challenges to a significant extent, above the Horizon 2020 average and well ahead of the other areas in the excellence pillar: 62% of the budget in 2014-2015 was awarded to projects related to sustainable development, 23% to climate change and 6% to biodiversity’ (idem, p. 6).

Inclusiveness:
‘The MSCA will increase support to providing conducive framework conditions to integrating researchers displaced by conflict outside the EU and Horizon 2020 Associated Countries into the European research and innovation landscape on a long-term basis’ (ibid.).

Widening participation:
‘Therefore, specific Widening Fellowships in line with the high quality standards of the MSCA Individual Fellowships will be implemented through Work Programme part 15 (Spreading Excellence and Widening Participation)’ (p. 6)

Other relevant policies:
Same.
## Summary - Keys:

There seems to be a high awareness of all keys except Governance. Especially Science 
Literacy (of both doctoral students as well as towards the general public) is valued and 
there is even an explicit mention of RRI as an approach/concept.

**Explicit mention RRI together with Open Science:**

‘Common introductory training for all MSCA-fellows should be arranged […] This will 
enable fellows to receive specific training in dimensions that will empower them to 
become leaders of the new generation of researchers (such as training in open science 
and responsible research and innovation), and to be directly informed about their rights 
and obligations as MSCA-researchers. This will foster a common sense of identity and 
further strengthen the already successful brand name’ (EC, 2016b, p.7)

**Open Access/Science:**

‘Open Science. Research training must ensure that researchers develop the key skills to 
be able to implement open science in their daily work and become active contributors to 
the digital era in research. Researchers shall hence acquire the digital skills that will allow 
for optimal research data management and data sharing with the rest of the research 
community, through opening access to their publications and to their research data. They 
shall also develop the knowledge and the communication skills, using new digital (social) 
media […]’ (idem, p. 2).

**Science literacy:**

‘…1) to reach out efficiently to the general public, 2) to explain their research results to 
them in an easily understandable fashion, and 3) to emphasise how their work may 
contribute to improve their lives and/or to provide a better understanding of the world 
they live in’ (ibid.).

‘The European Researchers’ Night (NIGHT) will continue its successful outreach activities 
communicating science to youth and the general public, highlighting both the results of 
research and the attractiveness of a research career’ (idem, p. 4).

‘The possibility for researchers to become involved - and supported through appropriate 
pedagogical and didactic training - in teaching up to a reasonable amount of time should 
be made more explicit, as teaching can create synergies between education and research 
and allows researchers to gain valuable transversal skills’ (idem, p.4)

‘For instance, further efforts are needed to ensure the structural embedding of research 
in teaching and learning to help students develop an inquiring mind. Best practices in 
combining H2020 and ESIF funding should be highlighted more strongly to increase their 
uptake’ (idem, p. 7/8).

‘encouraging more young people to embark on a career in research’ (idem, p.8).
Public engagement:  
‘a training in how to best include citizens in the research design and processes (when relevant) and in how to engage with them in citizen science projects for example, will allow researchers to empower their research and maximise its impact, while strengthening the trust built with the general public’ (idem, p. 3).

Ethics:  
‘Training in ethics will naturally be essential in this setting to best accompany and guide researchers in the appropriate use of all the digital and communication competencies acquired to promote and implement open science’ (ibid.).

Gender equality:  
‘Under H2020 so far, a total of 40.9% of MSCA-supported researchers are women. This is higher than the average percentage of female researchers in Europe and shows the openness of the programme to women. The MSCA will ensure that their participation will remain at a high level, hence evaluators will be sensitised to unconscious gender or other biases. The attractiveness of the Individual Fellowships’ Career Restart Panel will be further increased. [...]In addition, the conditions for benefitting from the family allowance should be made more flexible in order to ensure that researchers with dependent family members are appropriately financed. The family allowance can only truly fulfil its purpose if it is fully accessible to all researchers eligible for it, at all stages of their career’ (idem, p. 5)

Summary - 3 O’s:  
There appears to be a high awareness, considering the explicit mention of the booklet on Open Science and a lot of mentions of inter-sectoral and transnational mobility (which are here seen as de facto applications of Open Innovation and Open to the world).


Open Science:  
‘Finally, assessment of researchers for career progress and during evaluation processes for funding should also take into account these new dimensions of researchers’ work in order to best promote and expand open science practices’ (idem, p. 3).

Open Innovation:  
‘The Innovative Training Networks (ITN) will provide support for innovative doctoral training of researchers in the academic and the non-academic sector.’ (ibid)
‘Part-time fellowships [...] will allow researchers to work on their research project, while at the same time giving them the opportunity to become entrepreneurs and start a company, work in a different sector, or embark on further advanced training or studies’
Therefore the MSCA will continue to promote and support mobility between the academic and the non-academic sector and training in entrepreneurship. In line with the country-specific recommendations of the European Semester 2016, the MSCA will also continue to strengthen intersectoral cooperation to turn research results into future products and services and contribute to the exploitation of Europe's innovation potential. 887 enterprises already receive funding within 1,050 MSCA projects, which represents 37% of the total number of beneficiaries’ (idem, p. 6) ‘The Society and Enterprise Panel under Individual Fellowships was created in 2016 to support researchers training in the non-academic sector specifically’ (idem., p. 7) ‘Also, intersectoral mobility is not an end in itself but should lead to genuine innovation. [etc.]’ (ibid.).

Open Innovation to the World:
‘the Research and Innovation Staff Exchange (RISE) scheme will provide support for international and intersectoral cooperation and transfer of knowledge through the exchange of staff’ [...] ‘the Research and Innovation Staff Exchange (RISE) scheme will provide support for international and intersectoral cooperation and transfer of knowledge through the exchange of staff’ (idem, p. 4).

Open to the World:
‘The Global Fellowships will be reinforced to enable more researchers to gain new skills and knowledge abroad which they bring back to Europe from leading centres in any country. This will also foster new partnerships between outgoing fellows, their European employers, and their host organisations around the world. [...] The MSCA will more actively target European researchers abroad with the aim of reintegrating them in Europe on a long-term basis by strengthening the Reintegration Panel as part of the Individual Fellowships’ (idem, p. 5/6)

Summary - Implicit:
There appears to be a high implicit incorporation (since awareness is hard to discern when it comes to implicitness) of dimensions of anticipation, responsiveness and inclusiveness. Mostly, these relate to the research system and not so much to society as a whole. There are references to Global/Societal Challenges (migration) and important events/networks.

Anticipation (but of future research related positions):
‘The Marie Skłodowska-Curie actions (MSCA) under Horizon 2020 (H2020) contribute to these goals by equipping researchers with the right knowledge, skills and international and intersectoral exposure to fill the top research positions of tomorrow, both in the
academic and the non-academic sector’ (idem, p.1)

**Responsiveness (towards a changing R&I landscape):**
‘The resulting Strategic Advice Report recommends building on the existing strengths of the MSCA and continuing the bottom-up, excellence-driven approach, while reflecting the changing landscape of research and innovation to better equip researchers with the right skills and competences to thrive in a changing environment’ (ibid.).

**Societal/technological challenges and multidisciplinarity:**
‘Inter/Multidisciplinarity reflects the complexity of societal challenges, the conversion of enabling technologies and the emphasis placed by funders of research (which increasingly includes the non-academic sector) on innovation as an outcome. It is estimated that more than one-third of all references in scientific papers now point to other disciplines and a similar proportion of MSCA fellowships are inter/multidisciplinary’ (idem, p. 3)

**Open to the world/global challenges:**
‘Strengthening international cooperation in research and innovation is a strategic priority for the European Union to access the latest knowledge and the best talent worldwide, tackle global challenges more effectively, create business opportunities in new and emerging markets, and use science diplomacy as an influential instrument of external policy. Increased efforts are also needed to attract and retain researchers in Europe as well as to open mobility paths for European researchers elsewhere in the world’ (ibid.).

**Societal challenge: (anticipation of) migration**
‘Migration is likely to remain considerable in the coming years, as a result of the instability in Europe’s neighbourhood and beyond. Research can help to evaluate and respond to these migration streams through expertise and foresight, addressing the challenges and root causes of migration. EU-funded research can also support displaced researchers to integrate into the European research landscape, which often involves intra-European mobility and building links with economic and social actors’ (ibid.).

**Inclusiveness (related to career restart and migration):**
‘The MSCA will continue to support displaced researchers to integrate into a research position in their European host country. The mobility rule will continue to apply to refugees only from the moment in time when the refugee status has been obtained. It is also intended to strengthen the Individual Fellowships’ Career Restart Panel that is promoted to displaced researchers who may have been forced to interrupt their career. The capacity of the Reintegration Panel to support displaced researchers who previously worked in Europe and now wish to come back will be increased and communicated. The possibility of providing specific support to displaced researchers through e.g. COFUND will also be highlighted’ (idem, p.6).

**Inclusiveness (related to disability):**
‘Specific support should also be provided to researchers living with a disability: Mobility is
often far more difficult and more expensive for them due to special needs when travelling, finding a suitable residence, and working abroad. Nevertheless, disabled researchers should be able to enjoy the same opportunities as their peers to participate in the MSCA, therefore a distinct disability allowance for such researchers should be introduced’ (idem, p. 4).

Societal and economic challenges (and visibility of contribution to benefits):
‘a strengthened community of MSCA researchers and higher visibility of the programme as well as its contributions that benefit both society and economy’ (idem., 8).

Widening participation:
‘The results from the first three years of MSCA implementation reveal the existence of a research and innovation gap across Europe. [...] supporting measures will be introduced to stimulate higher quality applications from potential beneficiaries in under-represented countries’ (idem, p.4).

Other policies:
‘Synergies and complementarity with other EU policies, funding programmes and bodies will be emphasised, notably the European Structural and Investment Funds (ESIF) as well as education-focused initiatives such as the European Institute of Innovation & Technology, the New Skills Agenda for Europe, and a renewed framework for cooperation on the Modernisation of Higher Education’ (idem, p.7).

Events and network:
Mention of the MCAA and the NCP network (idem, p.8).

Call level – Calls for ITN, IF, COFUND, RISE and NIGHT in WPs from 2016-2017/2018-2020

This assessment of RRI on call level is organized per MSCA funding scheme

<table>
<thead>
<tr>
<th>Explicit:</th>
<th>Keys: low awareness but growing over the years in COFUND</th>
<th>O’s: high awareness</th>
<th>Implicit: low awareness</th>
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**Innovative Training Networks (ITN)**

Summary keys/3 O’s/implicit:
In the ITN calls related to Work Programme 2016-2017, there is minor awareness of the necessity to do something on Science Literacy and Open Access. Open Science and again international and inter-sectoral mobility (which could be viewed as Open to the World and Open Innovation) are more central. More specifically and implicitly, the ITNs are seen as contributing to the knowledge-based economy and society, EU competitiveness and growth. There’s a mention of the European Charter and Code and the EU principles for Innovative Doctoral training. In Work Programme 2018-2020 there is increasing attention to the possibilities for Open Science/Open Access/Public Engagement.
ITN calls related to Work Programme 2016-2017:

**Keys:**

*Science Literacy*

‘[expected impact at system level:] stronger links between the European Research Area (ERA) and the European Higher Education Area (EHEA), notably through supporting the knowledge triangle between research, innovation and education [...] Increased societal and economic relevance of European higher education’ (EC, 2016a, p. 9)

*Open Access (related to the anticipation of changing research landscape):*

In order to reflect on the changing nature of research, training should prepare early-stage researchers for an increased research collaboration and information-sharing made possible by new technologies (e.g. collaborative tools, open access, raw data, etc.).

‘ (idem, p. 8)

**3 O's:**

*Open Science:*

‘Incorporating the elements of Open Science and equipping researchers with the right combination of research-related and transferable competences’ (idem, p. 7).

‘Substantial training modules, including digital ones, addressing key transferable skills common to all fields and fostering the culture of Open Science, innovation and entrepreneurship will be supported’ (ibid.).

*Open Innovation/Open to the world:*

‘It will provide enhanced career perspectives in both the academic and non-academic sectors through international, interdisciplinary and intersectoral mobility combined with an innovation-oriented mind-set. [...] implemented by partnerships of universities, research institutions, research infrastructures, businesses, SMEs, and other socio-economic actors from different countries across Europe and beyond’ (idem, p. 7)

‘In order to increase the employability of the researchers, the research training should be complemented by the meaningful exposure of each researcher to the non-academic sector’ (idem, p. 7).

‘[Expected impact at organisational level]: Enhanced cooperation and better transfer of knowledge between sectors and disciplines’ (idem, p. 7).

‘[expected impact at system level]: Increase in international, interdisciplinary and intersectoral mobility of researchers in Europe’ (idem).

**Implicit:**

*Challenges related to economic and societal benefit:*

Objective: The Innovative Training Networks (ITN) aim to train a new generation of creative, entrepreneurial and innovative early-stage researchers, able to face current and future challenges and to convert knowledge and ideas into products and services for economic and social benefit (idem, p. 7)

*Higher impact in R&I output/greater contribution to the knowledge-based economy and*
society, EU competitiveness and growth:

‘[expected impact at researchers level]: Increased set of skills, both research-related and transferable ones, leading to improved employability and career prospects both in and outside academia (leading in the longer-term to more successful careers); Increase in higher impact R&I output and more knowledge and ideas converted into products and services; Greater contribution to the knowledge-based economy and society [...] [expected impact at system level]: ] Better quality research and innovation contributing to Europe’s competitiveness and growth’ (idem, p. 8)

European Charter and Code and the EU principles for Innovative Doctoral training:

‘Training responds to well identified needs in defined research areas, with appropriate references to inter- and multidisciplinary fields and follows the EU Principles for Innovative Doctoral Training’ (idem, p. 7)

‘More structured and innovative doctoral training, enhanced implementation of the European Charter and Code and the EU Principles for Innovative Doctoral Training’ (idem, p. 9)

ITN calls related to Work Programme 2018-2020:

3 O’/Keys:

Open Science/Public engagement/Open Access:

‘In order to reflect the new modus operandi of research supporting the development of open science, training should prepare early-stage researchers for increased research collaborations and information-sharing made possible by new (digital) technologies (e.g. collaborative tools, opening access to publications and to research data, FAIR2 data management, public engagement and citizen science, etc.) (EC, 20172, p. 9).

International Fellowships (IF)

Summary keys/3 O’s/implicit:

In the calls related to Work Programme 2016-2017, there a few mentions of RRI keys (only Science Literacy/Open Access). Open Innovation and Open to the world keep playing a crucial role as does the greater contribution to the knowledge-based economy and society. Inclusiveness towards researchers that want to reintegrate is emphasized. In IF calls related to Work Programme 2018-2020, there are no relevant changes.

IF calls related to Work Programme 2016-2020:

Keys:

Science literacy/open access:

‘Better communication of R&I results to society’ (EC, 2016a, p. 13).

3 O’s

Open innovation/open to the world:

The same mentions of expected impact at organisational level and system level of more international and intersectoral mobility and improving the attractiveness of research outside of academia. Thereby contributing to an increase in R&I output and greater contribution to knowledge-based economy and society (idem, p. 12/13)
**Implicit:**

*Inclusiveness in terms of reintegration of researchers:*

‘Return and reintegration of researchers into a longer term research position in Europe, including in their country of origin, is supported via a separate multi-disciplinary reintegration panel of the European Fellowships. For the reintegration panel, there shall be mobility into Europe. Support to individuals to resume research in Europe after a career break, e.g. after parental leave, is ensured via a separate multi-disciplinary career restart panel of the European Fellowships’ (idem, p. 12).

*Higher impact in R&I output/greater contribution to the knowledge-based economy and society:*

Same (idem, p. 13)

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**RISE**

**Summary keys/3 O’s/Implicit:**

In the calls related to Work Programme 2016-2017, we see the same story as with the IF scheme only adding a specific focus on SME’s. In RISE calls related to Work Programme 2018-2020 there are no relevant changes.

**Keys:**

No mention or reference.

**3 O’s:**

*Open innovation/open to the world:*

Same ideas about inter-sectoral and international mobility with particular reference to small and medium enterprises (SME’s) (idem, p. 16).

**Implicit:**

*Higher impact in R&I output/greater contribution to the knowledge-based economy and society:*

Same (idem, p. 17)

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**COFUND**

**Summary keys/3 O’s/Implicit:**

In the calls related to Work Programme 2016-2017 we see a similar story as in the IF/RISE scheme. There are however some relevant changes in the 2018-2020 call with an added focus on Science Literacy, Open Science and implicit integration in the socio-economic system.

**COFUND calls related to Work Programme 2016-2017:**

**Keys:**

No mention.
3 O’s:
*Open innovation/open to the world:*
Same ideas about inter-sectoral, interdisciplinary and international mobility with particular reference to small and medium enterprises (SME’s) (idem, p. 16).

**Implicit:**
*Higher impact in R&I output/greater contribution to the knowledge-based economy and society:*
Same (idem, p. 21)

*European Charter and Code and the EU principles for Innovative Doctoral training:*
Same (idem, p. 21).

**COFUND calls related to Work Programme 2018-2020:**
**Keys:**
*Science education*
Added: ‘Enhance networking and communication capacities with scientific peers, as well as with the general public, that will increase and broaden the research and innovation impact’ (EC, 2017e, p. 23).

3 O’s
*Open Science:*
‘supporting the practice of Open Science through targeted training activities’ (idem).

**Implicit**
*Integration in the socio-economic system:*
‘Strengthening of international, intersectoral and interdisciplinary collaborative networks that will reinforce the organisation’s position and visibility at a global level, but also at a regional/national level by helping them become key actors and partners in the local socio-economic ecosystems’ (ibid.).

**NIGHT**
**Summary keys/3 O’s/implicit:**
In the calls related to Work Programme 2016-2017, there is a very explicit focus on *Science Literacy* and/or what one would call (one-way) Public *Engagement*. The *Gender* dimension is also mentioned, as is the emphasis on the *European dimension*. The latter is emphasized even more in the 2018-2020 calls.

**NIGHT calls related to Work Programme 2016-2017:**
**Keys**
*Science education/public engagement:*
‘Objective: The European Researchers' Night aims to bring researchers closer to the general public and to increase awareness of research and innovation activities, with a view to supporting the public recognition of researchers, creating an understanding of the
impact of researchers’ work on citizen’s daily life, and encouraging young people to embark on research careers’ (EC, 2016a, p. 29).

‘it is the occasion for a Europe-wide public and media event for the promotion of research careers, in particular towards young people and their families. Supported events can start on Friday and last until early morning the following day. Activities focus on the general public, addressing and attracting people regardless of the level of their scientific background, with a special focus on pupils and students. Activities can combine education aspects with entertainment, especially when addressing young audience. They can take various forms, e.g. hands-on experiments, science shows, simulations, debates, games, competitions, quizzes, etc.’ (idem).

‘[Expected impacts:] increased awareness among the general public of the importance of research and innovation and more favourable general attitude towards its public funding; Better understanding of the key benefits that research brings to society; Reduction in the stereotypes about researchers and their profession; Increase, in the long term, of people taking up research careers’ (ibid.).

Gender equality:
‘[they should promote] gender balance in research and innovation’ (ibid.).

3 O’s:
Open to the world/open science:
“‘Each proposal should set up at least one European corner. Activities should be organised with researchers actively involved and directly in contact with the public. They should promote the European dimension’ (ibid.).

‘Involvement of researchers funded by Horizon 2020, including the Marie Skłodowska-Curie actions, is encouraged’ (ibid.).

Implicit:
No mentions.

NIGHT calls related to Work Programme 2018-2020:
3 O’s:
Open to the world
Better understanding of the European Union among the general public (EC, 2017e, p. 23).

Other calls and actions:
In the other calls and actions related to the Work Programme 2016-2017, there are some mentions of training for NCPs on RRI and outreach activities towards the general public by the programme line. In the 2018-2020 Work Programme a call is written for the development of an optional training for starting fellows on Open Science and RRI.

MSCA National Contact Points:
‘Support will be given to a consortium of formally nominated NCPs in the area of MSCA. The activities will be tailored according to the nature of the area, and the priorities of the NCPs concerned. Various mechanisms may be included, such as benchmarking, joint workshops, enhanced cross-border brokerage events, training sessions linked to MSCA as well as to Responsible Research and Innovation, twinning schemes, etc.’ (EC, 2016a, p. 47).

Events and outreach

**Keys:**

*Science literacy/(open science):*

‘During 2016 and 2017, the Commission intends to organise several events (conferences and workshops) dedicated to the Marie Skłodowska-Curie actions, and to contribute to leading research conferences. Moreover, a dedicated campaign will be organised to take a novel approach in communication of research and to disseminate results of the Marie Skłodowska-Curie-funded projects to the general public’ (idem, p. 51).

**In other calls and actions related to Work Programme 2018-2020: one relevant change.**

**Keys:**

*RRI mentioned as a concept*

‘5. Introductory Training:

Optional introductory training for all MSCA fellows will be organised through an online training module, including explanatory videos. This will enable fellows to receive specific training in areas that will empower them to become leaders of the new generation of researchers (such as training in open science, responsible research and innovation) and provide them with useful information regarding their careers as MSCA researchers (rights and obligations as fellows, EU support to innovation, possibilities for international collaboration in research and innovation)’ (EC, 2017e, p. 48).

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**Proposal Template level**

The assessment of RRI on proposal template level is organized per MSCA funding scheme

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<tbody>
<tr>
<td><strong>Keys:</strong> some awareness (differs per proposal template: some more than others)</td>
</tr>
<tr>
<td>O’s: high awareness</td>
</tr>
<tr>
<td>Implicit: low awareness</td>
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</tbody>
</table>

**ITN**

**Summary keys/3 O’s/Implicit:**

The ITN Proposal template exhibits a high awareness of the *Ethics* of research even though it seems to view it in a ‘tick box’- way (with, as we will see in the interviews, a strong focus on concepts related to the life sciences and military research). Applicants are, furthermore, asked to reflect on *Gender* aspects (where appropriate) and to reflect on

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145 Since we have already demonstrated the changes on the level of the Work Programmes and calls, and since most of the templates (except IF) are updated versions with changes tracked by the EC, we will, for the sake of brevity, focus on the last available versions of both the proposal and evaluation templates of the different calls.
communication/dissemination (Science Literacy/Open Access-language) and Public Engagement measures. The incorporation of inter/multi-disciplinary, inter-sectoral aspects are also mentioned as something the applicants should reflect on (Open Science/Open Innovation).

**Keys:**

**Ethics:**

Upfront, participants should declare that the ‘proposal complies with ethical principles (including the highest standards of research integrity — as set out, for instance, in the European Code of Conduct for Research Integrity — and including, in particular, avoiding fabrication, falsification, plagiarism or other research misconduct)’ (EC, 2017a, p. 4)

Participants need to fill in the standard ethics issue table that every H2020 participant needs to fill out (idem, p. 10/11).

Under 6. Ethics issues, applicants are required to read and apply the following:

‘All research activities in Horizon 2020 must respect fundamental ethics principles, including those reflected in the Charter of Fundamental Rights of the European Union. These principles include the need to ensure the freedom of research and the need to protect the physical and moral integrity of individuals and the welfare of animals.

Ethics is an integral part of research from beginning to end, and ethical compliance is seen as pivotal to achieve real research excellence. There is a clear need to make a thorough ethical evaluation from the conceptual stage of the proposal not only to respect the legal framework but also to enhance the quality of the research. Ethical research conduct implies the application of fundamental ethical principles and legislation to scientific research in all possible domains of research. All proposals considered for funding will be submitted to an Ethics Review procedure. The Ethics Review is the core of the H2020 Ethics Appraisal procedure, which concerns all proposals and actions, and also includes the Ethics Checks and Ethics Audit that can be initiated during the action implementation. In this context, please be aware that it is the applicants’ responsibility to identify any potential ethics issues, to handle the ethical aspects of their proposal, and to detail how they plan to address them. Should the applicant identify any ethics issues in the Ethics Issues table in Part A of the proposal, then an ethics self-assessment must be included in part B2 Section 6 (Ethics Issues) of the proposal. The self-assessment in part B2 Section 6 must:

1) Describe how the proposal meets the national legal and ethics requirements of the country or countries where the tasks raising ethics issues are to be carried out.

2) Explain in detail how the consortium intends to address the ethics issues raised in the Ethics Issues table from part A, in particular as regards:

   a. Research objectives (e.g. study of vulnerable populations, dual use, etc.)
   b. Research methodology (e.g. clinical trials, involvement of children and related consent procedures, protection of any data collected, etc.)
   c. The potential impact of the research (e.g. dual use issues, environmental damage, stigmatisation of particular social groups, political or financial retaliation, benefit-sharing, malevolent use, etc.)
   d. Should the proposal be selected for funding, before the beginning of an activity raising an ethics issue, each beneficiary must have obtained: any
ethics committee opinion required under national law and any notification or authorisation for activities raising ethics issues required under national and/or European law needed for implementing the action tasks in question.’ (ibid.).

**Gender:**
Under Excellence 1.2, participants should reflect on ‘where appropriate, gender aspects’ (ibid.).

**Science literacy/public engagement:**
Under 2.4 Quality of the proposed measures to communicate the activities to different target audiences, applicants are required to reflect on ‘Quality of the proposed measures to communicate the activities to different target audiences. Required sub-heading: Communication and public engagement strategy’ (ibid.).

The difference between the obligation to disseminate results and public engagement is explained. Public engagement is explained as having two components: ‘Researchers should ensure that their research activities are made known to society at large in such a way that they can be understood by non-specialists, thereby improving the public’s understanding of science. Direct engagement with the public will help researchers to better understand public interest in priorities for science and technology and also the public’s concerns’ (ibid.).

**3 O’s/Implicit:**
**Open Innovation/Open to the world:**
Under 1.2 Quality and innovative aspects of the training programme, participants are required to reflect on the ‘transferable skills, inter/multi-disciplinary, inter-sectoral [...] aspects’ (ibid.).

Under 2.2a applicants are required to write about the ‘Meaningful contribution of the non-academic sector to the doctoral / research training (as appropriate to the implementation mode and research field’ (ibid.).

**Individual Fellowships**

**Summary keys/3 O’s/Implicit:**

There’s a lot of attention for Gender (under Excellence) and Ethics. Science Literacy/Open Access, in the form of communication and dissemination of results also plays a big role (under Impact). Open Science is mentioned and the interdisciplinary, intersectoral and international elements are also found in the template) (Open Innovation/Open Science).

**Keys:**
**Gender:**
Under Excellence 1.1 Quality and credibility of the research/innovation project; level of novelty, appropriate consideration of inter/multidisciplinary and gender aspects, applicants are required to ‘Discuss the gender dimension in the research content (if relevant). In research activities where human beings are involved as subjects or end-users, gender
differences may exist. In these cases the gender dimension in the research content has to be addressed as an integral part of the proposal to ensure the highest level of scientific quality’ (EC, 2018b, p. 2).

Under Excellence 1.2 Quality and appropriateness of the training and of the two way transfer of knowledge between the researcher and the host, applicants are required to consider discussing ‘Training dedicated to gender issues’ (idem, p.3).

**Ethics:**
Under Excellence 1.2 Quality and appropriateness of the training and of the two way transfer of knowledge between the researcher and the host, applicants are required to consider ‘Hands-on training activities for developing scientific skills (new techniques, instruments, research integrity, ’big data’/’open science’) and transferable skills

Under Section 6 – Ethical issues, a format similar to the ITN is given (idem, 12/13/14).

**Science literacy:**
Under Excellence 1.2 ‘Organisation of scientific/training/dissemination events, Communication, outreach activities and horizontal skills’ (ibid.) are discussed.

**Science literacy/open access/ (open science):**
Under Impact 2.2 Quality of the proposed measures to exploit and disseminate the project results, applicants are asked to ‘Describe how the new knowledge generated by the action will be disseminated and exploited, and what the potential impact is expected to be. Discuss the strategy for targeting peers (scientific, industry and other actors, professional organisations, policy makers, etc.) and to the wider community. Also describe potential commercialisation, if applicable, and how intellectual property rights will be dealt with, where relevant. For more details refer to the "Dissemination & exploitation" section of the H2020 Online Manual. Concrete planning for exploitation and dissemination activities must be included in the Gantt chart.’ (idem, p.4).

**Science/literacy/public engagement:**
Under Impact 2.3. Quality of the proposed measures to communicate the project activities to different target audiences, applicants are asked to ‘Demonstrate how the planned public engagement activities contribute to creating awareness of the performed research. Demonstrate how both the research and results will be made known to the public in such a way they can be understood by non- specialists. The type of outreach activities could range from an Internet presence, press articles and participating in European Researchers' Night events to presenting science, research and innovation activities to students from primary and secondary schools or universities in order to develop their interest in research careers.

For more details, see the guide on Communicating EU research and innovation guidance for project participants as well as the “communication” section of the H2020 Online Manual. Concrete planning for communication activities must be included in the Gantt chart’ (idem).

**3 O's/Implicit:**
*Open science:*
See ethics.

Open Innovation/Interdisciplinary aspect:
Under Excellence 1.1 Quality and credibility of the research/innovation project; level of novelty, appropriate consideration of inter/multidisciplinary and gender aspects, applicants are required to reflect on the interdisciplinary aspects (where relevant) (idem, p. 2).

Under 1.2 training on ‘Inter-sectoral or interdisciplinary transfer of knowledge (e.g. through secondments)’ (idem, p.3) is discussed.

COFUND
Summary keys/3 O’s/Implicit:
For this particular action, there is an explicit requirement for applicants to reflect on possibilities for training on all aspects of RRI except Governance. Moreover, the exploitation and dissemination of results to all kinds of stakeholder groups, Open Access and communication of the implications of the work of science for society are all included. A deliverable in Ethics should be included. Interdisciplinarity, intersectoral and international development are mentioned (Open Science/Open Innovation/Open to the world).

Keys:
Several of the keys:
Under Excellence 1.3. (Quality of career guidance and training, including supervision arrangements, training in transferable skills), applicants are asked to reflect on training on non-research oriented skills:
Describe the training on research skills within the appropriate discipline(s) and/or to gain new skills; Support and/or additional training in non-research oriented transferable skills (i.e. grant writing, project management, IPR, entrepreneurship, training for job interviews), ‘open science skills’ (i.e. learn researchers how to open access to their publications, manage and share their research data, be trained in ethics and research integrity, on gender balance in teams and research content, learn to communicate with the general public and to even integrate citizens in research design and processes including through citizen science)’ (EC, 2018a, p. 2).

Science literacy/open access/ (open science):
Addressed under Impact 2.3:
‘Quality of the proposed measures to exploit and disseminate the Results. Describe plans and procedures for exploitation and dissemination of results towards the research and innovation community and other relevant stakeholders (e.g. industry, other commercial actors, professional organisations, policy makers) in order to achieve and expand potential impact of the programme. This includes the strategy to be adopted to ensure open access to publications and to research data (when appropriate) as well as promoting FAIR data management’ (idem, p. 3).

Science literacy/public engagement:
Under Impact 2.4 (Quality of the proposed measures to communicate the results to different target audiences), applicants are asked to describe: ‘Communication and public engagement strategy of the programme; in particular the approach envisaged to create awareness among the general public of the research work performed under the programme and its implications for citizens and society should be described’ (idem, p.3).

**Ethics:**

Next to the requirement of an explicit deliverable on ethics per call, a whole paragraph is devoted to ethics:

‘All research activities in Horizon 2020 must respect fundamental ethics principles, including those reflected in the Charter of Fundamental Rights of the European Union2 and the relevant ethics rules of H2020. These principles include the need to ensure the freedom of research and the need to protect the physical and moral integrity of individuals and the welfare of animals. Ethics is important for all research domains. Informed consent and confidentiality are as important for a sociological study as they are for clinical research.

In this context, please be aware that it is the applicants’ responsibility to identify any potential ethics issues, to handle the ethics aspects of their proposal, and to detail how they plan to address them.

COFUND programmes often follow a bottom-up approach and it is often not known in advance if the fellowships to be funded will raise ethics issues. Therefore, it is important to describe how the proposal meets the European as well as the national legal and ethics requirements of the country or countries where the tasks raising ethics issues are to be carried out. In particular, applicants should take care to describe the ethics procedures that they will enforce in the execution of the programme (at application phase, selection and evaluation phase, monitoring and follow-up of projects, and the trainings on ethics). A report on ethics issues will be produced by the beneficiary for each call it organises.

In practice, this means that the successful COFUND programmes, when opening their calls for proposals, will have to detail the procedure to be followed for addressing proposals raising ethics issues’ (idem, p. 7).

**3 O’s:**

*Open Innovation/Open to the world:*

Reflection under Excellence 1.2. Quality of the research options offered by the programme in terms of science, interdisciplinarity, intersectorality and level of transnational mobility on ‘interdisciplinarity, intersectorality and level of transnational mobility’ (idem, p. 2).

**Implicit:**

*Equal opportunities:*

Under Excellence 1.1 Quality of the selection/recruitment process for the researchers (transparency, composition and organisation of selection committees, evaluation criteria, equal opportunities the applicants are asked to reflect on how they ensure equal opportunities (idem, p. 1).

**Human resources development:**
Under Impact ‘2.2 Aligning practices of participating organisations with the principles set out by the EU for human resources development in research and innovation. Describe how the programme will contribute to the implementation of principles set out by the EU for the human resources development in R&I (such as Charter and Code1, or the Principles for Innovative Doctoral Training for DPs) at the participating organisations; Any other relevant point’ (idem, p. 2).

RISE

Summary keys/3 O's/Implicit:
Here too, attention is paid to Ethics in a similar way. Participants are explicitly asked to partake in the Open Research Data pilot (Open Access) and dissemination of results (in relation to addressing societal needs/challenges) are discussed. Science Literacy/Open Access by reaching out to society and disseminating results and the Gender dimension are also part of the Proposal template. Interdisciplinarity, intersectoral and international development are mentioned (Open Science/Open Innovation/Open to the world) as are the European Charter for Researchers and the Code of Conduct for their Recruitment.

Keys:
Ethics:
Same requirement on complying with ethical principles as with ITN (EC, 2017a, p. 5).
Same ethics table at the start.
Under a separate paragraph, ethics issues are discussed in the same way as in COFUND (idem., p. 29).

Open Access:
Participants are asked whether or not they want to partake in the Open Research Data Pilot (idem, p. 15).

Open Access/Science literacy/ (Open Science):
‘Impact 3.3 Quality of the proposed measures to exploit and disseminate the action results.
Please develop your proposal according to the following lines: Describe the dissemination strategy about the results - targeted at peers (scientific or the action’s own community, industry and other commercial actors, professional organisations, policymakers) and to the wider research and innovation community - to achieve the potential impact of the action.
Please provide adequate details and sufficient arguments for the choices of your planned activities. Elaborate on how results (when available) will be taken up/used. Also the expected impact of the proposed exploitation, commercial application and dissemination measures.
Expected impact of the proposed measures (e.g. addressing societal needs/challenges).
Indicate intellectual property rights aspects (if applicable) and exploitation of results’ (idem, p. 19).

Science literacy/public engagement:
‘Impact 3.4 Quality of the proposed measures to communicate the action activities to different target audiences
Please develop your proposal according to the following lines: Describe the communication strategy of the project and its results, outreach plan and the activities envisaged to engage the public. Please provide adequate details and sufficient arguments for the choices of your planned activities. Consider how activities will be targeted at multiple audiences, beyond the action’s own community (including the media and the public). From the beginning of the project, indicate which channel(s) will be used to inform and reach out to society, and to show the benefits of research.

Elaborate on the expected impact of the proposed activities (idem, p. 20).

**Gender:**
Under Excellence
2.1 ‘Gender aspects in research activities where human beings are involved as subjects or end-users, gender differences may exist. In these cases, the gender dimension in the research content has to be addressed adequately’ (idem, p. 18).

**3 O’s:**
*Open Innovation:*
Under Excellence
‘2.1 Quality and credibility of the research/innovation action; level of novelty and appropriate consideration of inter/multidisciplinary, intersectoral and gender aspects a focus on inter-/multidisciplinarity and intersectoral cooperation’ (ibid.).

*Open Innovation/Open to the world:*
Under Impact
‘3.2 Developing new and lasting research collaborations, achieving transfer of knowledge between participating organisations and contribution to improving research and innovation potential at the European and global levels
Please develop your proposal according to the following lines: Describe the development and sustainability of new and lasting research collaborations resulting from the intersectoral and/or international secondments and the networking activities implemented. Describe the contribution of the action to the improvement of the research and innovation potential within Europe and/or worldwide’ (ibid.).

**Implicit:**
*European Charter for Researchers and Code of Conduct for their Recruitment.*
Under Implementation:
‘In all cases, the Beneficiaries must take all specific steps and measures to implement the principles set out in the European Charter for Researchers and the Code of Conduct for their Recruitment’ (idem, p. 20).

**Night**
**Summary keys/3 O’s/Implicit:**
Interestingly, this action is focused on Science Literacy and Public Engagement.
Furthermore, Public Engagement is seen predominantly in terms of bringing science to the
general public and improving the attitude of the public towards science and research, the public funding thereof and the European character of it. Bringing ideas and insights from the public to research practice (in the form of agenda setting or e.g. ‘citizen science’) is not included.

**Keys:**

*Science literacy/public engagement:*

Under Excellence:

‘1.1 Clarity and pertinence of the objectives
Describe the specific objectives pursued, keeping in mind that the common main objective consists of ‘bringing researchers to the general public and increasing awareness of research and innovation activities, with a view to supporting the public recognition of researchers, creating an understanding of the impact of researchers’ work on citizen’s daily life, encouraging young people to embark on research careers’” (EC, 2017b, p. 5).

Under Impact

2.1. The extent to which the outputs of the project would contribute to each of the expected impacts mentioned in the work programme under the relevant topic. These are: Increased awareness among the general public of the importance of research and innovation and more favourable general attitude towards its public funding; Better understanding of the key benefits that research brings to society; Reduction in the stereotypes about researchers and their profession; Increase, in the long term, of people taking up research careers; Better understanding of the European Union among the general public (idem).

*Open access/public engagement:*

Under Impact

‘2.1 Quality of the proposed measures to exploit and disseminate the project results (including management of IPR), and to manage research data where relevant and to communicate the project activities to different target audiences’ (idem).

Moreover, pre-structured Work packages are involved that elaborate on the Awareness campaign, activities during the night, impact assessment and management.

**3 O’s:**

Not mentioned.

**Implicit:**

None.

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**Evaluation level**

<table>
<thead>
<tr>
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<th>Keys: some</th>
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<tbody>
<tr>
<td>O’s:</td>
<td>some</td>
</tr>
<tr>
<td>Implicit:</td>
<td>some</td>
</tr>
</tbody>
</table>

**ITN**
Summary - keys/3 O's/Implicit:
A focus on Gender, Open Access-related language and Science Literacy/one-way Public Engagement. Moreover, interdisciplinarity and transdisciplinarity and intersectorality are also valued, thereby pointing to the Open Science/Open Innovation.

Keys:
Gender equality
Under Excellence:
‘Quality, innovative aspects and credibility of the research programme (including inter/multidisciplinary, intersectoral and, where appropriate, gender aspects)’ (EC, 2017e, p. 67).

‘Quality and innovative aspects of the training programme (including transferable skills, inter/multidisciplinary, intersectoral and, where appropriate, gender aspects)’ (idem).

Open Access (open science):
Under Impact:
‘Quality of the proposed measures to exploit and disseminate the project results’ (ibid.).

Science literacy/public engagement:
Under Impact:
‘Quality of the proposed measures to communicate the project activities to different target audiences’ (ibid.).

3 O’s:
Open Innovation:
Under Impact:
‘Meaningful contribution of the non-academic sector to the doctoral/research training, as appropriate to the implementation mode and research field’ (ibid.).

Open Science/Innovation:
Under Impact:
Mention of inter/multidisciplinary, intersectoral (see quotes under gender).

Implicit:
Governance conditions:
‘Appropriateness of the management structures and procedures, including quality management and risk management’ (idem).
‘Appropriateness of the infrastructure of the participating organisations’ (idem).

IF
Summary keys/3 O’s/Implicit:
Gender Equality, Open Access and Science Literacy/one-way forms of Public Engagement are addressed. Again, language related to Open Science/Open Innovation. Implicit
mention of the governance conditions needed to implement the IF.

**Keys:**

*Gender equality:*

Under Excellence:
‘Quality and credibility of the research/innovation project; level of novelty, appropriate consideration of inter/multidisciplinary and gender aspects’ (idem, p. 68).

*Open Access (open science):*
‘Quality of the proposed measures to exploit and disseminate the project results’ (idem).

*Science literacy/public engagement:*
‘Quality of the proposed measures to communicate the project activities to different target audiences’ (idem).

**3 O’s:**

*Open Science/Open Innovation:*

Under Impact:
Mention of inter/multidisciplinary, intersectoral (see two quotes under gender).

**Implicit:**

*Governance conditions:

‘Appropriateness of the management structure and procedures, including risk management’ (idem).

‘Appropriateness of the institutional environment (infrastructure)’ (idem).

*Knowledge transfer:

‘Quality and appropriateness of the training and of the two way transfer of knowledge between the researcher and the host’ (idem).

**COFUND**

**Summary keys/3 O’s/Implicit:**

*Open Access and Science Literacy/one-way forms of Public Engagement* are addressed. Again, language related to *Open Science/Open Innovation* and now also *Open to the world*. Implicit mention of the *governance* conditions needed to implement COFUND.

**Keys:**

*Open Access (open science):*

Under Impact:
‘Quality of the proposed measures to exploit and disseminate the results’ (idem).

*Science literacy/public engagement:*
‘Quality of the proposed measures to communicate the results to different target audiences’ (idem.).

**3 O’s:**

*Open Science/open innovation/open to the world:*

Under Excellence:
‘Quality of the research options offered by the programme in terms of science,
interdisciplinarity, intersectorality and level of transnational mobility’ (idem).

**Implicit:**

*Inclusiveness:*
‘Equal opportunities’ in the recruitment process are mentioned (ibid.).

*(Governance of) human resources:*
‘Aligning practices of participating organisations with the principles set out by the EU for human resources development in research and innovation’ (ibid.).

**RISE**

**Summary keys/3 O’s/Implicit:**

*Gender Equality, Open Access and Science Literacy/one-way forms of Public Engagement* are addressed. Again, language related to *Open Science/Open Innovation*. Implicit mention of the *governance* conditions needed to implement RISE.

**Keys:**

*Gender equality:*
Under Excellence:
‘Quality and credibility of the research/innovation project; level of novelty and appropriate consideration of inter/multidisciplinary, intersectoral and gender aspects’ (idem, p. 69).

*Open Access (open science):*
Under Impact:
‘Quality and appropriateness of knowledge sharing among the participating organisations in light of the research and innovation objectives’ (idem).

*Open access/science literacy:*
‘quality of the proposed measures to exploit and disseminate the project results’

*Science literacy/public engagement:*
‘Quality of the proposed measures to communicate the project activities to different target audiences’ (idem).

**3 O’s:**

*Open Science/Open Innovation:*
Under Impact:
Mention of inter/multidisciplinary, intersectoral (see two quotes under gender).

**Implicit:**

Under Impact:
*Lasting collaboration (governance):*
‘developing new and lasting research collaborations, achieving transfer of knowledge between participating organisations and contribution to improving research and innovation potential at the European and global levels’ (ibid.).

*Governance:*
Project level

The assessment of RRI in MSCA on project level is based on the data provided by CWTS.

Yes
- Keys: low/some awareness
- O’s: n.a.
 Implicit: n.a.

Explicit

Keys:
Low/some awareness on the project level, mostly in terms of Science Literacy, ('sending') Public Engagement and Gender Equality.

Of the 4527 MSCA projects from CORDIS that were processed by CWTS, 1170 mentioned one or more terms related to RRI with an average score of 2.2 RRI-related key words.

According to the analysis, all top-8 RRI projects are in the field of the social sciences. Only 6 out of the top 8 could be discussed since the two others did not have a project website.

The top-scoring project is AGenDA, with a high score in gender key words and Public Engagement. 4 out the top-6 projects have high scores on Science Literacy and have creative ways of educating their research to all users. For example: the SCILIFE project (NIGHT) uses a Science in the city format and the CLoSER project (NIGHT) uses a combination of games, activities in schools, seminars and workshops.

Moreover, 3 of the top-6 projects bring science to the public through different events: workshops, lectures, talks and seminars (thereby leading to a high Public Engagement score; whether this is full blown two-way engagement remains to be seen).

All top-6 projects have achieved Gender Equality status and therefore equal participation of men and women in project teams. There were minimal to zero scores on Open Access in the top-6. Only one project, SCILIFE, has all materials online and accessible.

Another interesting find was that among the 29 EC-flagged RRI projects, 5 should receive a high RRI-score given its activities in RRI-dimensions. 6 out of top-8 RRI projects are applied research, whereas most EC-flagged RRI projects are mostly basic research.

Funding Finally: most EC-flagged RRI projects are from the Marie-Curie Innovative Training Networks.

8.4.2.2 General use of RRI

Is RRI (in any form) traceable as a vision in the programme line?
Aspects of the 6 keys of RRI are traceable as a vision in the programme line and the concept of RRI seems to gain momentum (in a way). In the founding text of Horizon 2020, RRI is not mentioned in relation to MSCA and neither is it mentioned in the first Work Programme. In the second and third Work Programme, it is already mentioned as something that all researchers should take into account. In contrast, the latest scoping document has (elements of) RRI written all over it. This being said, parts that could be subsumed under RRI, such as Gender equality and language related to Science Literacy and Open Access have already been present from the start of the programme line. Increased attention to these aspects and other aspects of RRI like Public engagement can also be discerned.

- **Is RRI reflected in the challenge to be addressed? (As opposed to looking for a “technology fix” to the challenge?)**

There is no central challenge since MSCA is by definition a bottom-up programme line. What can be noticed is that there are a few mentions of global/societal/sustainability and economical challenges (notably in the legal text founding the MSCA and in the last scoping paper.) The only specific challenge that was mentioned related to the Migration-issue and this may be coupled to the fact that MSCA is one of the few programmes that has Mobility as its prime focus. What can be said based on the data and analysis above, is that, next to the Gender-aspects, interdisciplinary, cross-sectoral, international aspects of the projects answering calls are really valued in addressing current and/or future said challenges (see also 4.2.3). This might not be a technology fix per se, but it may point us towards how the programme line (and the actors behind it) conceive of this particular implementation of scientific practice as a fix to tackle future challenges (whether they be societal, economical or related to the topic sustainability).

- **Is RRI (or any other underlying principle thereof) reflected in the theoretical considerations of the work programme or the calls? (Theoretical framework of RRI applied in the programme)**

The later Work Programmes (2016-2020) mention RRI as something that all researchers should take into account, when filing an application for the MSCA-programme line. The theoretical considerations that have led MSCA-related policy actors to include RRI in their programme line are not explicated, nor is it clear to which extent these considerations permeate the actual calls, templates and evaluation criteria. The fact is that RRI is mentioned and elaborated beyond what is stipulated as requirements by the European Charter for Researchers, the Code of Conduct for the Recruitment of Researchers and the European Code of Conduct for Research Integrity. Both the Rome declaration and the standard EC webpage on RRI are made part of the MSCA Work Programme information from 2016 onwards, and all applicants are encouraged to ensure that the idea of responsibility in research is well elaborated throughout the proposal.

- **Is RRI (via keys) present only as a tick-box exercise or is it more substantial? If yes, how? Is RRI substantially influencing the way R&I in the programme line carried out?**

The above analysis brings us to the question whether the incorporation of RRI in MSCA is merely a ‘tick-box exercise’ or whether it is substantially influencing the way R&I that get funded in the programme line is carried out. This differs per key, per level and per call (or so
it appears) and therefore it is hard to make general statements. Moreover, it is difficult to make any statements on the actual implementation (save what we know from the CORDIS analysis from CWTS and heard in interviews which will be discussed below). What can be done is to look at how the 6 keys are referred to (or not) in the policy documents and whether or not they ‘trickle down’ to the Work Programmes, calls, proposal templates and evaluation criteria.

*Gender equality*, as already mentioned, is explicitly mentioned in the legal founding text as well as receiving elaborate mentions in the latest Scoping Paper. Interestingly, in most documents the both sides of Gender Equality (so balance of gender in the make-up of a team as well as related to the content of the research itself) are addressed. On the call level, the key doesn’t seem to be addressed, except for a very short mention in the NIGHT call. In the proposal template it is mentioned under Excellence in the calls for ITN, IF, COFUND, and RISE. In the evaluation criteria it is mentioned as something that should be addressed ‘when relevant’ under the Excellence-criterion for ITN, IF and RISE. A prime case of a concept actually trickling down.

A second concept which manifested itself throughout the programme line is *Science literacy*. It is also there already in the legal founding text (in terms of ‘communication’ and ‘dissemination’) when the necessity to disseminate and communicate results of the research is discussed. It is shortly mentioned in the first Work Programme and in later Work Programmes even seen as necessary for tackling Sustainability Challenges. In the latest Scoping Document and Work Programme it is emphasized that applicants may spend more of their time on teaching. On the call level it is present in all calls and most prominently in the NIGHT call. As with the Gender-aspects it seems to be well integrated in the proposal templates as well as the Impact-evaluation criterion for all calls. The interesting thing is that Science Literacy in NIGHT is not just about sharing results but also seems to be focused on convincing people of the importance and meaningfulness of a scientific career and, in later calls, to show the European character of the funding.

*Open Access* is present since the first Work Programme and seems to be predominantly phrased in terms of ‘exploiting’ and ‘disseminating results’. Moreover, in reaction to the changing research landscape, young researchers are required to develop new digital skills related to Open Access. One of the possibilities that is consistently offered throughout the programme is the Open Research Data Pilot. Interestingly enough this is something that can be opted out of without having consequences for evaluation. Open Access-related language can be found in the Work Programmes, calls (ITN/IF/RISE/COFUND) and proposal templates with COFUND and RISE notably discussing communication of the implications of science for society and dissemination of results in relation to addressing societal needs and challenges respectively.

*Public engagement* is there since the beginning of Horizon 2020, but on the outset seems to be predominantly viewed in terms of a one-way engagement akin to a public understanding of science perspective. In later Work programmes and the last scoping paper possibilities to engage in more extensive ways are added (e.g. mention of citizen science as a possibility).
On the call level it is notably absent, except for in the latest ITN calls and NIGHT, and most proposal templates do not reserve a lot of words for this, if at all. The evaluation criteria have integrated engagement under Impact, but mostly in terms of a unidirectional engagement with the public to communicate results.

*Ethics* is well covered in MSCA as will be seen in the interviews discussed below. What can be deduced from the documents is that the topic of Research integrity is added to the Work programme 2016/2017. On the call level, it is notably absent, but on the proposal template level, it is part of every call except NIGHT. It takes the form of a formalized ethics issue table that, as we will see in the interviews, has relations with concepts from life sciences and military research and is coupled loose from the actual template. When he/she answers the questions in the template in a certain way, the applicant is required to use an extra paragraph to address issues related to ethics. Notably, the RISE scheme has a special Ethics deliverable as a requirement.

*Governance* is never explicitly mentioned except for in the founding legal text in which it is stipulated that the MSCA should help the coordination and governance of researchers’ mobility etc. Even on the scoping level all keys are mentioned except governance. The only time when governance returns in an implicit way is when under the Implementation-criterion of the evaluation for the IF, COFUND and RISE schemes applicants are required to reflect on the appropriateness of the management structures and procedures, including quality management and risk management and appropriateness of the infrastructure of the participating organisations.

### 8.4.2.3 Beyond the keys/RRI

- **Three O’s**

  The idea of the “three O’s: Open Science, Open Innovation and Open to the world” permeates the whole MSCA programme line, from policy documents to evaluation criteria. The ideas captured in the three O’s may be seen as MSCA’s *raison d’être*, and therefore play a major role in the policy documents. All actions in MSCA context and the way they are made operational aim at contributing to the knowledge-based economy and, consequently, to society by stimulating the circulation of knowledge notably via stimulating the mobility of knowledge producers and their training. The adjectives ‘inter-/transdisciplinary’, ‘inter-/cross sectoral’ and ‘trans/international’ coupled to the noun ‘mobility’ or ‘cooperation’ are well spread throughout the different levels of the programme’s implementation: from the programme line’s legal founding text (the Scoping Paper) and the Work Programmes, to the Proposal Templates and the Evaluation criteria. Over the past years, furthermore, SME’s and CSO’s are included as partners a grantee is allowed to work with (‘opening up’ the programme further to include societal stakeholders). This is reflected in the self-understanding of people working in and on the programme line, who try to initiate cooperation across all sorts of boundaries in order to help European R&I practitioners, practices and systems to become more connected.

- **Societal challenges/impact**
When moving ‘beyond the keys’ to focus on RRI as a way of dealing with societal challenges, the following can be observed. In MSCA, societal challenges are only superficially discussed in the programme line’s documents. There are a few mentions of societal/economic and sustainability-related challenges in the legal founding text, and every now and then they are mentioned in one of the Work Programmes. Most notably, there is a concrete reference to the problem of Migration in the most recent Scoping paper. In the most recent Work Programme, there is a mention of the societal impact the MSCA programme has had until now, listing the number of funded projects that focused on climate change and biodiversity next to a listing of the number of publications in (amongst others) peer-reviewed journals that MSCA-funded projects have produced.

- **Other important implicit mentions**
  Last but not least, there are a few other implicit mentions worth noting. The European Charter and Code and the EU principles for Innovative Doctoral training are recurrently mentioned and these relate to the responsibility that host organisations have for their doctoral students. Other references are made to being inclusive towards researchers and staff working in/coming from Widening countries, and to being responsible for researchers that want to reintegrate after a break (either because they left Europe or because of parental leave through Reintegration panels).

### 8.4.2.4 Overall assessment of RRI in the programme line, based on desktop research

Based on the previous discussion, we conclude that the awareness of RRI in the programme line can be assessed as ‘Some awareness’ (B). RRI is present in most documents as a concept, and specific aspects of it are present throughout the various levels of programme implementation. Among these, notably Gender Equality, Science Literacy and the three O’s as related concepts stand out as being fully integrated in the programme line’s documents on all levels. However, we cannot assess the RRI-awareness as ‘high’ (A) because of the dominant reading of public engagement as unidirectional; there is no focus on upstream engagement and on multiple levels there appears to be a lack of attention to the social embeddedness of research.

<table>
<thead>
<tr>
<th>Category</th>
<th>Value</th>
<th>Description</th>
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| **A**    | High awareness:  
- Gender Equality;  
- Science Literacy/Open Access (in terms of ‘communication’/‘dissemination’);  
- Three O’s (in terms of ‘cross-sectoral’/’inter’/‘transnational’/‘inter/transdisciplinary’/‘mobility’.  
| • RRI as concept is (implicitly or explicitly) present in most documents on all levels;  
| • RRI keys and O’s are used and referred to in several documents;  
| • Governance structures reflect societal embeddedness;  
| • Upstream/Downstream engagement is present on multiple levels | **B** | Some awareness  
- RRI as a concept gaining momentum  
- Open Access;  
| • RRI as concept is(implicitly or explicitly) present in some documents;  
| • Some RRI keys and O’s are used |
8.4.3 Interview findings

For the diagnosis, we conducted semi-structured in-depth interviews with 12 stakeholders. We selected stakeholders that we deemed crucial for understanding a range of different perspectives from within the ‘ecosystem’ of MSCA and outside of it (for an overview, see Appendix 1). The selection ranged from central policy actors from the EC Unit responsible for MSCA, to MSCA-alumni (included representatives from the alumni association), a former representative from the MCFA, 2 MSCA-focused NCPs, a MSCA IF proposal evaluator, two Open Science experts and a science journalist.

8.4.3.1 Shared understanding of RRI

Level of awareness of RRI as a concept

Apart from a very strong awareness of the six keys-interpretation of RRI at the level of the EC DG (Int. 1), awareness of the concept of RRI and the several elements varies highly amongst participants. Many of the (former) grantees and grantee representatives (MCAA as well as MCFA) that we interviewed indicated that it was unclear to them what the concept entails precisely. As one of them stated: ‘It was an interesting exercise to discuss this issue [with members of the Policy WG]. I think the feedback I can give you is that most people do not know at all what RRI is. The name, designation doesn’t tell them anything. [...] It is not that people are not aware of the issues that are [grouped] under the RRI label. But as a whole, they do not know’ (Int. 10). Another alumnus echoes this when saying: ‘Perspective I get from people is that it is not very clear what it means exactly. We can have a set of values but there is not a list we can check on the Internet to see if we are actually working inside these values. I believe we need to define this first’ (Int. 5). There is a growing awareness of topics resorting under the RRI label, states the MSCA evaluator we interviewed (Int. 4), but this does not mean that the concept is well understood.

As to the reasons why, interviewees suggest that among researchers, there may be a general disinterest in the topic. See e.g. the following statement: ‘What I notice is that it is a very small minority of scientists who are interested in these topics. The rest are just interested in their...
experiments, which is not good I think’ (Int. 7). An expert on Open Science put it as follows: ‘One of the drawbacks is, [the concept of RRI] is kind of flimsy’ (Int. 3). One of the NCPs claims that RRI is not something that a lot of people think about. The NCP states that she only thinks about RRI because she, and her colleagues, knows it may influence their funding advice practice (Int. 6). Another NCP summarizes this as follows:

[Compared to FP7], I do see a change, but regarding the RRI label, I am not sure that the concept as a whole, that you would see very many people who would just says: ‘I know exactly what it means’. So it is a kind of an umbrella label that has very many components. So when you talk about public engagement and gender issues and science education and open science and ethics, then of course these are the issues that are more central and prominent, so people will know about it. But I am not sure that the concept/label as such is also known. People would still have to Google it. (Int. 9)

Some see advantages in the RRI label as an umbrella concept, as it puts everything together. According to a policy actor: ‘No, I think the principles were more or less there, but indeed it puts everything together in one label and it reinforces the different principles that we were trying to implement’ (Int. 1). Consequently, according to a funding and Open Science expert, the keys are essential: ‘The keys are essential of course […]. Most people don’t have a clue of what [RRI] means so the keys provide some structure’ (Int. 8). He issues a warning however that the label should not be taken too seriously as a classification scheme, but rather be used as a heuristic to operationalise efforts at implementing it.

Now that we have considered the de facto understanding of RRI in MSCA context, we continue with a discussion of the various interpretations per key, and of responsibility as such, in the programme line according to the interviewees.

Various interpretations per key

Public engagement: mostly understood in terms of a Public Understanding of Science

Public engagement, in addition to being a central part of the NIGHT funding scheme as was observed above, forms arguably part of the evaluation criteria by which MSCA research proposals are assessed. One could argue that public engagement is implied in the Impact-criterion. This is underlined by a policy actor responsible for MSCA: ‘we encourage [applicants] to communicate to industry, policy makers, civil society; we really encourage them to move outside of their ivory tower’ (Int. 1). As a consequence of this opening up, so policy actors are told, researchers ‘open their minds and horizon individually (through engagement with people outside of their laboratories) [and] that this is slowly changing too the organizations that are working with us’ (Int. 1).

While NCPs observe an increasing emphasis on public engagement – a theme that they offer trainings on for grantee candidates so as to improve chances of proposal selection on the basis of the Impact-criterion (Int. 6, int. 9) – public engagement is predominantly understood in terms of a public understanding of science. A reading of public engagement that fits, as a critical science journalist observes, the deficit model paradigm (“we [researchers] know, and we will let you, the public, [know]”) without acknowledging that there is expertise among the public, that there are all kinds of questions coming from the public’ (Int. 2). This point of view is reflected in many responses
that we received when asking to explain the meaning of public engagement, e.g.: ‘We ask several researchers to discuss [their work in front of an audience and] explain to the general public what they are working on, showcase their work’ (Int. 1). As an NCP states: ‘In the Guide for applicants, there is something on public engagement, but in practice what I see – and proposals get accepted on the basis of this – is that proposals [under this heading] mainly discuss communication. Involvement is more of an activity of communication than actually letting stakeholders influence research. The latter does not happen often’ (Int. 6)

This is also reflected in the way in which the criteria are phrased, and most importantly perhaps, interpreted by both applicants as well as evaluators according to the evaluator: ‘If you look very strict in terms of the evaluation criteria coming from the Commission, you could understand it as a one way thing, the researcher does her research, then there’s results and then they communicate it to the outside world’ (Int. 4). However, the evaluator has the feeling that some of ‘the researchers have understood that that’s kind of old fashioned and too simple’ (idem). He and other evaluators also criticize proposals for such a narrow conceptualisation of public engagement: ‘Actually that is something that shows up quite often in these evaluation reports, that proposals are being criticized on being too narrow on where they want to communicate’ (idem).

More extensive public engagement is however still a sensitive issue in some countries and for some researchers. According to one interviewee, in the North Western European countries, it is far more accepted to involve people in the research process beyond the dissemination phase. But in the South: ‘There is trying to disseminate the results to the scientific community but they do not try so much to involve the general public. That kind of suggestion becomes polemic […] letting the people decide on the orientation of research is a very sensitive issue’ (Int. 5).

Concrete examples of engaging with the public also speak of a public understanding of science perspective among several of our interviewees. For example, when asked after public engagement actors affiliated with the MCAA mention cooperation with Sense about Science that ‘engage[s] with non-scientists, to tell them: “don’t believe any news you receive before asking for the evidence behind it”’. This is something we love from the beginning and we supported it’ (Int. 7), and cooperation with the Voice of Young Science. Other examples given are the participation in the March for Science by local MCAA chapters (Int. 7), participation in the ESOF event Science in the City (showing citizens how research is fun and contributing to the quality of urban live) and the publication of a book for children on the life and works of Marie Skłodowska-Curie (first of a ‘My Super Science Heroes’ book series) to inspire young kids to think about the struggle and fun of a scientific career (Ints. 7/10). In other words, the connotation of ‘public engagement’ is with initiatives that aim to improve public debate by disseminating scientific results and/or make research practices more transparent to outsiders. Upstream engagement, such as in citizen science or citizen informed agenda setting in science, is not referred to.

Someone affiliated with the MCAA suggests that upstream engagement may critically hinge on the time and/or skills among researchers and that not many may feel they are properly equipped to initiate that (Int. 10). Likewise, an NCP reflects that upstream engagement is not something that applicants have in mind when applying for an MSCA grant (Int. 6). This issue is taken up below, under the heading ‘barriers for RRI’.

Gender Equality: extensive efforts do not prevent experiences of discrimination
Concerning *gender equality*, the programme line scores highest within H2020 in balancing women and men applicants. More specifically: according to numbers from the EC, from April 2017, a total of 40.9% of MSCA supported researchers are women: 44.1% in ITN, 41.7% in IF, 34.2% in RISE and 48.2% in COFUND (Sauer, 2017). Next to that, ‘around 41% of MSCA grants funded take into account the gender dimension in research and innovation, compared to 25% of all grants funded during the same period across Horizon 2020’ (idem).

As observed, gender is mentioned under the Excellence-evaluation criterion. A policy actor explains this success: ‘we check the gender balance in the projects. Not only quantitatively but also qualitatively, so that there is no bias in that regard’ (Int. 1) Next to that, there are also ‘some actions in particular helping women come back into research thanks to Career Restart’ (Int. 1.) The evaluator concurs that evaluators critically observe the Gender-aspect when evaluating the Excellent-part of proposals to see whether it is elaborated in way that it is ‘actually relevant’ (Int. 4). An NCP observes that the emphasis on gender in the evaluation process really helps to make people think through how it might affect their research (Int. 6). However, another NCP states that the applicants that she meets are often not sure about how to integrate gender issues in their research: ‘The gender issues relating to their research ... when they are dealing with people [ok] but [when they are dealing with] animals, this is not clear to them. And I am not always sure that they understand me [when I talk about it]’ (Int. 9). She describes how amongst her predominantly Northeastern European client base ‘the gender issues are not taken as seriously as they should be. People are thinking of them as not serious issues or not relevant to their work. […] They often have to be educated in what it is’ (Int. 9).

The MCAA has a specific Working Group working on Gender Equality and Diversity for Mobile Researchers, which is actively visiting conferences and partaking in debates about gender issues (Int. 7). Despite the attention paid to gender in MSCA, there are signals of gender discrimination. A grantee representative states that: ‘on our last survey, there was a lot of feedback by our female members about being discriminated against. That was interesting because I think that there is the general idea that gender equality is ... a problem that has been solved’ (Int. 10). Others concur: ‘I have heard many stories about gender discrimination sometimes, even from female supervisors’ (Int. 7). Specific examples of the discrimination of women were given a representative from the MCA: ‘A colleague [told me] that [she was] one of the few females in the group, and the boss was stating openly that he would send a man to [a] meeting because the impact would be bigger if it is a man talking. [...] Or some more subtle discrimination [...] when one has kids’ (Int. 10). The fact that a fellowship does not last long enough to provide grantees in their host country with the right to parental leave is also recurrently stated as a problem.

**Science education: predominantly understood as sharing research results to inspire the young**

*Science Education* is among the most prominent themes addressed by policy actors and (former) grantees alike when discussing RRI. The aforementioned cooperation with the *Sense about Science* initiative, *VoYS*, the book on Marie Curie and the involvement with ESOF were associated with *public engagement*, yet can equally be understood in terms of science education. The same holds for the NIIGHT projects as they too are framed in terms of dissemination and unidirectional forms of science communication. In general, science education is valued highly. The policy actor remarked that a central goal for FP9 is to be ‘that we should be better at making use of the results of research in society, and make sure that there is a real impact and that this impact is known’ (Int. 1). This is
evidenced by a two-day Satellite Event organised by the Unit together with REA and the MCAA on communication and dissemination, discussing topics like ‘How and where to best present your research’ and ‘How to engage with policy makers’ (EC, 2018). It is expected that the link between research and education in MSCA will be strengthened even more in the future: ‘We now explicitly allow [grantees] to spend up to 50% of their time on something else than their research [...] We are very keen in reinforcing links between European education and European research. This is one of the major objectives for the next years’ (Int. 1).

In the context of talking about the Marie Curie book, a former representative of the MCAA explains that science literacy for him is not just about ‘being literate in science. It is a broader picture; the idea is that kids understand... The first book about Marie Curie is not only on what she did and discovered as scientist and, this is the background, but the real message that we want to get through is that scientists contribute to society, and that thanks to their inventions they can improve the living conditions for example’ (Int. 7).

Reflecting on dynamics like these, the science journalist voices his concerns: ‘My main concern [...] is that RRI becomes one other form of science popularization. It is a more participative way of communicating and popularizing science. [...] It is not something you can just add at the end of a research project as a communication action: it is something that should be there from the beginning’ (Int. 2).

**Open Access (open science): mandatory and often seen as a tick-box exercise**

The interviewees often mention Open Access, since they are obliged by a standard requirement in the grant agreement in Horizon2020 to provide some form of open access to their research articles. The actual implementation of the Open Access rule is of interest, as discussed by the interviewees.

It turns out, so interviewees relate, that Open Access to research articles is, while a given, still something that can be opted out of, as it cannot be penalized in the evaluation (Int. 6). Open Access to research data thus can be reduced to a tick-box exercise. There are other problematic sides to the idea and practice of Open Access. Especially when working with business partners, for example in the ITN’s, COFUND and RISE, it collides with commercial aspects: ‘Especially companies don’t see it as their responsibility. [...] It is complicated because they want to protect data from a commercial point of view.’ (Int. 6). Related to the latter point, an interviewee voiced how different cultures might value the relationship between capitalist notions of intellectual property and open access differently: ‘you might see in a certain region that they think that capitalizing on research or the scheme where you have to pay for some article is something that has economic value and is part of the capitalist system where you’re going to have better research’ (Int. 5). Furthermore, interviewees observe a tension between Open Data and privacy requirements (int. 2).

Various awareness-raising activities are undertaken by the MCAA in view of Open Science. There is an active Open Science Task Force at the Policy Working Group that prepared a position paper in the context of FP9 talks, and that organises events, discussions and even sessions at the ESOF on Open Science that includes someone from the EC, members of the MCAA and publishing (Int. 10). Moreover, there has been a series of webinars on Open Science where a lot of members signed up and were interested in follow-up webinars on parts of Open Science (Int. 2/7/8/10). Finally, there is a specific Working Group on Science to Business at the MCAA (Int. 7).
The Open Science experts we spoke with gave concrete reasons why one wishes to care about Open Science, and how Open Science now is in danger of becoming a term that signifies everything therefore nothing at the same time. Someone working on Open Science as a way to improve proposals with the use of Open Science ideas, mentioned that it is a form of opening up pipelines for reproducibility, reusability and essentially increasing the knowledge transfer from academia to society (Int. 8). Another expert reflected how there have been quite some different interpretations of the term (just as with RRI): 'The general thing of people that come together under the [Open Science] umbrella label is just that since we have digital infrastructures now, we should use them to make parts of science more transparent. But there isn’t “one open science”. For some people, this could mean “talk to stakeholders”, for some this is “make the underlying data visible” so you can do replication studies. Which are completely different streams of thought but under the same broad work’ (Int. 3).

**Ethics:** institutionally integrated but perceived as a niche by some

The *ethics* key appears to be well integrated on an institutional level. According to one of the NCPs, who deals with this in the training and information events, the self-assessment template and guidelines are sometimes really helpful in that they are ‘user-friendly’ and they give applicants ‘already a good idea of what is expected of them’ (Int. 9). According to her this is already a major improvement in H2020 compared to FP7. At the NCP trainings she ‘highlights that [applicants] shouldn’t leave it at the last moment because people have the tendency of filling in the administrative forms at the last step in their proposal preparation and then of course it is far too late’ (Int. 9). The other NCP describes how there are specific Ethics Work Packages linked to ITNs and how they are sometimes required to produce Data Management Deliverables and appoint external Ethics advisors after acceptance of the grant proposal (Int. 6).

Interestingly, policy actors and representatives from the MCAA (Int. 1/7/10) recurrently mention that concerns about research integrity are considered a central question of responsible research and innovation. As the central policy actor mentioned as a first reaction: ‘In all our work programmes, we really set out the principle of research integrity, so we refer to the European Code of Conduct for research integrity, we refer to Open Science and to the Horizon 2020 Responsible Research and Innovation principles’ (Int. 1). The concern for research integrity as a form of responsible research and innovation is reiterated by a former representative of the MCAA: ‘I hear of other fellows that say there is a lot of pressure to publish and again that is mostly on the supervisors: they have all the power and so they put so much pressure and eventually they do some light or less light research misconduct and it is not denounced many times’ (Int. 7). The need for more information on research integrity under members was reflected in the oversubscription of members to the sponsored web courses provided by the MCAA. People that applied were asked to fill in a survey and what came out was that ‘There were some serious cases where people said that they had experienced ethical related, research integrity issues. They were worried, didn’t know what to do. [...] A lot of general curiosity. Mainly the people were worried about not knowing how to deal with these issues’ (Int. 10).

Next to that, the evaluator described how his part of the ‘ordinary’ evaluation process doesn’t really touch upon the ethical issues in the sense that he is explicitly instructed not to look at ethical issues: ‘there’s a whole ethics review board that I was never really informed about when I was briefed as an
evaluator [...] I don’t have to look at these ethical issues as they are conditioned at the moment with these ethics issue tables’ (Int. 4). This ironically points to the fact that, although ethics seems to be well taken care of from a bureaucratic/institutional perspective, ethics is treated as something that can be functionally differentiated/separated from the research itself. Moreover, the questions seem to be focused on specific topics and ‘have a strong linkage to biomedical research and certain biological fields like stem cell research’ (Int. 4). Also, there’s no direct mentioning of the word responsibility.

Other participants voice different perspectives concerning ethics. For one of the interviewees, ethics is a matter of being responsible towards values of a certain community in which one works (Int. 5). For another, ethics can be linked to tracing the research process through the use of open data (Int. 8).

According to an NCP, ethics ‘for applicants are usually the least of their worries. I think they are thinking about their research project as such and less about the [...] ethics aspects.’ (Int. 9). This was echoed by a representative of the MCAA: ‘the people see ethics as kind of a niche of interest in research. So not all researchers think that ethics is applied to them. People in life sciences are more aware of ethics, especially if it involves a medical related project [or] social sciences related projects’ (Int. 10). Moreover, she explained that researchers are mostly focused on ethics only when it is required by law: ‘it is mostly when there’s some regulation, that it is demanded by law that you pay attention to certain aspects, because you deal with patients or participants in a survey or something like that’ (idem). She specifically emphasized that ‘if there is no specific regulation, the people do not think of any ethical aspects’ (idem). Furthermore, the GDPR was given as an example of how that works in practice and how researchers were afraid that this might harm their research (Int. 10).

**Governance: not explicitly mentioned**

*Governance* as a key was not explicitly mentioned. Only in an indirect manner, a policy actor spoke about it, asking: ‘So how can we help mainstream [RRI] principles in individual organisations?’ (Int. 1). The general lack of attention for governance, among researchers, NCPs and others is interesting as one could argue that every attempt at integrating (aspects of) RRI will inevitably be influenced by governance structures.

### 8.4.3.2 Enablers and barriers for integrating RRI in MSCA

From the interviews, information can be inferred about aspects of the programme line that may prove conducive to mainstreaming RRI in MSCA, and about aspects that may hamper its further integration. In this chapter, we list several of these ‘enablers’ and ‘barriers’.

**Enablers: existing requirements, practices, networks and changing attitudes**

The awareness of, and/or dedication to, RRI among policy actors in the EC DG responsible for MSCA is noteworthy. This seems to make RRI stand a fair chance of getting fully integrated (e.g. as compared to other excellent science programme settings). According to an NCP, the reason could be that in MSCA, political considerations of the EC, such as a focus on impact, play a bigger role compared to, for example, the ERC (which is run by scientists and where excellence in terms of research output is the sole ambition, cp. Int. 6). The MSCA grantee association MCAA, which presents a very strong player in the field, is also highly motivated to consider RRI. The organisation is
responsible for setting up a series of Webinars, together with Euroscientist, in which, among other
issues, RRI or RRI-related issues (open science, research integrity) are addressed. These webinars are
well attended, which to some can be understood as an indication of ’sheer interest ... [showing
that]... many people, young people, are ready and open to do science in different ways’ (Int. 2). This
interest is also manifested in on-going discussions on what ‘impact’ of science means. According to
an Open Science expert, many feel that ‘output alone shouldn’t be the end goal of research, we
should have a goal behind it’ (Int. 3). He observes this idea to take root also among people in more
senior actors who partake in working groups: ‘The higher you go up in the hierarchy, the more
understanding they are of the issue. If you talk to people that actually run these research
organisations, they see it as a problem. What they want to have is some kind of societal impact.
[M]aybe also academic impact but they want to have a greater impact’ (Int. 3). According to him also
‘many [young] people are interested in the topic of responsibility in some form. [People] want to
create something; if the things that they create have the form of sustainability or responsibility in
itself it is not only created to be created but also has a purpose that talks to many people’ (idem).

These developments, inside of MSCA and in its context, promise to present concrete footholds for
furthering RRI. (Former) representatives of the MCAA, furthermore, have voiced their willingness to
cooperate with the NewHoRRizon-project (Int. 7/10).

**Barriers: powerful actors, narrow research excellence and lack of structural incentives**

But why then does RRI not show a massive uptake? What are the bottlenecks? Among the barriers
are the aforementioned lack of skills, knowledge, time, and intrinsic motivation among grantees, as
well as more subtle barriers like envisioning RRI as something which can easily be separated from
research (e.g. in the case of ethics and understanding public engagement primarily in terms of
science communication/dissemination of results). In addition, some systemic barriers can be
discerned.

According to some, it is hard to implement RRI understood as an attempt at democratizing science
because ‘Actors with political and economic power have already now a major influence on shaping
science’ (Int. 2). This might keep them, as well as the scientists they influence, from accepting
additional actors from exerting influence on research (agenda’s). This is not counteracted by
democratic dynamics within the scientific system: ‘Usually labs are very vertical and undemocratic.
Maybe universities aren’t vertical and different research institutes are. In different countries there
are different traditions. How can you expect the institution to become more democratic towards an
external actor if they don’t even hear their PhDs?’ (idem).

In addition, some claim that researchers fear that an extensive involvement of the public in research
might prove dangerous and counterproductive: ‘Some people believe it is important to involve the
general public because it is their money and the research is for their benefit, but some other people
believe that that will cause only damage because they don’t understand how research works’ (Int.
5).

A policy actor mentioned the expectations of supervisors and the host organisations in which they
work as a crucial factor: ‘We also get feedback from supervisors: “we want researchers spending
100% of their time on their research, rather than going to spend time giving lessons or participating
in communication events” etc. Even if we ask supervisors to be fully aware of these principles, for
some of them it is harder than for others’ (Int. 1). An MCAA representative echoes this dependence on the willingness of supervisors (Int. 10). The change of cultures like these is slow according to the MSCA policy unit actor.

Maybe more crucial, and underlying the previous comments, is the narrow notion of research excellence that came up in a lot of the interviews and that can be found amongst the earlier named supervisors, (young) researchers, policy makers and therefore in the way in which the programme line has been set-up. This can partly be blamed on the fact that ‘there’s no education. If you look at the education of PhD-students, all of them do classes on scientific publishing […] They don’t have classes on impact. Basically, the end goal is always publication’ (Int. 3). According to an Open Science expert ‘Applicants tend to be trained at academic excellence and rarely trained at what impact is other than research impact. People don’t understand what societal impact of research is, they don’t know how to look at their outputs in another way than research publications’ (Int. 8). An NCP echoes this: ‘I know that for some researchers it is an eye opener but others are not really open to it because for a lot of them Excellence is what it is about […] Researchers find it difficult. If you’re used to always first think and write in terms of the content’ (Int. 6).

The evaluator shows how the particular notion of excellence also permeates evaluation practice: ‘a lot of fellow evaluators are kind of strongly geared towards this understanding of traditional excellence. Many co-evaluators put a lot of emphasis on academic excellence. So I have seen comments coming from others criticizing these young researchers that they haven’t published enough in high-ranking journals, that they haven’t been in excellent schools’ (Int. 4). He adds that this thought permeates the set-up of the programme line: ‘The whole set-up of the funding line Marie Curie is primarily focusing on a certain understanding of excellence. That is in my view the main barrier for an opening towards societal responsiveness’ (Int. 4). He speaks of how it is still the dominant paradigm in quite some research policy networks ‘I think it is still the understanding of high level policy makers that this narrow understanding of excellence is the way to go. That it is the best way to go, to make sure that Europe is academically competitive compared to other regions’ (Int. 4).

According to another Open Science expert, this has to do with how research output has been evaluated in the past decades. The mono-focus on output of oft-cited articles in high-impact peer-reviewed journals has led to ‘a complete disregard for anything that isn’t high quality in these measures. Which means that people wouldn’t even pursue something that doesn’t score high. As a consequence, there is little output but the output scores in this indicator well because that’s the only thing that gets you further in your career’ (Int. 3). He continues: ‘It is like a pendulum and the pendulum swung to an extreme where now article outputs are on a complete pedestal and if you did two great articles, basically you’re made and nobody cares about whether they’re not great’ (idem). Another second-order effect is that is has created virtual colleges of academics publishing for each other and ‘a system [that] is very much revolving around itself, there is no feedback mechanisms what that means outside of the academic system’ (idem). In his eyes this has led to ‘a monolithic researcher: everyone kind of is the same. […] For teaching, for outreach, for society it is horrible because we only have one perspective: they all talk about the same things, they all read the same things, they all publish in the same outlet’ (idem). He clarifies that this doesn’t mean that there should be as little publishing as possible, but that it shouldn’t be the only valued format: ‘It is not necessarily wrong to have people that want to have impact in the academic community, that really
want to focus on publishing high quality articles. I think it is a valid position to have but I don’t think it is a valid position to have for everyone. [...] The system crowds out its most creative people. [...]’ (idem).

Peripherally related is the idea that some PhDs are just used as resources by departments: ‘they see PhDs just as a tool to have some work done. [...] This then affects how the research is used in terms of ethics or in terms of societal values. If you are just paying someone to do some mental work or some work that gives a PhD, you are not interested in promoting that researcher and that researcher is just going to do work to finish the PhD and that’s it’ (Int. 5). Finally, with some NCPs, there is a general fatigue noticeable when it comes to the introduction of ‘extra’ requirements (Int. 6).

The lack of uptake of elements of RRI is echoed by another interviewee who does see that a lot of people want to do something but do not feel empowered: ‘If we go to all of these stakeholders, the one recurrent comment is, well, all of these practices are good, we believe them, we do have the conviction that they are ethical, right and moral and they should be part of the system, but the system is not built for them, the system doesn’t allow for them or the incentives for them or the resources for them’ (Int. 8). He unpacks the micro-dynamics: ‘If a researcher performs RRI to a 100%: they are not getting the career credit and tenure. The colleague next to them who only publishes gets the tenure. [...] So, the system itself is not built to encourage and incentivize RRI-behaviour’ (idem). There is in other words a lack of structural incentives and/or indicators: ‘The discussion we’re having most frequently is that the indicators of research excellence are a little bit simplistic towards what RRI expects’ (idem). There’s a lack of ‘pragmatic, measurable and concrete indicators that can incentivize if someone is spending time on not only publishing the next paper but putting it into context and breaking it down for societal understanding, education, awareness, literacy but also proactive transfer’ (idem). Many scientists do this already in their own time, but it is not recognized and rewarded by the system. The other Open Science expert concludes that there’s the need for a ‘more nuanced [less] one-dimensional’ understanding of excellence (Int. 3).

Possible enablers: awareness, education, criteria and gatekeepers

Next to the enablers that are already there, we also asked interviewees to envision how elements related to the MSCA programme line could be leveraged and what kind of enablers could be envisioned that might further the discussion on and possible uptake of (elements of) RRI in the programme line. One of the primary interesting responses was that ‘Enablers could be stronger: in the end you want to increase consciousness of these things in the scientific system so that it becomes more normal to think about them instead of being forced by a Framework Programme’ (Int. 6).

A first thing that could be done in this regard is to create awareness of RRI, voiced by almost all, and show more the value of including aspects of RRI. For example, ‘some researchers have already learned the value of including stakeholders in their research [...] Even some natural scientists think more easily about involving stakeholders. [...] I think it is also because they see the value for their own research, instead of thinking: “oh yes, I also have to do something with communication”’ (Int. 6). This could be achieved by showcasing examples (Int. 3), by showing how it adds to the quality and therefore chances of acceptance of their proposals (Int. 2/6/9) or by rewarding behaviour through awards: ‘On a funding scheme level, low hanging fruit would be [...] to give one of them the award
for best outreach after the end of the grant. [...] In academia you have to have to stand out from the masses and if the masses all publish in the same journals it gets more complicated just by pure academic excellence just to stand out’ (Int. 3).

Secondly, the educational aspect of MSCA, which really sets it apart from the other programme lines could be leveraged: ‘the role of MSCA is to educate. If they have not yet, in the environment where they have done their previous research work, helped them to understand the concepts of RRI, it is the role of the project preparation phase and during the implementation it is high time that they learn about it’ (Int. 9). This is already partly and implicitly done in the training by NCPs, but it is ‘by far too ambitious to think that this one day where we devote on half an hour on one aspect and on another, would be a life changing moment for them’ (Int. 9). More extensive training could be developed in collaboration with the Net4MobilityPlus network of MSCA NCPs, developed in the context of the ITNs or knowledge exchange could be developed on best practices in the context of the RISE and COFUND actions. Moreover, IFs are bound to train some of the academic leaders of the future and this could also be used more to that end.

Another enabler that was mentioned was the need for operationalizable, scalable methodologies or scripts and guidelines (Int. 8/9): if ‘they don’t have the recipe, they understand the concept, they buy the philosophy but they are paralyzed, they don’t feel empowered in a detailed and scripted way of what they should do next’ (Int. 8). According to the interviewee that’s where operationalization comes in: ‘They want everything about Open Science and RRI to be operational so that an applicant comes in and it is immediately clear to them why this particular RRI idea fits in to their grant proposal and they see it immediately’ (Int. 8). It also needs to be scalable: ‘It needs to be scalable so that, in theory you imagine that every applicant is convinced that is something for them. Then you achieve massive uptake of the practices and everything we advocate. [...] It needs to be [catered to] discipline specific behaviour’ (Int. 8).

Fourthly, a change in criteria might actually help applicants to enlarge their perception of excellence. The partly successful integration of the gender-dimension under Excellence is in that sense already an interesting example of how this could work in practice. One of the NCPs suggested that the same could be done with the integration of actual public engagement under the Excellence-criterion (Int. 6). Others reflect how it is essentially about enabling other career paths:

Inevitably it comes down to: are there career paths for different kinds of impact? [...] If there is a career path for someone doing great RRI work and other people see that that is the case ‘that is way closer to what I want to do’ it will work. But I think as long as a career path is solely dependent on the article outputs you can’t blame people to do what their career is based upon. In the Marie Curie example: if the one reason to get the grant is because of the research output; then how to motivate people to do something else? (Int. 3)

A softer version of this is that funders like the MSCA Unit could require fellows and coordinators to write about it and think it through, either in their proposals or in their career development plans without making funding dependent on it (Int. 5).
Finally, to build leverage for actions like these, we could learn from a project working on Open Science in the context of MSCA by looking at the ecosystem and who’s influencing the researcher of the future. In first instance these are the Graduate Schools, however

the young researcher of the future will walk out the Graduate School and then who applies pressure on them, who moulds them, shapes them? That’s going be their supervisor and their project manager. We’re walking out of strict academia where they will have secondments in the private sector, in policy. [...] So we argued that all of those key essential actors in the academic ecosystem could both a be a barrier or an enabler of those RRI practices. We try to target that ecosystem in terms of various degrees, to make sure that they are aware how the best practices we advocate for are actually helping the future career of young researchers. [...] As a minimum so that they don’t impede.

(Int. 8)

Research Managers (united in associations like EARMA) are also important gatekeepers that need to be convinced of what the researcher is standing to gain or lose from it: ‘The sooner they have the answers, the sooner they will be able to multiply’ (idem). This all inevitably leads to funding and the funders (Int. 8/9), because ‘at the end things only change if it comes down to funding’ (Int. 3). A more concrete comment in this respect comes from a former representative of the MCAA who recommends that RRI should be more integrated in FP9: ‘My perception is that it is there in H2020 that the EC would like that something goes on there, but there’s not being much push for the integration of these topics. So it was kind of laid over. It would be great if FP9 has it more integrated as one of the pillars’ (Int. 7).

8.4.3.3 Beyond the keys/RRI

As we can infer from the previous descriptions, societal impact has been a recurring theme with multiple interviewees (Int. 1, 3, 6, 8, 9). The way in which this was seen was predominantly in terms of an improved knowledge transfer from science to society through talks with policy makers or disseminating results to the general public or making them accessible for more actors with the help of improved digital infrastructures. Only one person explicitly saw RRI as an opportunity to democratise science and involve less powerful actors in the research process and decisions made there, but he also voiced the caveat that this should be done by keeping core values of science intact (Int. 2)

Interestingly enough, there were no shared central societal or ethical challenges mentioned, even though this was one of the first questions asked to interviewees. The only things that came near these notions were the example of a group of MCAA members uniting to work on climate change and even sending in a proposal together for an ITN (Int. 7). Another example was the question about what scientists can do for the refugee crisis which was also discussed in one of the webinars organised by the MCAA (Int. 2).\footnote{Further desk research has shown that 62% of the budget in 2014-2015 was awarded to projects related to sustainable development, 23% to climate change and 6% to biodiversity (EC, 2017d, p. 158). This leads the EC to conclude that ‘The bottom-up approach taken by MSCA has allowed a large majority of institutions to train}
Related to this was the mention of responsible research as a form of research that takes into account the conditions under which researchers do their work in different countries. As one of the interviewees said: ‘Certain countries don’t value how the research should be done according to some human resource values’ (Int. 5). It is therefore crucial, according to this researcher, to see subsumed under the ‘problem of responsible research in the European Union the [different social] conditions in which the researchers have to work […] Important to tackle this issue and to include in responsible research also the conditions of the research fellow in which they have to work’ (Int. 5).

A final interesting take comes from the same interviewee. This former representative of the MCFA mentioned that responsible research and innovation should be responsive towards local societal values: ‘Responsible research is not a fixed set of principles but the worry that research must benefit society and therefore society has to be involved in the orientation of the research. It is up to a community or specific society to say which values should be more well defined. Some countries will say: one of the values is family. So we should researchers must have a better support for family and research should not be oriented to the single individual but to solve problems in family matters and so on. In other societies you may have other values. […] There are many values according to different countries and regions that have different weights. It is up to them to say what’s responsible research in their own case’ (idem). There shouldn’t, in other words, be a mono-culture of values: ‘So I think it is important that the EU sets the values they want to make as a whole but leave room for other regions and countries to change or add in terms of values that are not on this list that we created’ (idem).

How the latter comment links to the general EU objectives and the mobility requirement of MSCA will be an interesting tension to explore further in the future. Adding to this, we may conclude that any subsequent discussions on RRI in MSCA should take account of these different interpretations of what RRI is and try to connect to them in some way.

**8.4.3.4 Assessment of RRI based on interviews**

Because of this variety in levels of awareness among actor groups, as reported by our interviewees, we refrain from presenting a generic assessment. Awareness ranges between ‘high’ (A) (at policy level and at NCP level) to ‘limited’ (C) at grantee level while, moreover, awareness varies greatly among grantees, including ‘no awareness’ (D). Governance as a key is an outlier in all account (‘no awareness’, D), although its manifestations are recognised in terms of enablers and barriers to promoting the integration of RRI. The wide range of interpretations of the keys, especially of the meanings of Public Engagement and Ethics, is striking. It is also interesting to see how interviewees bring in new conceptions of responsible research and innovation that are either science centred (conditions under which researchers work) or that problematize the notion of RRI (different values per community).

and upgrade the skills of a new generation of researchers able to tackle a broad range of current or expected societal challenges. Moreover, MSCA funding addresses societal challenges to a significant extent, above the Horizon 2020 average and well ahead of the other areas in the excellence pillar’ (idem). Examples are given of ‘including the fight against diseases such as cancer, Alzheimer’s and Multiple Sclerosis, providing safer food, developing solutions for improved road safety, reducing noise pollution, preserving cultural heritage and shaping the development of key policies such as migration, climate change and energy’ (idem).
8.4.4 Case briefs

8.4.4.1 Project 1 – NextGenVis
Training the Next Generation of European Visual Neuroscientists for the benefit of innovation in health care and high-tech industry also known by its acronym NextGenVis (NextGenVis, 2018) has an RRI score of 0 according to the CWTS analysis. It is an ITN that is coordinated in the Netherlands and funded through the 2014 ETN call and provides 15 Fellows with a place to do their doctoral studies in a network of organisations located in Germany, the UK, Denmark, Italy, The Netherlands and Israel with organisations from both the public and the private sector. The total costs are 3 886 818,12 Euros and it runs from 2015 until February 2019.

According to the analysis of CWTS the ITN uses university courses and workshops to enhance Science Literacy. Analysis of the mid-term report shows that ESRs and PIs have contributed to various local and international outreach and dissemination activities such as presentations to patient groups (with vision loss and from vision support organisations) and participation in the Long Night of the Sciences in Germany (NextGenVis, 2017). Based on the available documentation it can be deduced that most activities don’t go further than one-way engagement.

Even though the project appointed an external Equal Opportunities Coordinator, there are more males than females taking part in the network (which means that Gender equality is absent). Next to this, all publications are online (which means it should score on Open Access). Moreover, a quick search in the midterm report showed that Ethics are not only taken care of by the appointment of a special Ethics Adviser, but also in interesting novel ways. E.g., it is taking place at the Lundbeck in Denmark where ‘general policy is to have high focus on the 3Rs – For example every year a price is awarded to the group that has implemented new routines that reduce the number of animals used and/or implemented better methods to reduce the number of animals. In general all animals at Lundbeck are housed according to Danish law with ad libitum access to water and food. Animals are provided wooden blocks and nest material’ (idem.).

Responsible Research and Innovation as a concept was not addressed in the available report.

8.4.4.2 Project 2 - CLoSER
The Italian project Cementing Links between Science and society toward Engagement and Responsibility also known by its acronym CLoSER (CLoSER, 2018a) has an RRI score of 7,45 according to the CWTS analysis. It scored a 1,39 on Public Engagement, a 3,03 on Gender Equality, a 1,52 on Ethics and a 1,52 on Governance. It was a NIGHT project funded by a CSA in 2016 and funded 5 Italian organisations working together to organise a Researchers’ NIGHT

which aims at establishing an alliance between researchers and the various societal actors by bringing them closer to one another, using the RRI approach to encourage them to take responsibility and work together to design a sustainable, ethically acceptable and socially desirable future. For this purpose, specific actions will be devised to actively engage citizens, schools and young people, policy makers and industries, who won’t be just the audience but the protagonists of each of the proposed action. A special programme will particularly target young people to foster their interest in scientific careers. In addition, CLOSER aims at
strengthening the European citizenship feeling of the public involved as well as increasing their awareness of the importance of the European dimension in research through specific activities such as the ‘European Stage for Research and Innovation’, ‘A talk with young research!’ and ‘The Human Face of Research’. To realise such an ambitious programme, the engagement of a large, trans-disciplinary, gender-balanced community of researchers committed to public engagement will be vital: CLOSER will provide them with innovative, creative formats of communication that will strengthen their capability of communicating their research. (CORDIS, 2018)

Interestingly enough, real RRI-themed questions were asked like ‘Who should communicate the research’s results, to empower citizens and all the societal actors and let them take part in the R&I process?’ (CLoSER 2017). Most activities were however still of the public information of science type which was displayed in the kind of activities undertaken (idem).

8.4.4.3 Project 3 – COINS

Complex and Open Innovation for Networked Society also known by its acronym COINS is an ITN EID funded through the 2015 call. It runs from 2015 until 2019 and has an RRI score of 4,3, with Public Engagement at 16,6 and Open Access at 9,9. It is coordinated from the UK and houses 5 ESRs that are accompanied by experienced, interdisciplinary and intersectoral group of supervisors will study development of innovation capabilities required for organizations of different types to effectively respond to institutional, social and technological complexity in innovation ecosystems. Fellows will benefit of rich and unique complementary training programme, which will enable them to pursue variety of professional careers in academia, industry, consultancy and public policy. They will especially benefit from competency and skills for professional innovation management and technology entrepreneurship. An ambitious outreach programme will equip all fellows with appreciation of the role of business, entrepreneurship and technology in society. They will become responsible researchers and leaders capable of finding solutions for some of the greatest challenges facing our planet. (CORDIS, 2018b).

The language used above is reminiscent of the focus on intersectoral and interdisciplinary cooperation that was earlier found to be of great importance for the evaluation. It is also interesting to see that the ESRs, despite the high score on Public Engagement, have had courses on how to perform ‘dissemination to lay audience (for societal outreach)’ (COINS, 2017) and are working together predominantly with business actors. They do write blogs and plan to visit a secondary school to ‘explain the research topics and how this contributes to the social and economic landscape’ (idem). Gender is also not addressed in the technical report that was
available. Still, the project has already produced an ethics deliverable (Ethics) and a data management plan (Open Access).

8.5 Conclusions
This diagnosis presents a very nuanced image of RRI in MSCA as it is currently in place, and of the challenges and opportunities to further the notion within the programme line. A first observation worth noting is that there is certainly no silence around RRI in MSCA, but the way it is addressed and acted upon varies widely across the funding scheme. A second observation is that there appears to be a discrepancy between the paper reality of RRI in MSCA and RRI in MSCA-related practices. Thirdly, what strikes the eye is the sheer variety of interpretations of RRI and its constitutive concepts, including the 5 ‘keys’ and the 3 O’s. Below we will elaborate on these general conclusions in some detail, in order to outline (1) the main challenges for RRI in MSCA, (2) current stories and practices of RRI, and (3) possible RRI-imbued futures or MSCA and associated actions.

8.5.1 Challenges for RRI in MSCA
The variety of interpretations of, and ideas on, responsibility and RRI in MSCA as such does not have to present a challenge as such. On the contrary, the diversity of approaches and interpretations in fact speaks of fertile ground in which the notion may well come to full blossom. After all, it is for good reason that a fixed definition of the RRI-concept is still lacking: the open nature of the notion allows for an interpretive flexibility by which it can not only be made to fit a variety of research and funding practises but also inspire a wide range of actors to reflect on their current practices. What is a challenge however, is that adopting RRI in the full meaning of the word arguably implies the need to question and reflect upon standing interpretations of responsibility and excellence that are currently dominating MSCA-relevant practices. While concerted action does not presuppose an agreement on a fixed definition of what RRI might entail, it does require the willingness – even a sense of urgency – to reflect on standing practices, including on the value schemes that dominate these.

Currently, RRI-related perspectives only limitedly inform the criteria by which grantees are selected. Stronger, where that is (seemingly) the case (regarding gender, science literacy/open access to publications and research data, and ethics), this institutionalisation might hamper the further integration of RRI in MSCA. The analysis shows that a narrow reading of the Excellence and Impact criteria, with their focus on the (career) opportunities for grantee and host organisation that is typical for MSCA does not challenge the received view on the division of labour between Science and Society, precluding elaborations of the notion of mutual responsiveness as a core aspect of RRI. To the extent that that is indeed the case, barriers for the furthering of RRI in MSCA practice include:

- The lack of incentives to stir reflection on
  - The idea of excellence as it is now used in the evaluation criteria, namely as mostly defined in terms of excelling in getting published in peer-reviewed journals and/or having attended excellent institutes;
  - The interpretation of public engagement solely as unilateral science education (Public Understanding of Science), and its equation to ‘impact’ and the associated emphasis on (ex-post) dissemination of research findings;
The equation of ‘ethics’ in research (and of ‘responsibility in research’ / RRI) with ‘research integrity’, and the associated institutional incentives to make grantees act on that topic.

- The reassuring idea that many keys have been ‘taken care of’ already in MSCA, that is, their integration on an institutional level, may turn RRI into a blind spot:
  - The formal integration of ‘ethics’ in the grant application procedure may feed into the limited perspective on ethical issues in research as observed above. But it also may bring along the idea that it is sufficient to deal with ethics in a ‘tick-boxing’ manner. The current way the ethics issues are now incorporated in the application forms (‘user-friendly!’) seem to offer an incentive to make the topic a final capstone in the submission of a proposal, as a ‘last’ step in a merely administrative procedure. This does not provide an incentive to prospective applicants to think though the very idea of their research proposal from the perspective of ethics;
  - The success rate of MSCA in gender terms, understood in terms of the female: male ratio in successful applications. This may, however laudable, hide from view that female grantees report discrimination in their working practice. The focus on success in terms of numbers may present a blind spot for critically investigating possible discriminatory dynamics in the science system seen from an MSCA perspective.

- The scattered nature of agentic power: not only the awareness of RRI among actor groups is diverse, so is their ability of MSCA-related actors to act on the issue. Grantees and alumni are scattered among a wide range of host institutes all over Europe (and even the world at times) and their power is limited as they are transient guests there. Evaluators and NCPs are equally dispersed and /or operating in relative isolation from one another. Communication and discussion about RRI and related themes is hence quintessential to spur reflection on the current (lack of) institutionalisation and the ‘received views’ on excellence, public engagement, etc. Self-awareness and networking options in regard to RRI and related themes are direly needed. In that light, the lack of awareness of governance as a key is a barrier as such.

- The impression that from an EC-perspective RRI has a specific set of meanings: this may pre-empt discussions on what RRI might entail, and thus limited enthusiasm to engage in debate on RRI. Views vary widely on what acting responsible in research entails, and efforts to curb this variety may hamper the articulation of values, which may differ per region or disciplinary community.

8.5.2 Current manifestations of RRI in MSCA

While these barriers can be discerned, a wide variety of MSCI-related dynamics are in observable too that may be considered manifestations of RRI, or of RRI-in-the-making, which may prove relevant points of departure, and/or enablers, by which to develop the issue further. From the NIGHT events to the institutionalisation of ethics requirements (given aforementioned caveats) to the implicit integration of parts of RRI in the evaluation; there are many de facto RRI practices that speak of, or enable, the possible integration of RRI in MSCA. Among these, current manifestations of RRI in practice are:

- Evaluators discussing and assessing impact in terms of long-term societal effects and/or early (upstreaming) public engagement;
- The MCAA creating a stage of RRI-related discussions, such as in Webinars;
The MCAA active involvement in Working Groups on Policy and Gender and participation in, and the organisation of, events on Open Science, and their partnerships on RRI-related issues with organisations like Sense about Science and VoYS;

The programme line’s efforts to reach an equal gender balance in women and men applicants. The programme’s efforts to sensitise evaluators to unconscious gender biases. The growing awareness that an equal balancing in terms of numbers does not rule out or prevent gender discrimination in science;

The MSCA enabled outreach activities, among them European Researchers’ Night (NIGHT) that aim to boost public awareness of the positive role of research in society, especially among young people;

The ITN trainings on science education/public engagement, and the institutional weight granted to these in the Work Programme;

The keen awareness of Open Access and related O’s; the institutionalisation of this idea in the programme – the fact that grantees are required to ensure Open Access to their peer-reviewed scientific publications of their results;

Plan of funding agencies’ publication platforms to circumvent behind-a-pay wall journal publications;

The institutionalisation of the ethics dimension of R&I in the programme line’s assessment practice, e.g. visible in the organisation of the assessment on ethics which is evaluated by ethical experts;

The active network of MSCA-relevant actors, among them the aforementioned MCAA, and the NCP network - Training of ESRs (INT) and Fellows (IF) on RRI aspects. Knowledge exchange in COFUND, and RISE;

The keen interest at EC-level among the actors responsible for the programme line in RRI (and in the developments in the NewHoRRizon project);

The diversity of MSCA-grantee projects that seek to implement RRI-related aspects into their design, execution and/or dissemination.

8.5.3 Possible futures of RRI in MSCA and associated actions

Building on the dynamics in place as listed above offers ample opportunities to further RRI within the (context of) the MSCA programme line. Among these are:

Initiating discussions on various levels, among them EC-level, on the interpretation of the excellence criterion, which counts for 50% of the evaluation of a proposal in order to redesign it to form an incentive for researchers to strive for ‘excellent responsibility’ that reaches beyond individual scientific terms;

Initiating discussions about the current unilateral reading of the Impact criterion to explore opportunities to include a broader scope of what public engagement in research might entail, taking the EC’s definition of RRI as an “interactive process by which societal actors and innovators become mutually responsive to each other” as appoint of departure;

Putting in place incentives that urge or lure host institutions into reflection on excellence and impact, to back up grantees and NCPs who seek to put a discussion about the limits of academia’s self-referential system on the agenda; associated communications about these may contribute to establishing the programme line as a bridgehead to make a breach in the publication oriented academic culture;
• Emphasising in discussions and communications about responsibility in MSCA the 3 O’s instead of, or in relation to, the 6 keys; these seem to fit the MSCA context better and may form an entrance for discussing RRI in programme-specific terms, given its orientation on interdisciplinary, international and intersectoral research;
• Re-orientating the NIGHT funding scheme towards a more interactive approach to discussing the relation between science and society, and actively supporting those who currently seek to do so;
• Helping NCPs to set up trainings on public engagement and to bring on board a broader scope of interpretations, beyond the public understanding of science;
• Initiating discussions on the ethics of doing research, beyond the mere obligatory administrative aspect, and actively working towards a broader understanding of the notion, undoing its capture in terms of biomedical research;
• Seeing to it that the obligatory Open Access approach to publication is enforced – acknowledging that currently it is found to be something that can easily be opted out of; initiating discussions and decision-making on how to ease the tension between Open Access requirements and commercial interest when working with business partners;
• Strengthening the networks of scholars produced by the MSCA programme line over the years, and calling upon alumni to help reflect on, and redraft calls, templates and criteria in line with the above suggestions, working with the alumni association and NCP networks to raise awareness and achieve leverage for bottom-up perceptions of responsibility.
8.6 Relevant stakeholders to MSCA Diagnosis Input

8.6.1 Interviewees

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<th>Interview</th>
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<th>Social lab wider circle</th>
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8.7 Literature, links, resources for MSCA Diagnosis

8.7.2 Sources and links for MSCA Diagnosis Input


EC. (2018a, April 12). *H2020 Programme Proposal template. Project proposal (Part B) Marie Skłodowska-Curie Actions - Co-funding of regional, national and international programmes (COFUND).* Retrieved from


