NETWORK OF THE
MARIE SKŁODOWSKA-CURIE ACTIONS
NATIONAL CONTACT POINTS

DOCTORAL NETWORKS

EXCELLENCE, IMPACT & IMPLEMENTATION

UNIVERSITY OF LJUBLJANA, JANUARY 16, 2025

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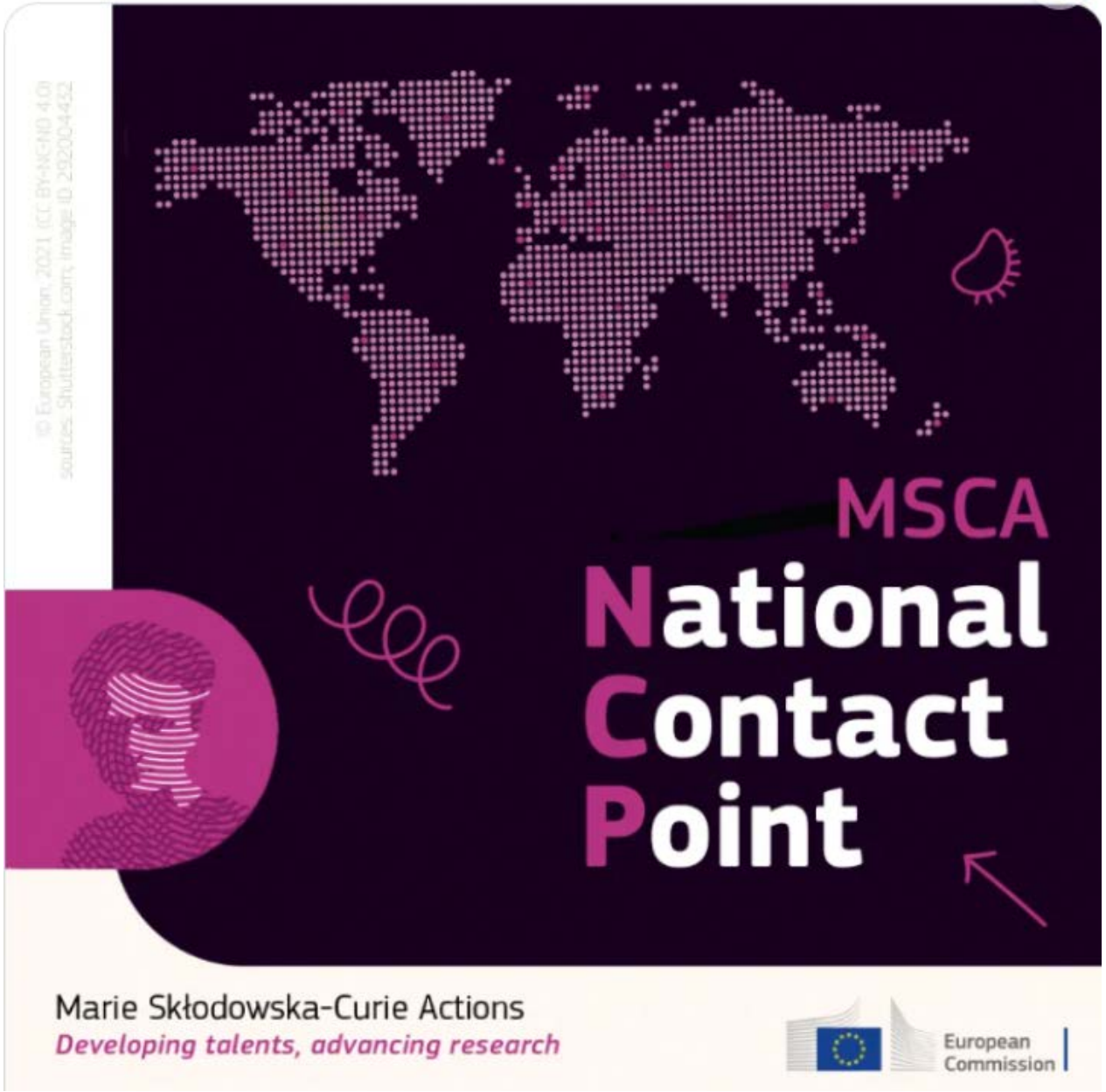
REPUBLIC OF SLOVENIA
MINISTRY OF HIGHER EDUCATION, SCIENCE AND INNOVATION

@MSCANetwork



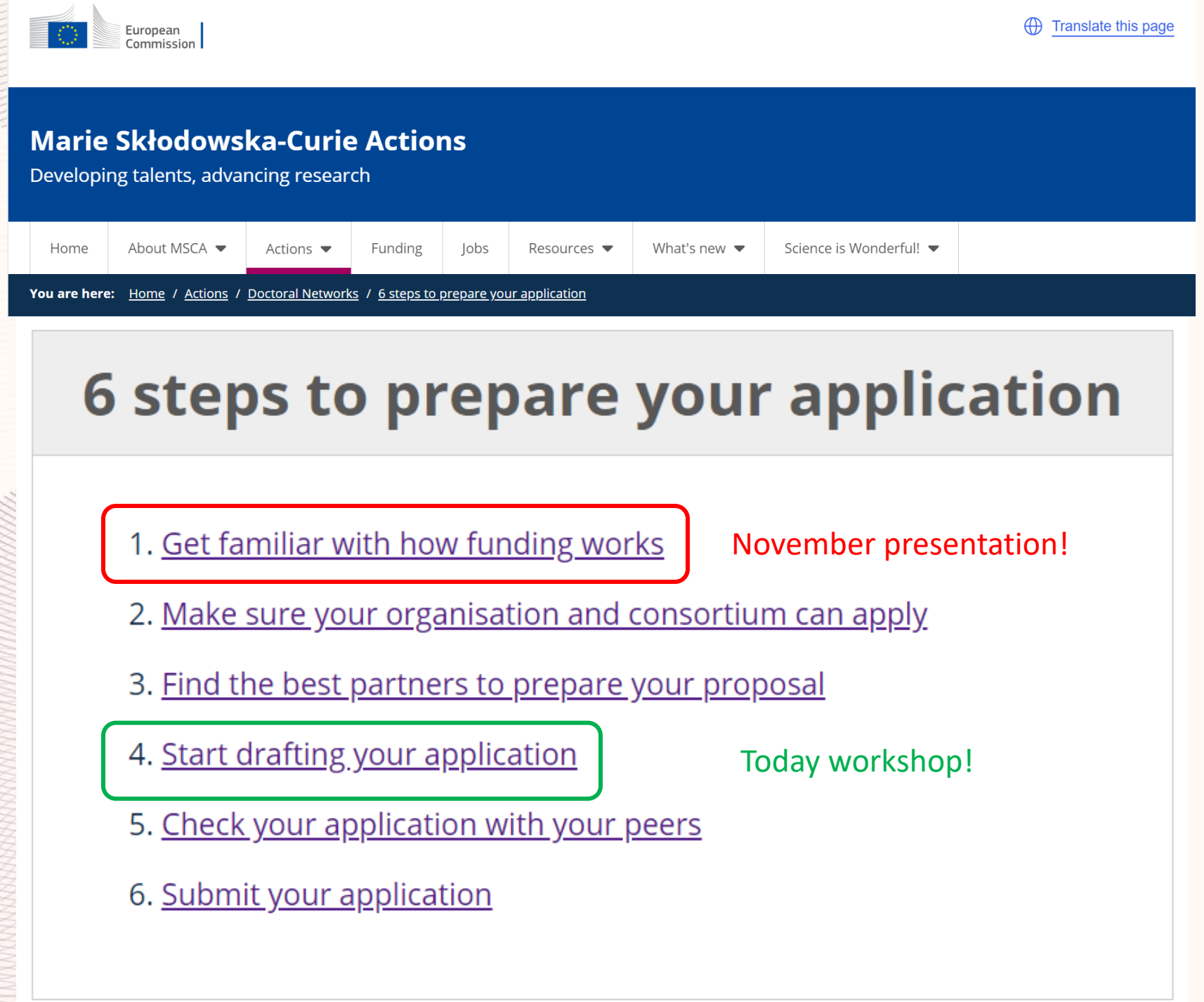
Do you have questions about your #MSCA application?

Our National Contact Points can help you with:

- Guidance
- Eligibility checks
- Practical questions
- Proposal screening

Useful links:

- Home - Marie Skłodowska-Curie Actions
- Home Page - MSCA-NET
- Najnovejše informacije za javnost, NCP MSCA v Obzorju Evropa
- stojan.sorcan@gov.si
- (1) Stojan Sorcan | LinkedIn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You are here: Home / Actions / Doctoral Networks / 6 steps to prepare your application
6 steps to prepare your application
1. Get familiar with how funding works
November presentation!
2. Make sure your organisation and consortium can apply
3. Find the best partners to prepare your proposal
4. Start drafting your application
Today workshop!
5. Check your application with your peers
6. Submit your application

Doctoral Networks: award criteria

Excellence	Impact	Quality and efficiency of the implementation
Quality and pertinence of the project's research and innovation objectives	Contribution to structuring doctoral training at European level and strengthening European innovation capacity	Quality and effectiveness of the work plan, assessment of risks, and appropriateness of the effort assigned to work packages
Soundness of the proposed methodology	Credibility of the measures to enhance the career perspectives of researchers and contribution to their skills development	Quality, capacity and role of each participant, including hosting arrangements and extent to which the consortium as a whole brings together the necessary expertise
Quality and credibility of the training programme	Suitability and quality of the measures to maximise expected outcomes and impacts, as set out in the dissemination and exploitation plan, including communication activities	
Quality of the supervision	The magnitude and importance of the project's contribution to the expected scientific, societal and economic impacts	
50%	**30%**	**20%**

NETWORK OF THE
MARIE SKŁODOWSKA-CURIE ACTIONS
NATIONAL CONTACT POINTS

EXCELLENCE IN DOCTORAL NETWORKS

Work Programme MSCA

MSCA Doctoral Networks

The MSCA Doctoral Networks aim to train creative, entrepreneurial, innovative and resilient doctoral candidates, able to face current and future challenges and to convert knowledge and ideas into products and services for economic and social benefit.

The MSCA Doctoral Networks will raise the attractiveness and excellence of doctoral training in Europe. They will equip researchers with the right combination of research-related and transferable competences and provide them with enhanced career perspectives in both the academic and non-academic sectors through international, inter-sectoral and interdisciplinary mobility combined with an innovation-oriented mind-set.

Work Programme MSCA

Scope: MSCA Doctoral Networks will implement doctoral programmes, by partnerships of universities, research institutions and research infrastructures, businesses including SMEs, and other socio-economic actors from different countries across Europe and beyond. MSCA Doctoral Networks are indeed open to the participation of organisations from third countries, in view of fostering strategic international partnerships for the training and exchange of researchers.

These doctoral programmes will respond to well-identified needs in various R&I areas, expose the researchers to the academic and non-academic sectors, and offer training in research-related, as well as transferable skills[16] and competences relevant for innovation and long-term employability (e.g. entrepreneurship, commercialisation of results, Intellectual Property Rights, communication). Proposals for doctoral networks can reflect existing or planned research partnerships among the participating organisations.

1. EXCELLENCE

1.1 Quality and pertinence of the project's research and innovation **objectives** (and the extent to which they are ambitious, and go beyond the state of the art)

1.2 Soundness of the proposed **methodology** (including interdisciplinary approaches, consideration of the gender dimension and other diversity aspects if relevant for the research project, and the quality and appropriateness of open science practices)

1.3 Quality and credibility of the **training programme** (including transferable skills, inter/multidisciplinary, inter-sectoral and gender as well as other diversity aspects)

1.4 Quality of the **supervision** (including mandatory joint supervision for industrial and joint doctorate projects).

1. Elements of EXCELLENCE criteria

Introduction

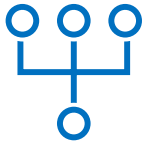
Objectives

Individual projects

Ambitiousness

State-of-the-art

Methodology



Interdisciplinarity

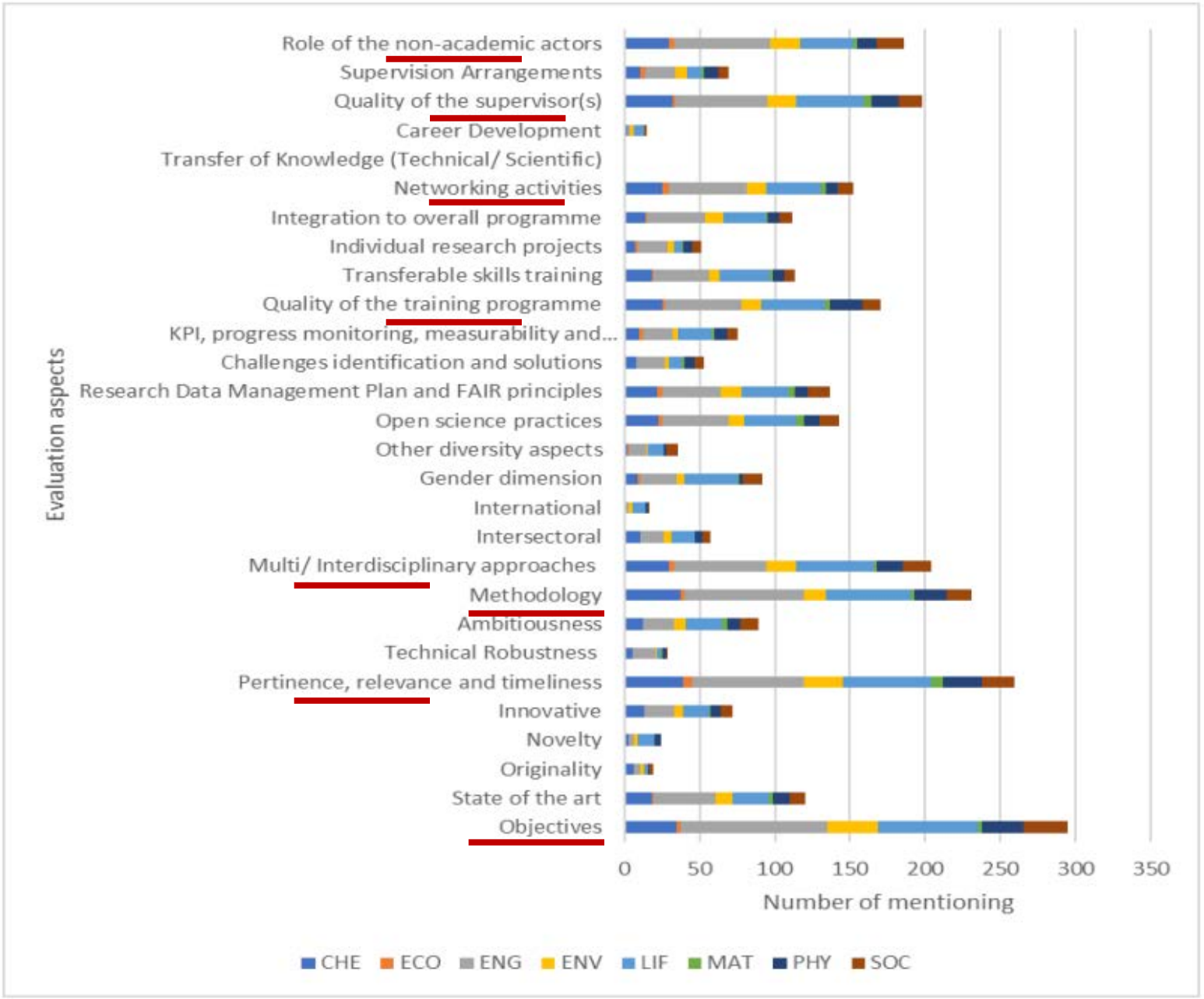
Gender/diversity

Open Science

Training

Supervision

FIG 7: MSCA DN 2022 EXCELLENCE STRENGHTS BY THE SCIENTIFIC PANELS



Source: 'In the framework of the MSCA-NET network we have analysed the ESRs and herewith the outcomes are presented.'

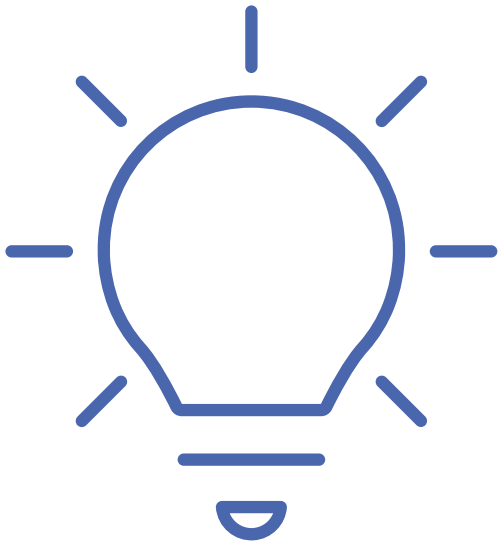
1.1 QUALITY AND PERTINENCE OF THE PROJECT'S RESEARCH AND INNOVATION **OBJECTIVES** (AND THE EXTENT TO WHICH THEY ARE **AMBITIOUS**, AND GO **BEYOND THE STATE OF THE ART**).
REQUIRED SUB-HEADINGS:

- **Introduction, objectives and overview of the research programme.** It should be explained how the individual projects of the recruited researchers will be integrated into – and contribute to – the overall research programme. All proposals should also describe the research projects in the context of a doctoral training programme. Are the objectives measurable and verifiable? Are they realistically achievable?
- **Pertinence and innovative aspects of the research programme** (in light of the current state of the art and existing programmes / networks / doctoral research trainings). Describe how your project goes beyond the state-of-the-art, and the extent the proposed work is ambitious.

The action should be divided in Work Packages and described in the Table 3.1a under the Implementation section

- **1.1.1 Introduction, objectives and overview of the research programme.**
  - State what research/technical problem/knowledge/skills **gaps** the proposal addresses.
  - Demonstrate the timeliness and relevance in terms of social need and fit to sectoral policy targets, and **link to relevant EU policies** as well as UN SDGs.
  - Focus on **both the research and the training dimensions** of the programme!
  - Outline multi/interdisciplinarity and intersectorality of the training programme.
  - Each individual project should be clearly perceived as a contribution to the programme as a whole.

EXCELLENCE – GENERAL APPROACHES



- **Motivation** for the project
  - Why is this project **idea** important?
  - What is the problem **consortium** will try to solve?
  - Why is it important to solve it **now**?

- Topic/call scope:
  - Project objectives needs to refer back to the **Work Programme**, focus and terminology („language“)
  - Refer to **EU policies**

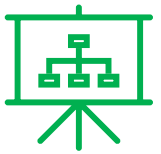
Work Programme MSCA

Expected impact

Proposals under this Action should contribute to the following expected impacts:

- Strengthen Europe's human capital base in R&I by training highly-skilled doctoral candidates;
- Improve the attractiveness of researchers' careers notably through better working and employment conditions of doctoral candidates in Europe;
- Enhance talent and knowledge circulation across the R&I landscape, through international, inter-sectoral and interdisciplinary mobility;
- Increase Europe's attractiveness as a leading research destination;
- Enhance the quality of R&I contributing to Europe's sustainable competitiveness;
- Establish sustainable collaboration between academic and non-academic organisations;
- Foster the culture of open science, innovation and entrepreneurship.

INTRODUCTION



+ The proposal **outlines** an ambitious research programme in the field of XY and offers a good **overview** of the **main aspects** it intends to address, **highlighting** well its quality and pertinence.

+ The **relevance** of the topic is well **stated** and the proposal addresses well **scientific gaps** and research **questions** in the understanding XY changes that often go unnoticed.

+ The proposal is both **relevant** and timely. It is structured around well-defined research **objectives**, each tailored to address a specific **research gap** in this domain.

+ The current **gap in knowledge** on using XY in the field of XY is well **articulated**, and the **need** for the proposed research is well **justified**.

+ The topic addressed by the proposal is **timely**. For example, the XY utilization and valorisation is **a crucial step to address effects** of the climate emergency.

• 1.1.2 Pertinence and innovative aspects of the research programme

- Describe the state-of-the-art and how the specific research objectives will go beyond that
- Show that you are **experts** in the field and know well the state-of-the-art
- **Benchmark** against other PhD research trainings at national or international level
- Highlight what is **innovative and ambitious** about this programme

1.1 QUALITY AND PERTINENCE OF THE PROJECT'S RESEARCH AND INNOVATION OBJECTIVES (AND THE EXTENT TO WHICH THEY ARE AMBITIOUS, AND GO BEYOND THE STATE OF THE ART). REQUIRED SUB-HEADINGS:

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The action should be divided in Work Packages and described in the Table 3.1a under the Implementation section

- 3-4 research WPs
- training
- management
- dissemination, communication and exploitation

OBJECTIVES – 1

+ The research programme is well **motivated** overall and **ambitious** in addressing **relevant** aspects related to XY.

+ The goal of xy **is pertinent**.

+ The research objectives of the proposal, aiming to create new kinds of XY, are of **good quality** and **pertinent** to the call.

+ The objectives, which address **timely and important challenges** in climate change dynamics and accurate extreme weather predictions, are **very well identified.**

+ The research objectives of the project are **very relevant** because they address **important unanswered questions** in the field of XY.

OBJECTIVES

Specific	Measurable	Attainable	Relevant	Time-Bound
Make sure your goals are focused and identify a tangible outcome. Without the specifics, your goal runs the risk of being too vague to achieve. Being more specific helps you identify what you want to achieve. You should also identify what resources you are going to leverage to achieve success.	You should have some clear definition of success. This will help you to evaluate achievement and also progress. This component often answers how much or how many and highlights how you'll know you achieved your goal.	Your goal should be challenging, but still reasonable to achieve. Reflecting on this component can reveal any potential barriers that you may need to overcome to realize success. Outline the steps you're planning to take to achieve your goal.	This is about getting real with yourself and ensuring what you're trying to achieve is worthwhile to you. Determining if this is aligned to your values and if it is a priority focus for you. This helps you answer the why.	Every goal needs a target date, something that motivates you to really apply the focus and discipline necessary to achieve it. This answers when. It's important to set a realistic time frame to achieve your goal to ensure you don't get discouraged.

- Use **SMART objectives** that address the **gaps** in the state-of-the-art and correspond **to the needs** of training a new generation of researchers in Europe
- Show clearly, how **individual** doctoral projects contribute to **overall objectives**
- Scientific objectives should correspond to **Work Packages** (structured under 3.1)

OBJECTIVES – 2

+ The main objectives are very well elaborated, and their **key performance indicators** support very well that they are **measurable** and **verifiable.**

+ The objectives are **measurable**, **timely**, and **achievable**, responding to **societal** and **scientific needs**.

+ The research objectives are **pertinent** and **realistic** with appropriate **indicators** provided to support their measurability and verifiability.

+ **Measurable** and **verifiable** objectives are outlined, which are **realistically** achievable within the **duration** of the proposed work.

OBJECTIVES

- The objectives are **too broadly defined**, making their measurability and feasibility uncertain.
- The research objectives are not **clearly formulated** and **coherent**
- **It is not evident** how the objectives in the important field of XY are **measured, quantified or verified**. It is unclear whether the objectives can be **achieved** within the project timeline.
- The technical objectives of the research programme are not convincingly **described** and it is not sufficiently clear **how they could be measurable and verifiable**. **Precise means of verification relative to progress in reaching outputs and objectives** are insufficiently presented in the proposal and the realistic achievability is not sufficiently demonstrated.

INDIVIDUAL RESEARCH PROJECTS

+ The proposal convincingly explains how the individual research projects will be **integrated** into and **contribute** to the overall research programme.

+ The proposal effectively articulates **the integration of individual research project**s within the **overarching research agenda**, ensuring significant interdisciplinary **cohesion** and **synergy** across the consortium.

+ The Doctoral Candidates' individual research projects are **well defined in their topics**, and the proposal provides a very thorough and convincing explanation of **how each of them is linked to a specific research objective**.

INDIVIDUAL RESEARCH PROJECTS

- It is not sufficiently **well detailed** how the different individual projects are **integrated** into a doctoral training programme and what would be their **contribution** into the overall research programme.
- There is limited evidence of a globally **consistent research programme**: the doctoral network is designed **as a collection of projects whose interrelationships** ar.e not sufficiently developed.
- The proposal does not clearly express **the potential synergies between the Doctoral Candidates'** individual research projects.

AMBITIOUSNESS/INNOVATION

+ The project is **innovative** and holds the potential to make substantial contributions to the field.

+ The proposal is **ambitious**, and credibly aims to go **beyond the state of the art**.

+ The proposal is **ambitious** and would go **beyond the current state of the art** through its multidisciplinary approach and its aspiration to create an innovative **theoretical framework** and a methodological toolkit **transferable to global contexts**.

+ The proposal is highly **innovative** by elucidating many aspects of XY and function, that are so far **unknown** and therefore the proposal has the **realistic potential** to deliver significant progress in XY **beyond the state of the art**.

AMBITION / INNOVATIOIN LEVEL

- The ambition of the project **is unclear**, e.g. **details** of new xy studied and the different domains addressed by the programme are **insufficient described.**
- The **level of innovation** is limited because the advances related to XY are presented **qualitatively** and are not sufficiently measurable.
- The achievability of the research objectives is not convincingly established, especially given **their high level of ambition**.
- The proposed work is overall unambitious and **fails to adequately describe the progress** made with respect to the current state of the art in the field of XY.
- Some research objectives are **overambitious** for the duration of the program, especially for the doctoral candidates.

BEYOND THE STATE OF THE ART

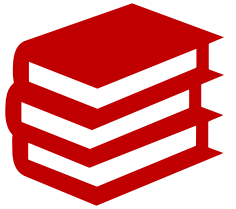
+ The project's **innovation** is convincingly presented, encompassing a **comprehensive overview** of the current state-of-the-art and a clear articulation of **advancements beyond it**.

+ The proposal convincingly **demonstrates advancement** beyond the current state of the art in this research field, aiming at the development of **novel XY techniques** for on-site monitoring of XY.

+ The proposal is **ambitious** and has the potential **to go beyond the current state of the art** with regard to XY.

+ The proposal target's **bringing very recent scientific advances** in the XY technology, and **goes well beyond** the state of the art, representing a **significant step forward** in specific aspects of the proposed research..

BEYOND THE STATE OF THE ART



- The presentation **of the current state of the art** is insufficient and the applicants failed to explain how their research **idea goes beyond** the state of the art.
- The proposal does not convincingly demonstrate that **it will generate substantial advancements against the state of the art** in the XY.
- The state of the art **is not convincingly discussed**, and the **added value** of the proposed research is not sufficiently demonstrated
- The **innovative aspects** of the proposal with respect to the current state of the art **are not clearly highlighted**.
- Past and current research already addresses how diverse policies shape XY, so the proposal **is not ground-breaking** in this regard.

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Formulate a scientific objective for your Doctoral network.

Is it SMART?

Discuss with your neighbour.

STRENGTHS & WEAKNESSES: 1.1

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+ The main research objectives are well-defined and important, and are clearly reflected in the work packages. The integration of the projects of the individual researchers into the overall programme is carefully considered and convincing.

+ The overview of the proposed research is relevant for the specific objectives, which are identified with respect to the comprehensive state-of-the-art description.

+ The general objectives are clear, justified and well contextualized. These are appropriately broken down into more specific research questions linked to the different PhD research projects.

- The description of the project's research and innovation objectives is restricted to general statements; missing are important details on the state of the art and the major objectives of research.

- The originality of the research is insufficiently demonstrated, as the proposal does not adequately present its contribution to advance the state-of-the-art in terms of new […] approaches and techniques.

- The proposal is not sufficiently clear on the complementarity and contribution of individual research projects to the overall research programme. Some of the Doctoral Candidates' topics are excessively specific, which limits integration within the whole project and exchange between the different doctoral candidates.

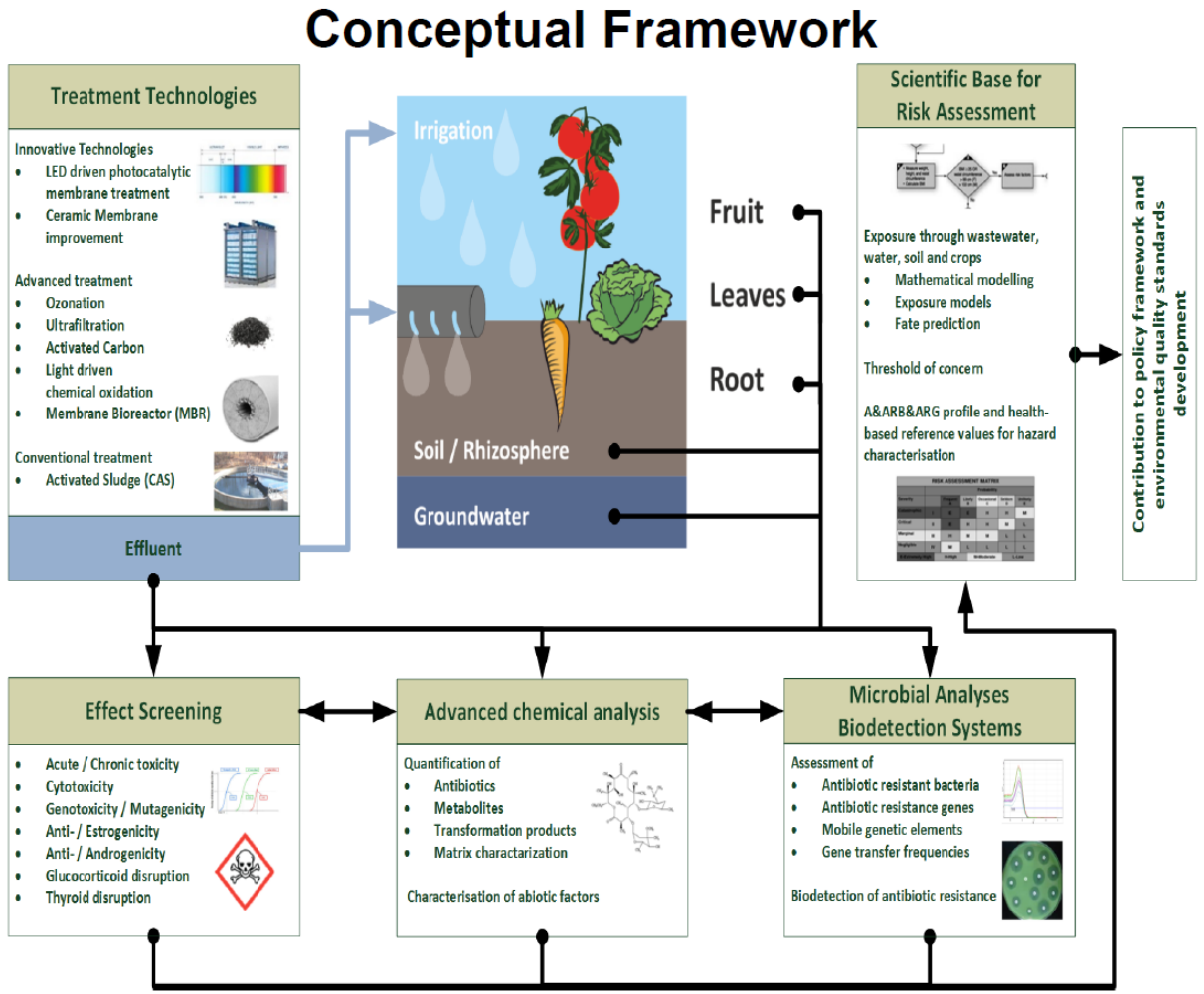
1.2 SOUNDNESS OF THE PROPOSED METHODOLOGY
REQUIRED SUB-HEADINGS:

MSCA-NET

- **Overall methodology:** Describe and explain the overall methodology including the concepts, models and assumptions that underpin your work. Explain how this will enable you to deliver your project's objectives.
- **Integration of methods and disciplines to pursue the objectives:** Explain how expertise and methods from different disciplines will be brought together and integrated in pursuit of your objectives.
- **Gender dimension and other diversity aspects:** Describe how the gender dimension and other diversity aspects are taken into account in the project's research and innovation content.
- **Open science practices:** Describe how appropriate open science practices are implemented as an integral part of the proposed methodology. Show how the choice of practices and their implementation are adapted to the nature of your work, in a way that will increase the chances of the project delivering on its objectives.
- **Research data management and management of other research outputs**
- **Artificial Intelligence** (if applicable)

METHODOLOGY

- Explain the concepts, models and assumptions emerging from the state of the art
- Which techniques, methods, intruments will be used to achieve your scientific objectives
- Explain multi-/interdisciplinary aspects



Source: ANSWER ITN

METHODOLOGY – 1

+ Research methodology and underlying concepts are very **clearly delineated**, highly **appropriate** and **credible** for the type of research proposed. The research methodology is **well established** in the respective laboratories and **institutions and** involves **multidisciplinary** approaches.

+ The proposed research methodology is very well **suited to reach the objectives,** and it is **consistent** and **credible**. The underlying models and assumptions are suitably **outlined**, including appropriately chosen methods for complex experiments, modelling and numerical simulations, device development and applications.

+ The research programme proposes **a range of plausible methodologies** to be used across the individual doctoral candidates' projects.

+ **The challenges** in the methodology, such as in XY are well identified and adequate measures to overcome them are thoroughly addressed.

METHODOLOGY - 2

+ The methodology **is highly multidisciplinary.**

+ The proposed methodology is sound and explained in sufficient **details**, including very good **interdisciplinary approaches** that are comprehensively described and relevant to the proposal.

+ The overall methodological approach is sound and relies on a credible **combination of techniques** and methods **from different disciplines**. It tallies well with the ambition of its research objectives.

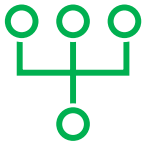
METHODOLOGY - 1

- The proposed methodology **is not described in sufficient detail** to demonstrate its quality and its efficiency.
- Certain aspects of the proposed methodology related to the XY are not fully **developed.**
- The methodology presents **some limitations**. For example, the proposal does not detail sufficiently **what data** would be used and **how they would be used** to answer each of the questions.
- The proposed methodology does not adequately take into account the **advances** made in the field.
- The proposal does not identify with sufficient clarity important **methodological challenges** and **measures to overcome** them.

METHODOLOGY - 2

- The soundness of the methodology is also **insufficiently demonstrated**. The methodologies to be employed in the proposal are **too generically described** and **lack detail**, especially as regards XY.
- The proposal **lacks sufficiently clear information** regarding sample **sizes** and the **amounts** of the materials to be analysed as part of each of the Doctoral Candidates' individual research projects.
- The imaging approach in vivo demands **more explicit details** to be considered feasible.
- The proposed methodology lacks a convincing presentation of **specific steps to address** the stated challenges.
- The methodology does not sufficiently address **critical aspects** such…

INTERDISCIPLINARITY



+ Interdisciplinary aspects of the proposal **are sufficiently considered** to achieve the project research **objectives**.

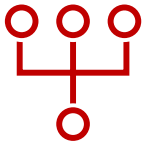
+ Interdisciplinarity and **intersectora**l aspects are **addressed very well** with **well-balanced involvement** of academic partners and industry.

+ Interdisciplinary aspects are **relevant** to the proposed research and are well addressed.

+ The project is highly inter/multidisciplinary and **it integrates well different disciplines.**

+ An interdisciplinary approach, **suitably integrating** complementing disciplines such as XY have been well **implemented in the methodology**. The interdisciplinary aspects are suitably **included to achieve the objectives**.

INTERDISCIPLINARITY



- As a minor shortcoming, the proposal claims to have an interdisciplinary dimension **are not clearly demonstrated**.
- Even though the proposal is at the interface of XY science, there is **limited evidence of an interdisciplinary approach** with proper **integration** of all the disciplines involved.
- The integration of the multidisciplinary aspects is not fully **comprehensive** and **cohesive**. The fusion into a cohesive whole of the diverse fields is not fully realized.

GENDER ASPECTS

Definitions

Gender balance refers to share of different genders in a research team; NOT to be discussed here, but under 3.1.

Gender equality refers to equal treatment of men and women (for example by employers) – Gender equality plan is an eligibility criterion for public bodies, HE institutions and RES organisations.
NOT to be discussed here, but under 3.1.

Gender dimension and other diversity aspects in R&I content refers to the integration of sex and/or gender analysis through the entire R&I cycle, from the setting of research priorities through defining concepts, formulating research questions, developing methodologies, gathering and analysing sex/gender disaggregated data, to evaluating and reporting results and transferring them to markets into products and innovations which will benefit all citizens and promote gender equality. This has to be addressed under 1.2

- How to deal with gender issues in the proposal?
  - HE programme guide is a good source of information and contains links to further sources, including examples
  - Describe how you are going to integrate gender dimension into your research – *or why you consider that this is not relevant for your research.*

GENDER/DIVERSITY DIMENSION

+ Gender and other diversity aspects are **well integrated** in the research.

+ Gender dimension and other diversity aspects of the research **are expected to not play a major role**, but they will be monitored and accounted for as appropriate in terms of the phenotypes studied by the consortium.

+ The gender dimension has been **sufficiently discussed** and it is considered relevant.

+ The gender dimension is **acknowledged** in its potential and some possible links to the proposed research strands are mentioned.

+ Gender and other diversity dimensions are well-integrated into the project, both in terms of task differentiation

ulti-omics analysis, and diverse computational approaches within a clearly integrated work plan.

- The research effectively addresses gender dimensions and other diversity aspects, particularly in studies involving humans and production animals.

GENDER DIMENSION

- Although gender dimension and other aspects of diversity are appropriately identified, it is not sufficiently explained **how these factors will be incorporated** into the new quantum algorithm.
- The gender dimension **is not sufficiently addressed**, particularly concerning sex as a confounder for gene expression and function in health and disease.
- Gender aspects are not clearly considered as are not sufficiently explicit **in the training programme.**
- Regarding the gender dimension the applicants mention that male mice will be used for the KSHV experiments. However, since humanized mice will be used for KSHV, **the gender of the human donor is likely more relevant than the gender of the mice**.

OPEN SCIENCE PRACTICES

Definitions

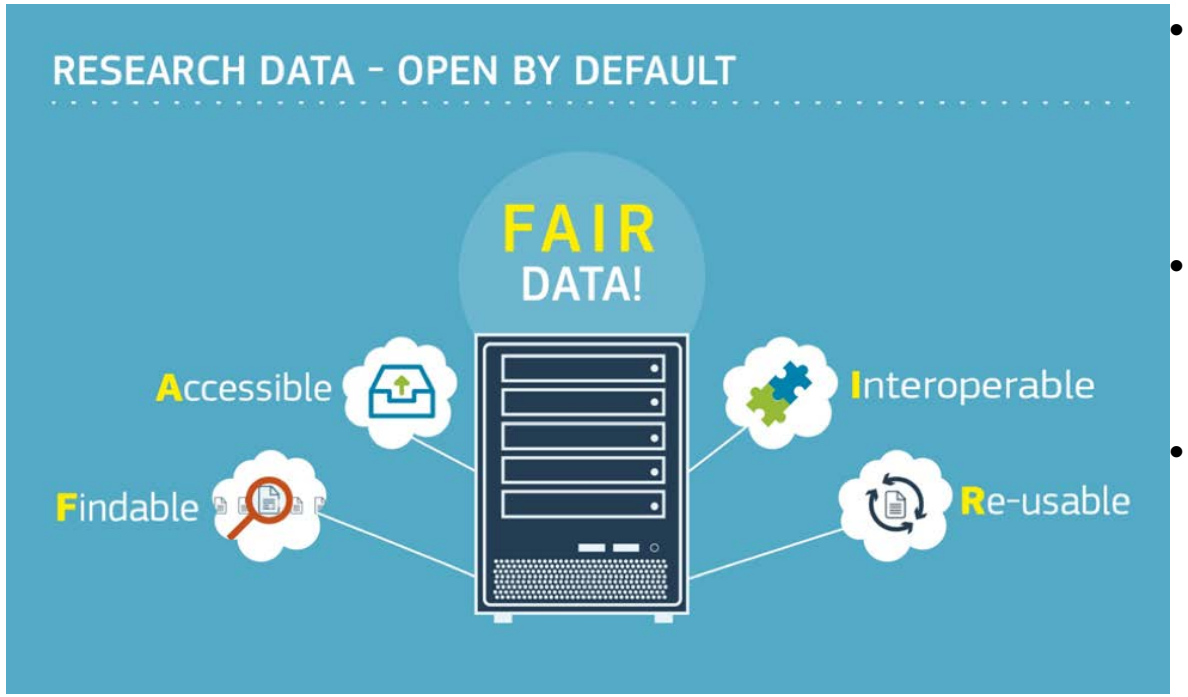
Open Science is an approach based on open cooperative work and systematic sharing of knowledge and tools as early and widely as possible in the process.

Open science practices include early and open sharing of research (for example through preregistration, registered reports, pre-prints, or crowd-sourcing); research output management; measures to ensure reproducibility of research outputs; providing open access to research outputs (such as publications, data, software, models, algorithms, and workflows); participation in open peer-review; and involving all relevant knowledge actors including citizens, civil society and end users in the co-creation of R&I agendas and contents (such as citizen science).

- HE programme guide is a good source of information and contains links to information on mandatory and optional (recommended) OS practices

Source: Meaningful Interactions Lab (mintlab)

RESEARCH DATA MANAGEMENT



- Applicants generating/collecting data and/or other research outputs (except for publications) during the project must provide maximum 1 page on how the data will be managed in line with the FAIR principles (Findable, Accessible, Interoperable, Reusable)
- Proposals selected for funding under Horizon Europe will need to develop a detailed data management plan (DMP) – see 3.1
- HE programme guide is a good source of information and contains links to further information
- OpenAIRE has guides, factsheets, use cases, webinars, and a helpdesk for all Framework programme participants.

OPEN SCIENCE

+ **Appropriate commitment** to open science practices is **well demonstrated**. There is also evidence of **a comprehensive approach** to data management and good **alignment with FAIR principles**.

+ The implementation of Open Sciences practices in the project is very **clear and sufficiently detailed** regarding tools and science activities.

+ The outline of the **Data Management Plan** is in line with **FAIR** principles and is very carefully presented and organised, including tools, responsible data managers, repository databases (open and protected), as well as details on file formats and database updating.

+ There is concrete and clear **information** on how open science practices will be **followed and implemented** within the context of the proposed methodology. The applicants adhere to all mandatory and recommended open science practices as relevant for patients and the public.

OPEN SCIENCE

- The proposal does not clearly describe how the project will implement the **mandatory and recommended open science practices**.
- The proposal fails to convincingly explain **how the open sciences practices are adapted** to the nature of work and **how they will contribute to delivering beneficial outputs**.
- The described data management plan lacks information on **how the results will be** findable, accessible, interoperable and reusable.
- The open science practices are not sufficiently articulated in the proposal, in particular as far as **sharing of research data** beyond the scope of the doctoral network is concerned.

STRENGTHS & WEAKNESSES: 1.2

MSCA-NET

+ The choices of methodology are well described and justified, and are suitable to solve the research questions. Inter- and multidisciplinary aspects are very well considered in the research methodology, with strong interaction foreseen between partners coming from different domains.

+ Gender dimensions and other diversity aspects are credibly discussed as being relevant for the proposed research.

+ The proposal clearly describes the ways in which open science practices will be followed including provision to deal with the tension between open access and the protection of IP to facilitate exploitation. The plan for data management is comprehensive and sound.

- The whole section on methodology has been insufficiently described and it is not clearly indicated which parts of the proposal are novel, particularly in terms of the introduction of novel technologies.

- The proposed research methodology is not sufficiently detailed. It lacks information on the specific use cases in the proposed application sectors.

- The plans for adopting open science practices and how they are integrated in the overall methodology are described briefly and in generic terms. The concrete measures to adapt these practices to the activity are missing. For example; open access tools, reproducible research, open science evaluation and citizen science are neither adequately presented nor explained.

- Diversity issues beyond gender are not addressed.

1.3 QUALITY AND CREDIBILITY OF THE TRAINING PROGRAMME (INCLUDING TRANSFERABLE SKILLS, INTER/MULTIDISCIPLINARY, INTER-SECTORAL AND GENDER AS WELL AS OTHER DIVERSITY ASPECTS)
REQUIRED SUB-HEADINGS:

- **Overview and content structure of the doctoral training programme**, including network-wide training events and complementarity with those programmes offered locally at the participating organisations (please include table 1).

Table 1 Main Network-Wide Training Events, Conferences and Contribution of Beneficiaries

	Main Training Events & Conferences	ECTS[5] (*if any*)	Lead Institution	Action Month (*estimated*)
1				
2				
3				
4				

TRAINING PROGRAMME

TRAINING

- **Specialized Training Courses** that provide professional and personal development opportunities beyond what ESRs are generally exposed to in the course of their PhD training
- **Complementary/soft skills courses**, such as writing and publishing research, preparation of research proposals and project management, entrepreneurship/commercial exploitation of research results, presentation skills, ethics, IPR, gender balance in research, etc.
- **Local Scientific Training Courses**
- **Strong interaction with private sector** (e.g. via ESRs' secondments)
- Trainings are adapted to researcher's **specific needs** (**Personal Career Development Plan**, updated every year)

Source: ANSWER ITN

Balance between

- Individual training-through-research
- Local doctoral programme
- Network-wide training

and

- Scientific training
- Transferable skills training
- Inter-sectoral exposure

EXAMPLE – Network wide training events

Table 1.2b Main Network-Wide Training Events, Conferences and Contribution of Beneficiaries

([C] Compulsory Attendance; [E] Elective)

	Main Training Events & Conferences	ECTS	Lead Institution	Project Month
1	Kick-off Meeting (includes Introduction to OOC, Research Integrity, Gender/Sex in Research/ Open Science)[C]		TCD	6
2	Tumor histology[E]		TCD	6
3	Antibody technology in cancer research and therapy[E]		TCD	6
4	Animal models in cancer research and drug discovery[E]		TCD	6
5	Whole body imaging in xenograft cancer models[E]		TCD	6
6	Drug discovery & medicinal chemistry[E]		UNISI	6
7	Biomarker discovery[E]		UVEG	6
8	Cancer cell metabolism[E]		Seahorse	12
9	Training in mitochondrial and cellular respiratory physiology[E]		Oroboros	12
10	Generic skills in communicating science[C]		QUB	18
11	Fluorescence and electron microscopy imaging of cells[E]		Andor	18
12	Computational Biology[E]		QUB	18
13	Year 1 Meeting[C]		QUB	18
14	Outreach event for OOC patient/advocacy groups[C]		QUB	18
15	NMR Mini Boot Camp of BioBank Analyses and Metabolomic Transformation in Cancer[E]		TCD	24
16	Analytical techniques in glycobiology[E]		NIBRT	24
17	Project management targeted to industrial needs[C]		NIBRT	24
18	Innovation Academy & Career Development Workshop (includes Gender Issues, WiseR)[C]	30	TCD/QUB	24, 30, 36
19	Year 2 Meeting		TCD	30
20	TRACT Marie Sklodowska-Curie ITN Open Day/Exploit			
21	Closing Symposium[C]			

'Animal Models in Cancer Research and Drug Discovery' (Organiser: TCD; **Duration:** 2 days**):** This event will include four lectures on the use of animals in cancer research: xenograft, transgenic, gene-targeted and CRISPR generated cancer models and the technologies that have been developed to evaluate and analyse tumour status. Students will gain hands-on-experience, of benefit for subsequent training events (see below). TBSI is equipped with a state-of-the-art transgenic facility, *in vivo* animal imaging capabilities (with multiphoton intravital microscope), histology suite, MoFlo 4-Color High Performance Cell Sorter and an 800 MHz NMR spectrometer.

'Whole Body Imaging in Xenograft Cancer Models' (Organiser: TCD; **Duration:** 2 days**):** *In vivo* live imaging of tumour xenografts has become a key technology to understanding cancer development and metastasis and in the evaluation of cancer therapeutic drugs. Students will have the opportunity to carry out imaging of xenograft animals, and evaluate and quantitate the growth over time. This course will also be open to wider research community.

EXAMPLE – Network wide training events

MSCA-NET

Table 1.2 b Main Network-Wide Training Events, Conferences and Contribution of Beneficiaries

	Main Training Events & Conferences	ECTS (*if any*)	Lead Institution	Project Month (*estimated*)
Technical Training				
1	VHDL design/implementation in FPGAs (1 week)		UNIPI	9
2	Effective parallel programming in modern C++ (2 days)		SDS	10
3	HLS (High Level Synthesis, 3 days)		ICCS	11
4	Designing in FPGA SoCs e.g. Zynq (1 week)		ICCS	11
5	Course on MRF (3 days)		IMAGO7	36
6	Technology in space applications, with reference to ASI and ESA research activities (2 days)		KI	46
Schools				
1	GPU programming school (2 days)		SDS	22
2	School at Fermilab (2 students/year, 2 months)		UNIPI	18,30,42
3	CMS detector upgrade school (1 week)		UNIPI	33
4	MAX Design flow and OpenSPL programming (3 days)		MAX	24, 34
Administrative and Management Trainings, transferable skills				
1	Italian language courses (2-months lessons)		UNIPI	When in Pisa
2	SixSigma Quality Management		GEGR-E	27
3	PHD+, technology transfer		UNIPI	36-38
4	TRIZ Problem Solving Tool		GEGR-E	39
Scientific Contribution in Conferences/Workshops				
1	PUMA Workshops		All	11,19,26,37,48
2	Contributions to Hipeac CSW		SDS	19,31,43
3	1 IMAGO7 event		IMAGO7	14
4	FTK workshops @CERN		UNIPI	17, 29, 41
5	Special Session Organization at Conferences/Workshops		ICCS	1/year

EXAMPLE – Network wide training events

MSCA-NET

Table 1.2 b Main Network-Wide Training Events, Conferences and Contribution of Beneficiaries

#	Main Training Events & Conferences (OBLIGATORY FOR ALL ACTIVE ESRs)	ECTS	Lead Benef	Month
1	**Kick-Off Meeting and Initial Training Days – RADEF, University of Jyväskylä (FI):** *[including researchers, supervisors, scientists in charge and related industrial partners]* It will be organized at RADEF part of the University of Jyväskylä and will set and share the training goals of the RADSAGA network. Almost all the researchers will be recruited at that stage. Presentations of the individual research projects will be made by the supervisors, while the researchers will make poster presentations. The event will be preceding or following the Jyväskylä summer school, thus allowing the ESRs to participate. Visits of RADEF test facilities and electronic laboratories will be organized, with concrete lab demonstrations. It will be followed by blocked technical and scientific training courses, such as "Radiation Safety" or "Electron, photon and Ion Beam Based Methods in Materials Science" as well as a presentation by Industry related to the "challenges for electronic components in radiation environments".	5	JYU	10
2	**Initial Training – University of Montpellier 2 (FR)** Organized as RADFAC event, this meeting allows the RADSAGA ESRs not only to meet the RADECS community to give an overview about their on-going thesis project, to exchange ideas and recommendations, but at the same time also exchanging ideas with other European PhD students active in the field of radiation to electronics. It will be preceded or followed by a blocked general training course on "Radiation Effects on Electronics" including also practical training on tools relevant for the network (*e.g.* TCAD), as well as an environmental training course delivered by a RADSAGA external SME company (TRAD) specialized in radiation testing.	5	UM2	12

Table 1.2 c List of scientific and technical trainings
(selection of what is available, obligatory courses underlined and bold)

#	Training	Knowledge gained	Institute	ECTS
1	IC Design software	Cadence-based full custom design: (i) setting up an initial Cadence environment; (ii) doing a Cadence design; (iii) full custom layout and verification	KUL	2
2	Analogue IC design	Study of different building blocks for analogue circuits with special focus on the integration of Op-Amps, filters (time continuous and switched-capacitor) and the integration of AD and DA converters.	KUL	6
3	Digital IC design	Deepen the knowledge about digital integrated circuit design. The common thread throughout the course is the optimisation of digital circuits in view of the energy versus performance trade off.	KUL	3
4	Reliability and Yield for Micro- and Nano-electronic Components	Basic concepts, tools and methods used in the field of reliability and main failure mechanisms that are important in integrated electronic components, both at the level of the integrated circuit and of the packaging and microsystems. The role and the impact of defects in semiconductor technology are emphasized.	KUL	3
5	METIS code	METIS is a software code for prediction of radiation effects in electronic devices.	AGIF	1
6	**Industr. experience in EEE and rad.engineering**	Lecture about methodologies, constraints and challenges linked to the development and implementation of electronic control and power systems in industrial applications.	ADS	1

TRAINING – 1

+ The programme provides promising **opportunities for networking** and **training** in relevant skills. The planned training activities appropriately **complement** the programmes offered **locally** at the participating organisations.

+ The training programme is of good quality and credible, including **transferable skills**, **inter/multidisciplinary** and **inter-sectoral** aspects.

+ The activities included in the **network-wide training events** are meaningful for the intended research and they **complement** well those programmes offered locally at the participating organisations.

+ An impressive range of network-wide training activities are described that ensure **complementarity with the local programmes.**

TRAINING – 2

+ The training programme is well presented. A significant effort is made to ensure **the integration of a dual research and policy perspective** throughout the training process. The policy training **at the non-academic** placement organisations is appropriate, well described, and **complements** well the training provided by the academic beneficiaries and within the **network-wide training events**.

+ The training programme is effective and well detailed, combining **traditional research activities** in the academic field with relevant **practical activities** in the sector considered.

+ It is convincingly demonstrated that the involvement of **associated partners** adds an intersectoral character and reinforces contextual and practical aspects.

TRAINING

- **Insufficient details** are given regarding the **scientific content** of the training programme.
- The **local training activities** in which Doctoral Candidates would be enrolled are not described in sufficient detail, making it **unclear how they complement** the network-wide events.
- The training programme insufficiently comprises **training in the application of AI methods**, given that they are widely used in the individual research projects.
- The **rationale for the location** of one of the network-wide training events is not fully justified.
- The network-wide training events and conferences are listed **without the necessary details on specific topics.**
- Trainings based on secondments in non-academic hosts **is limited due to short periods** (usually not longer than one month).

MSCA-NET

What are the transferable skills that the new generation of researchers need in your field?

What are the best methods to train the skills?

STRENGTHS & WEAKNESSES: 1.3

MSCA-NET

+ The proposal involves an excellent doctoral training programme with clearly defined objectives focused on specialist training, emphasizing digital skills, as well as broader training.

+ A well designed training programme is proposed. The network activities are carefully planned, involving all network nodes, and planning both scientific and useful complementary skills training. There is a good consistency between the local training, research activities, and the network training programme.

+ The role of the non-academic sector in the training programme is clear and relevant. Non-academic partners will consistently advise, guide, and contribute to planned training activities.

- The overview of the training program is not cohesive and not in line with the scientific and non-scientific objectives of the proposal.

- The network-wide training events and their complementarity with the programmes offered locally at the participating organisations are insufficiently elaborated, and do not adequately consider gender and diversity effects.

- The proposal lacks detail on the duration of webinars and on-site training events across the network.

- It is not fully clear what the nature of the secondments will be and how they will complement the research programme carried out in their home institutions.

1.4 QUALITY OF THE SUPERVISION (INCLUDING MANDATORY JOINT SUPERVISION FOR INDUSTRIAL AND JOINT DOCTORATE PROJECTS) REQUIRED SUB-HEADINGS:

- **Qualifications and supervision experience of supervisors.**
- **Quality of the supervision arrangements for DN.**
- **Quality of the mandatory joint supervision arrangements** for DN-ID and DN-JD.

The role and scientific profile of the supervisors should only be listed in the "Participating Organisations" tables in section 6.

Refer to the Charter and Code & Guidelines for MSCA supervision

Work Programme MSCA

Supervision

Particular attention is paid to the quality of supervision and mentoring arrangements as well as career guidance. Joint supervision of the researchers is mandatory for Industrial and Joint Doctorates.

Supervisory Board

Each MSCA Doctoral Network should have a clearly identified supervisory board co-ordinating network-wide training, research and in particular supervision activities in line with the Guidelines for MSCA supervision, while establishing continuous communication and exchange of best practice among the participating organisations to maximise the benefits of the partnership.

MSCA Guidelines on Supervision

MSCA-NET

- ✓ The Marie Skłodowska-Curie Actions (MSCA) are the European Union's flagship programme for the mobility and training of researchers, as well as the development of doctoral programmes, with a **strong structuring effect on participating institutions**.
- ✓ The MSCA promote effective supervision.
- ✓ MSCA Guidelines on Supervision constitute a **set of recommendations** to be adopted on a best-effort basis by participants in the programme – both individuals and institutions – in order to help institutions and supervisors in guiding MSCA researchers.

Role of the supervisor

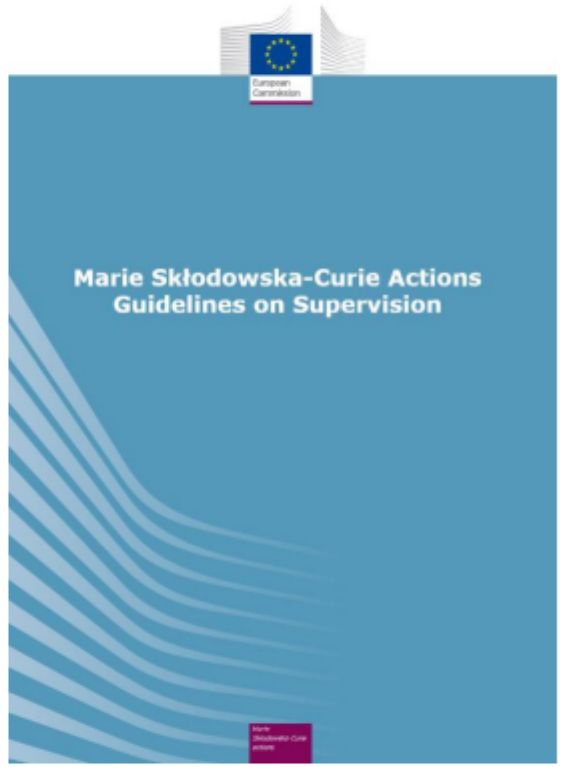
- General principles in the Charter and Code and integration of the researcher
- Research support
- Career development (regular review of the CDP)
- Monitoring and wellbeing of the researcher
- Communication and conflict resolution

Role of the researcher

- General principles set in Charter and Code
- Research
- Wellbeing
- Communication and conflict resolution

Role of the organisation

- General principles and integration of the researchers
- Raise awareness of the Codes of Ethics and Research Integrity in the institution
- Research support
- Career development
- Mentoring and wellbeing of the researcher
- Supervision management and conflict resolution
- Training and professional development for supervisors



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MSCA-NET

MSCA-NET

POLICY-BRIEF: SUPERVISION

Deliverable 3.11

NETWORK OF THE MARIE SKŁODOWSKA-CURIE ACTIONS NATIONAL CONTACT POINTS

Task 3.6	Policy Briefs
Issued by:	DLR
Issued date:	23 October 2024
Work Package Leader:	INNOVATIONAUTH (IL)

SUPERVISION

Supervision

Employers and/or funders should ensure that a person is clearly identified to whom researchers can refer for the performance of their professional duties, and should inform the researchers accordingly.

Such arrangements should clearly define that the proposed supervisors are sufficiently expert in supervising research, have the time, knowledge, experience, expertise and commitment to be able to offer the research doctoral candidate appropriate support and provide for the necessary progress and review procedures, as well as the necessary feedback mechanisms.

- Ensure it is very clear who will supervise each doctoral candidate
- In case of ID and JD, explain the arrangements for joint supervision, and the synergy
- Explain the supervision experience of each supervisor
- Ensure there are adequate monitoring and feedback mechanisms in place
- Think in advance about conflict resolution

PI	Expertise & Publications	Supervision Experience & Leadership Roles	ESR
Prof. Jose Bagan, MD, DDS, PhD (UVEG)	Oral medicine and pathology, discovery of novel biomarkers for treatment of OSCC; 326 publications	43 PhDs completed; 3 PhDs in progress; Head of Stomatology and Maxillofacial Surgery; Coordinator of Doctoral Programme in Clinical Dentistry; Director of research and teaching at University General Hospital in Valencia; Director of the School of Doctoral Programmes for UVEG	1, 3
Prof. Richard Kennedy, MB, BAO, Bch, BSc, PhD, FRCP (QUB)	Medical oncology and drug discovery, 90 publications	10 PhDs completed; 6 PhDs and 4 clinical fellows in progress; Director for undergraduate academic training in medicine	2, 4

SUPERVISION - 1

+ The **qualifications** and relevant **experience** of the members of the supervisory teams are well presented, clearly demonstrating that they are **well-matched**, and assuring that each doctoral candidate has an **appropriate supervision team** in place.

+ The qualifications, skills and supervision experience of the **academic** and **non-academic** supervisors are well described and are appropriate for the planned objectives of the proposal.

+Two supervisors from two different partners will ensure a **complementary** supervision of the doctoral candidates.

+ The supervisors have very **good qualifications and skills** and have valuable supervision **experience** at the level of doctoral training. The network consists of a very good mix of **junior** and **senior** supervisors, who will **co-mentor** the doctoral candidates.

+ The supervision of different types of partners is extremely well suited and **balanced**, including the highly effective involvement of the **industrial partners**.

SUPERVISION - 2

+ The supervisors' expertise is **well aligned with the research proposed**.

+ The supervisors have very good experience in the topic of research and a strong **track record of publications** and **funding**. All have also very good experience in mentoring young researchers.

+ Supervision is well organised. Doctoral candidates would have **access to more than one (co-)supervisor from different disciplines**, in addition to interdisciplinary supervision through the network.

+ The supervision quality is convincing and very well addressed, pre-establishing a sound approach of co-supervision by two mentors of different sectors and different disciplines, and a **secondment mentor**. The qualification, research profile, publications and supervision experience of academic supervisors are relevant to the scope of the research.

SUPERVISION

- The proposal does not demonstrate that the supervisors possess a **relevant experience** of supervision at the doctoral level.
- The proposal does not sufficiently elaborate on the experience of some supervisors.
- The involvement of **co-supervisors** in the overall mentoring scheme is not sufficiently clear.
- **Joint Supervision** from the associated partners is not discussed in adequate detail.

MSCA-NET

Describe the monitoring and feedback mechanisms that are used in the PhD programme of your institution.

How to complement them on the network level?

STRENGTHS & WEAKNESSES: 1.4

MSCA-NET

+ All supervisors have the necessary research qualifications and a strong record of training and mentoring young researchers to become experienced, mature and independent scientists. All partners agree to comply with the comprehensive standards supervising of PhD candidates.

+ Progress monitoring of the individual projects of PhDs are very well described and have all elements to ensure the success of Fellows' individual research projects and equip them with transferable skills for their life and career.

+ All beneficiary supervisors have international research teams with PhD students and postdocs leading large teams that include visiting scientists. The supervisor and co-supervisor will work together and will complement each other.

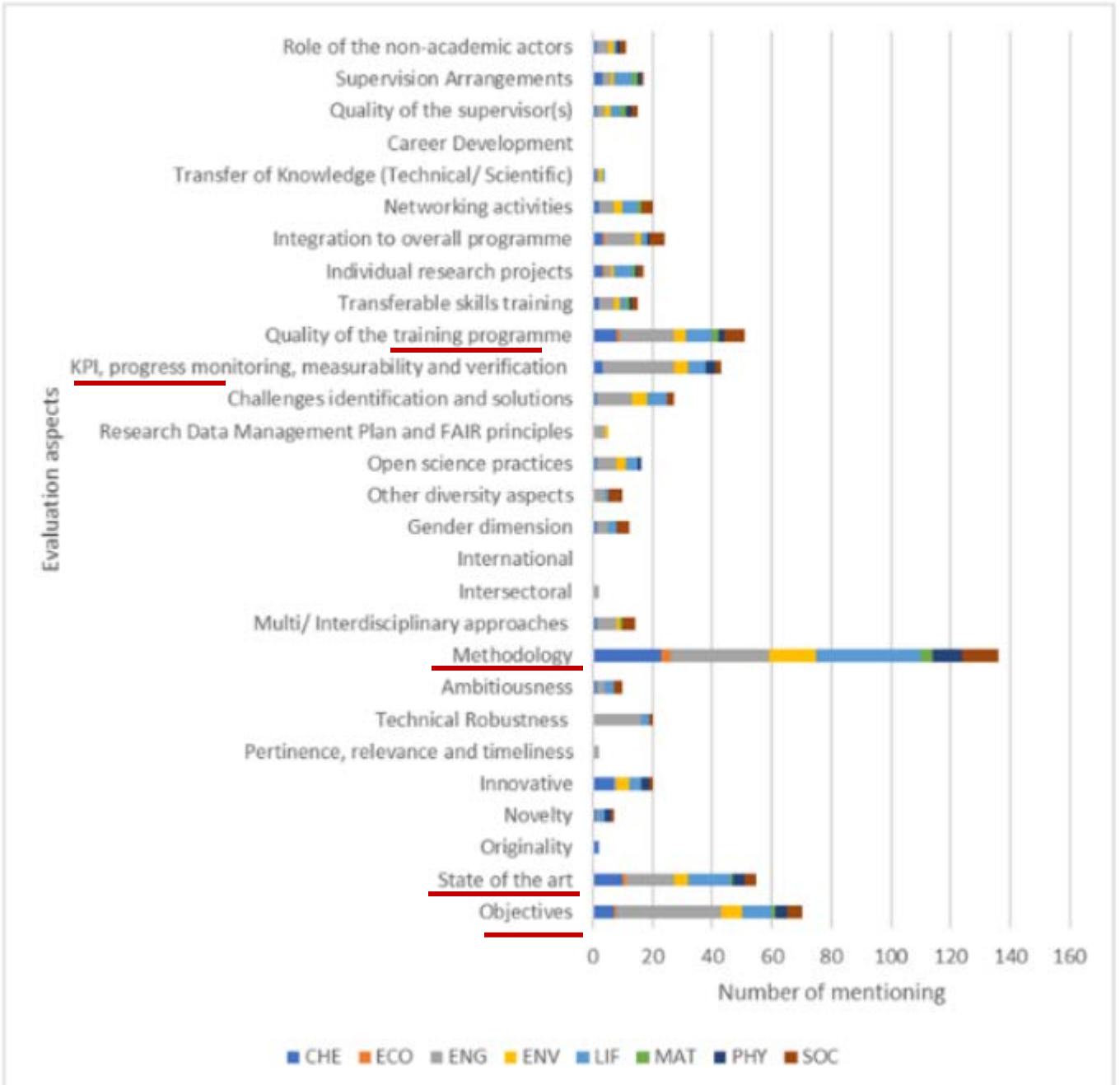
+ The supervision arrangements are clearly described and well designed, assuring an interdisciplinary and intersectoral oversight of the doctoral candidates' activities.

- The proposal does not sufficiently address supervisory arrangements or the specific support of co-supervisors. Mentoring and guidance for the professional development of future careers are not sufficiently demonstrated.

- The supervision arrangements are insufficiently described and imprecisely planned; moreover, the proposal lacks a clear plan of supervisors' involvement, appropriate progress monitoring and feedback mechanisms.

- A shortcoming is that details on the qualifications and experience of some of the specific supervisors are difficult to disentangle from the proposal.

FIG 8: MSCA DN 2022 EXCELLENCE WEAKNESSES BY THE SCIENTIFIC PANELS



Source: 'In the framework of the MSCA-NET network we have analysed the ESRs and herewith the outcomes are presented.'

EXCELLENCE

- Excellence is the most weighty part of the proposal, both in terms of length and importance.
- It is closely connected to Impact and Implementation – the key to success is a clear, coherent narrative throughout the Part B
- Use the MSCA-NET DN Handbook for additional support and ideas!