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Recommendations to design high-quality PCDP and its high-quality supervision.

Version 1.0



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Abstract

The following deliverable, D4.1 Recommendations to design high-quality PCDP and its high-quality supervision, makes some recommendations for a high-quality and personal design of a Personal Career Development Plan for each Doctoral Candidate in HYBRIDS project and its subsequent supervision, focusing on adapting the PCDP to each DC to his/her training and development needs, training unique professional profiles on disinformation problems and areas.

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List of Acronyms

DC	Doctoral Candidate
SB	Supervisory Board
PCDP	Personal Career Development Plan
TCDP	Training and Career Development Committee
SSH	Social Sciences and Humanities
IT	Information Technology
JRS	Joint Research Seminars
EA	Ethics Advisor
EB	Executive Board
EC	European Commission
HI	Hybrid Intelligence
HRS4R	Human Resources Strategy for Researchers

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DEFINITIONS

Beneficiary (BEN) — The signatories of the HYBRIDS Grant Agreement (either directly or through an accession form).

Associated Partner (AP) — Entities which participate in the action, but without the right to charge costs or claim contributions.

Host institution — the organization where the doctoral candidate is hired and will primarily work, providing the research infrastructure, academic support, and training environment necessary for their successful completion of the program and professional development.

Co-supervision institution — organization or institution that collaborates with the hosting institution in providing supervision and training to doctoral candidates enrolled in an MSCA-funded doctoral training program. The co-supervision institution(s) contribute to the training and research activities of the doctoral candidate. This collaborative approach promotes interdisciplinary research, international collaboration, and the development of a well-rounded skillset for the doctoral candidates.

Secondment — In an MSCA DN, secondment means a research training period spent by a fellow at the premises of a different beneficiary, an associated partner or an associated partner linked to a beneficiary included in the list of participants. The premises of the beneficiaries / associated partners / associated partners linked to a beneficiary must be independent from each other and therefore the secondment must involve physical mobility of the fellow. During their secondment, researchers receive supervision and training at the premises of the receiving beneficiary, associated partner or associated partners linked to a beneficiary.

Secondments should be differentiated from short visits, i.e., visits of a few days.

The difference is not only the "time spent" criterion, but it also depends on the purpose of the fellow's visit to the host institution. During short visits, fellows do not receive training and they are not supervised.

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1. Introduction

HYBRIDS is a Doctoral Network project, funded by the European Union's Horizon Europe research and innovation programme under the Marie Skłodowska-Curie Grant Agreement No. 101073351 and by the UK Research and Innovation (UKRI) Horizon Europe funding guarantee - Grant Number: EP/X036758/1.

Fake news, disinformation and hate speech online are pervasive and exacerbating societal tensions. Amidst growing concern that this harmful rhetoric is inciting violence and driving extremism, a global strategy to counter this digital phenomenon is more important than ever. In this context, the Marie Skłodowska-Curie Actions project HYBRIDS is working to provide researchers with the knowledge and tools they need to tackle disinformation. Specifically, it will integrate the structured knowledge provided by social and human sciences into natural language processing tools and deep learning algorithms. By developing new hybrid intelligence systems, HYBRIDS will combine machine and human intelligence to overcome the shortcomings of existing artificial intelligence methods.

The HYBRIDS consortium involves **a total of 14 members** (8 beneficiaries – 6 partners) from 7 European countries: France, Germany, Italy, Portugal, Spain, the Netherlands and the United Kingdom. Among the institutions are **6 universities** (*Universidade de Santiago de Compostela-Coordinator, Queen Mary University of London, Radboud Universiteit, Universidade da Coruña, Université Caen Normandie and Universidade de Evora*); **3 R&D centres** (*Consejo Superior de Investigaciones Científicas, Fondazione Bruno Kessler, Leibniz-Institut für Sozialwissenschaften*); **2 non-profit foundations** (*Fondazione Openpolis ETS, Fundación Empresa Universidad Gallega*) and **3 private companies** (*Factoria Software e Multimedia, Industrieanlagen Betriebsgesellschaft MBH and Newtral Media Audiovisual*).

HYBRIDS supervision inherits the hybrid concept that the entire Doctoral Network proposal goes through, ensuring that training activities and opportunities are performed in contexts and institutions with both IT (Information Technologies) and SSH (Social Sciences and Humanities) profiles. The genuinely hybrid approach of this doctoral network proposal, which shapes the design of each doctoral project as well as the coordinated co-supervision, ensures that each doctoral researcher will: 1) be exposed to international, interdisciplinary and inter-sectoral research environments and 2) obtain a new, unique and solid professional profile that allows to fill the existing gap in professional demands of interdisciplinary profiles oriented to the study of different forms of disinformation.

Each doctoral project will maintain a hybrid philosophy regarding technological-humanistic and industrial-academic plan, both in research topics, objectives, through co-supervision, secondments and with respect to training activities.

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Thus, it is a specific goal of the HYBRIDS programme to train doctoral candidates (DCs) to embrace interdisciplinary supervision and training, as well as professional and personal goals for each DC, taking responsibility for their project and career management and actively pursuing their own training needs.

In order to achieve these goals, HYBRIDS has established a Training and Career Development Committee (TCDC) chaired by QMUL, and is including several distinguished HYBRIDS scientists (Dr. R. Vieira, Dr. G. Dias, Dr. S. Tonelli, Dr. P. Martín). TCDC is responsible for (1) implementing all the HYBRIDS training activities planned, (2) designing and monitoring the individual Personal Career Development Plans (PCDPs), (3) monitoring the DC's PhD studies, and (4) the intermediation in training related conflicts. TCDC ensures a highly qualified supervision and mentoring process, as well as individual and continuous career development strategies for each DC reflected in their own PCDP. Guidelines for designed these individual plans are detailed in the following sections.

Scope of this deliverable

HYBRIDS WP4 includes as a specific goal the Design and monitoring of the Personal Career Development Plan (PCDP) for each DC, guaranteeing that they will acquire the scientific knowledge and transversal skills required to achieve all the goals detailed on each doctoral project. This is especially important due to the strong interdisciplinary approach in topics, research approaches, academia/industrial supervisions and DC profiles that HYBRIDS supported. The present deliverable makes some recommendations for this individual PCDP design and their supervision, focusing on adapting to each DC unique professional profile and its training and development needs.

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2. HYBRIDS PhD Process

During their first month, all DCs together in collaboration with their Supervisors and Co-Supervisors will identify their personal training needs and educational milestones within a Personal Career Development Plan (PCDP), specifying the set of hybrid skills and the set of transversal skills that will complement the DC professional and personal profile. It will also contain their participation in dissemination and outreach events. PCDPs will be reviewed every 6 months by the TCDC on a regular basis or in the event of changes.

Each DC will be enrolled in a recognized doctoral program at one of the HYBRIDS consortium universities. In addition, each DC will develop several secondments during at least 8 months (for 36-month doctoral projects) in discontinuous periods in the co-supervisor institutions and with non-academic partners. Non-academic supervisors will act as a third supervisor from the associated partners that receive the DC, maintaining periodical meetings with the DC in order to monitor her/his progress and to advise on professional issues.

All DCs will be continuously supervised by their supervisor by weekly contact and regular meetings every week. Where appropriate, supervisors will set up a slack account to be in regular contact with the DC. Their co-supervisor will be regularly available by mail and video conference, and with at least monthly meetings. She/he will act as primary supervisor when hosting the secondments. Moreover, each DC will be assigned a PGR administrator in their university, who will take care of any administrative issues they will need to deal with. Where a PGR administrator doesn't exist as a role, a contact person from the HR department of her/his host institution will be allocated, assisting the DC with any doubts or potential concern.

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3. HYBRIDS Supervision

As previously explained in this document and detailed extensively in the GA document, HYBRIDS project supervisory strategy presents two main pillars:

- Hybrid and coordinated co-supervision: each doctoral project is designed.
- Personalization of each career plan based on the doctoral project and candidate profile.

This supervision vision and the HYBRIDS mechanisms to follow up and ensure the supervision quality are detailed in next sections.

Vision and quality

HYBRIDS tries to cover all aspects involved in a high-quality supervision of doctoral projects, such as specific knowledge, transversal skills, human factors, among others. This holistic approach, trying to create unique research profiles, implies a significant effort in the design of the supervision strategy and the requirement in terms of its quality.

Thus, each **DC has two supervisors (one in the host institution and one in its co-supervisor institution) and, at least, an additional non-academic supervisor in their secondments.**

The cohesion and complementarity between supervisors and their adequacy to the DC project has been carefully analyzed in the proposal. Thus, in all DC projects supervisor and co-supervisor roles are taken by relevant researchers in different knowledge areas, in order to guarantee the interdisciplinary approach of the PhD project. In addition, non-academic supervisors are mainly situated in industrial or third sector organizations. This schema allows that **each DC candidate has access to academic and industrial supervision, as well interdisciplinary access to IT and SSH experts.** It is highly recommended that any impact decision to be made in the writing or revision of the PCDP (such as milestones, candidate evaluation criteria or presentation of research results, following the guidelines presented in this document in later sections) be discussed and agreed with the candidate and the rest of the supervisors involved.

Thus, each DC will be integrated during her/his contract in different research teams of different nature, methodologies and human component: in the host institution, in the co-supervisory institution and during the different complementary secondments, in both an engineering company (or research center as for DC1 and DC5) and a media organization (in the case of DC11 and DC9 the secondment in a media organization is not required as either the host or the co-supervisory institution is NEWTRAL, a company in such a sector). This

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integration will also allow DCs to access a diverse set of seminars, lectures and similar benefits from the academic exchange that underlies each partner group, contacting other PhD students, senior researchers, visitors, and teachers from different disciplines and approaches.

The TCDC committee will also take care of the supervision quality. Each trainee will be assigned a PGR administrator or an HR contact person to deal with work agreements, risk prevention, and any other concerns, as possible conflicts and personal issues. In addition, TCDC committee will review all PCDPs each six-month period, in order to ensure quality in the roadmap followed on each project.

Apart from the agreement, involvement, and close mentoring of the supervisors in all scenarios, note also that many of the participating universities have **quality regulation mechanisms for both the doctoral programs and the supervisor profile, which ensure quality in scientific supervision.**

Supervisors: roles and duties

Supervisor: The role of the supervisor is to assist the DC in his/her continuous professional development. In most HYBRIDS cases doctoral projects the supervisor is the main research person responsible for the project, and is also part of the HYBRIDS Supervisory Board (SB). He/she should know in depth the DC project in-depth, as well as the personal and professional needs of the DC. By regular meetings with the DC, the CPDC PCDC will be adjusted to these needs. The supervisor is also responsible for the accomplishment of the CPDCPCDP, including DC assistance to different HYBRIDS training events and secondments, supporting the DC in networking and career opportunities.

Co-Supervisor: The role of the co-supervisors is to jointly supervise the DC towards the successful completion of his/her PhD and to assist the supervisor with advising the DC in technical areas and monitoring the quality of various outputs.

The HYBRIDS doctoral projects include both situations in which the supervisor is from the academic sector, and at least one co-supervisor for each DC is from the industrial or third sector, and vice versa. In all cases, supervisor or co-supervisor from academia should also ensure the correct enrollment of the DC in the doctoral programme on in the academic institution.

Non-academic supervisor: The role of the non-academic supervisor is focused on providing the candidate a real-world, applied vision of their non-academic sector regarding the area of knowledge that each doctoral project addresses. This vision can be more industrial, allowing the candidate to obtain specific training on how

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to introduce and exploit their research results on the market, as well as in which industrial sectors in the field of disinformation their unique profile can be developed and what value it brings.

In other cases, the supervisor provides a more social vision of the information problem addressed by the doctoral project, bringing the student closer to non-profit organizations with access to real social studies.

In many cases, the non-academic supervisor will offer specialized training to the doctoral student as well as will allow them to obtain information repositories and develop practical use cases for the validation of their doctoral proposals.

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4. Personal Career Development Plan (PCDP): Specific Guidelines

Although the HYBRIDS project is committed to a personalized career plan for each doctoral candidate, we are aware of a series of necessary treatment of some common points for candidates during the preparation of their PCDP. Note here that each PCDP will be designed by each DC together with their Supervisors and Co-Supervisors and revised by the TCPD Committee, constituting the roadmap of the PhD process. Therefore, the PCDP is a live document that will be revised each 6 months. The document initial spirit and research goals defined in the first version of the document is likely that they will not be unlikely to change substantially from the initial version over time. However, it is expected that the subgoals, training needs etc. could change (especially on during the early stages of the doctoral project) depending on the PhD process. Also, dissemination or similar activities decided upon could change throughout the entire project.

During the PCDP design and review activities, the points detailed below should not be taken as a closed and/or exhaustive list, since it is assumed that depending on the DC profile and background, training needs, preferences and objectives, more aspects may arise to be addressed. It is therefore a series of issues or topics that need to be addressed and some recommendations to be applied during the design of each PCDP.

1. Previous background and skills. Training needs

Each candidate should go into a **reflective process on their own skills and competencies** at each phase of the PCDP review. Initially, at the time of the PCDP design, both the candidates and their supervisors will carry out an **intense work to identify skills and competencies relevant to the doctoral project that the candidate already possesses, and on the contrary, those that he/she needs to acquire**. Each competence or capacity will be identified as transversal or specific.

Thus, this part should include:

- Technical or knowledge-based skills in an interdisciplinary way of thinking.
- Research management skills, such as ability to successfully identify and secure possible sources of funding for personal and team research as appropriate, time management in relation to deadlines and deliverables, or resource management.
- Career management, including transferable skills, family-balance, time management, management of own career progression, ways to develop employability, awareness of what potential employers are looking for when considering CV applications etc.

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- Project management skills relating to proposals and tenders work programming.
- Communications skills, such as personal presentation skills, poster presentations, skills in report writing and preparing academic reports, papers and books. Also, research discussions in order to defend research outcomes at seminars, conferences, etc.
- Skills appropriate to working with others and in teams and in team building. Sensibility also with social and humanistic problems addressed in HYBRIDS and their impact.

Subsequently, the supervisors must identify where and how the doctoral student can develop the necessary skills, consulting the HYBRIDS training plan and their respective institutions, as well as the candidate's doctoral program. This will ensure the acquisition of those skills that the candidate does not have in his/her background and that are essential for the completion of the PhD. Especially important in HYBRIDS thesis projects is to **think outside the box** during these career design activities, taking into account that the competence and/or technique to be acquired can come from **any of the academic, industrial or third sector environments, as well as from any knowledge area**, without limitation to specific technological or humanities fields.

In addition, as a result of this reflection and at any time during the doctoral process, both supervisors and the candidates himself themselves may propose activities for the acquisition of new competencies and capacities of interest for the project and for the formation of the candidate's profile, both at a transversal level and sat a specific one.

2. Interdisciplinary level, possible penalties and project complexity

One aspect that must be addressed in the career design plan is the impact on the candidate's own profile with respect to the specific PhD project with a clear **interdisciplinary component**, such as the theses defined in HYBRIDS. Carrying out a pros and cons analysis focused on identifying opportunities that may open for the candidate at a professional level will **help DC to have motivating personal goals and results in the long term**.

It is therefore proposed as a guideline to discuss this issue with the candidate in a **SWOT (Strengths, Weaknesses, Opportunities, and Threats) analysis, establishing these opportunities and some measure to mitigate possible penalties that may arise during the project**. For example, given a profile with a more technical background, the study of sociological foundations in HYBRIDS project themes, such as immigration, may not be valued (in principle) in a purely technical career. However, acquiring skills and combined expertise at the technical and social level of immigration study in social

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networks can represent an opportunity to apply the learned methodologies in this area of social networks, expanding the candidate's capabilities in their own initial professional path. The idea is that any doubts from both supervisors and the candidate about the decisions to be made in the thesis project are analyzed to guarantee the greatest opportunities for the candidate at a professional level.

3. HYBRIDS network participation of the candidate

Considering the two previous points and the objectives defined for the thesis project, one of the points to be addressed in order to adequately prepare a quality PCPDC will be the **degree of involvement of the candidate in HYBRIDS as a network**, deciding and reviewing the decisions made on:

- Degree of participation and involvement of the candidate in the activities of the HYBRIDS network: presentations planned as part of the Joint Seminars, interest in planned training activities, etc.
- Identification of networking opportunities and synergies within the HYBRIDS network (with other supervisors, doctoral candidates, etc.)

4. Research goals, intermediate milestones and evaluation criteria

The PCPD should include an updated plan about **intermediate milestones** proposed for achieving the research goals of the doctoral project. As the PCPD is revised at least in a six-months period, we recommend maintaining a **draft of milestones and some evaluation criteria to evaluate each milestone for a six-months period** from the last review.

5. Research results

These should give an overview of the main direct results planned or already obtained as a consequence of the research carried out during the training period. It is recommended that an attempt be made to **specify what type of "product", in terms of research, is planned to result from each specific effort within the doctoral process**. For example, it is important to define in the PCDP if part of the dedication of the doctoral student produces a new methodology, technique, algorithm, theory, patent, a new case study, new empirical data, or validation of existing techniques at a formal and/or empirical level, etc.

Dealing with this issue within the PCDP will help the doctoral student to focus on obtaining the expected result (without prejudice to the fact that, as part of the research process, some of these results

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do not materialize and/or new ones arise, but this guarantees that it is always in a context of alignment with the original objectives of the project) and also to improve the way the DC could explain their own results in the context of the project.

In addition, this makes it possible to differentiate between the research results and the dissemination activities that are carried out for their communication and/or transfer (journal articles, presentations at conferences or pedagogical activities, for example), a point that is discussed below.

The information at this level should be relatively general as a **roadmap** since the career development plan does not strictly constitute a fixed report on the scientific results achieved.

6. Networking opportunities and communication and dissemination plan.

Each PCPD should include a **draft of a dissemination plan for the results achieved in high-standards research communities and venues**, including indexed research journals, relevant international conferences on each field, etc. It is recommended to follow an open science policy in terms of publication,

This plan also allows the DC to **develop/maintain co-operative networks and working relationships** as appropriate with supervisor/peers/colleagues within the institution and the wider research community. It is also important to consider in the PCPD the communication mechanisms to share project activities and results with the **general public. This may include engaging with press and media, developing pedagogical material and activities etc.**)

7. Ethical, sustainable and organizational aspects of the research career

Following the commitment of HYBRIDS with the European Green Deal¹ and HYBRIDS Ethics Management Policy^{2,3}, each PCDP should **ensure that any decision made regarding previous points of this guidelines list is aligned with Green Deal and Ethics principles expressed in the HYBRIDS Grant Agreement**. This includes revising decisions in the following lines:

- Researchers: promoting the use of on-line tools for all project's activities and encourage the researchers to limit the use of printed copies. Researchers will have an on-line repository tool where they can upload and share any information related to the project. DCs will receive

¹ <https://marie-sklodowska-curie-actions.ec.europa.eu/about-msca/msca-green-charter>

² <https://marie-sklodowska-curie-actions.ec.europa.eu/about-msca/msca-guidelines-on-supervision>

³ <https://euraxess.ec.europa.eu/jobs/charter>

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training in sustainable research management and environmental awareness, as part of the transversal skills.

- **Institutional:** all partners are committed to support their teams in minimizing the environmental impact of their day-to-day activities. The use of on-line teleconferencing tools will be encouraged and most of the meetings with the co-supervisors will be virtual. Regarding secondments, DCs will be encouraged to use efficient transport and the host institution will provide guidance about accommodation close to the host institution dependencies and provide information about sustainable commuting in the city.
- **Consortium:** To reduce the use promotional material , the project roll-up and banners will be shared by all the consortium and will be re-used in all HYBRIDS events and in conferences. In the organization of events, efforts will be made to minimize consumption in all areas. DCs and researchers will receive all documentation in electronic format. For the in-person events, we will select catering services that include a vegetarian or vegan option, with a wide range of plant-based dishes and with local, seasonal and/or organic ingredients.
- **Outreach:** The outreach activities and events will promote awareness about sustainability. Project's showcases and presentations will be related to sustainability goals (UN SDG). All the practices implemented will be shared in social media with the main objective of sharing best practices and inspiring the society to reduce the environmental impact of their day-to-day activities.
- **Ethics Management:** revision of the DC practices planned, especially in data management, data storage and data collection, AI good practices, research integrity and legislation compliance. HYBRIDS project has designated an independent Ethics Advisor (EA) responsible for monitoring and overseeing the ethical aspects of the project and ensuring proper handling of related issues. Each topic detected during the PCPD definition that presents some sustainability or ethics issues should elevate to the EA. EA main responsibilities are ethics management and monitoring, coordinating the implementation of the ethics processes and assessing the project partners as well as the Doctoral Researchers (DCs) to meet all the ethics requirements. Before starting the research, DCs will request the ethics approval of their project (also by presenting the first version of their PCDP) by the ethics committee at their host entity to ensure they comply with all national laws, regulations and requirements.

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Appendix A: Career Development Plan (Template)

Templates for the Career Development Plan are provided on the next page to guide the supervisors and DCs in the PCDP design process.

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Career Development Plan-Year 1 (Draft)

Name of fellow:

Department:

Name of Supervisor:

Date:

BRIEF OVERVIEW OF RESEARCH PROJECT AND MAJOR ACCOMPLISHMENTS EXPECTED (half page should be sufficient):

1. Previous background and skills. Training needs

- Main goal of the DC project:
- What further research activity or other training is needed to attain these goals?
- Transversal training needs and possible training opportunities/courses recommended to the DC:
- Specific training needs and possible training opportunities/courses recommended to the DC:

2. Interdisciplinary level, possible penalties and project complexity. SWOT Analysis

- Strengths identified:
- Weaknesses identified:
- Opportunities identified:
- Threats identified (and, if possible, measures for mitigating them):

3. HYBRIDS network participation of the candidate

- HYBRIDS Network events, training courses, presentations, stays, etc. (those the DC plans to attend):

4. Research goals, intermediate milestones and evaluation criteria

Research goal	Milestone and planned delivery date	Evaluation criteria

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5. Research results

Please, briefly list the research results achieved in the project during this period, describing for each how you categorize it (do you consider your contribution a new methodology, technique, algorithm, theory, patent, case study, empirical data, validation of existing techniques, etc.) and how it contributes to the final goals of the doctoral project.

Research result/contribution	Category	Contribution to DC project goals

6. Networking opportunities and communication and dissemination plan

- Synergies and Funding possibilities identified:
- Anticipated publications:
- Dissemination plan
 1. Anticipated research venues (conference, workshops, seminars attendance etc.)
 2. Planned dissemination activities (to general public):

7. Ethical, sustainable and organizational aspects of the research career

- Anticipated ethical issues (should be reported to the EA):
- Degree of accomplishment of ethical and sustainable principles (measures that ensure compliance with the ethical and green principles of the project):

Date & Signature of fellow:

Date & Signature of supervisor

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Career Development Plan-Final year (Draft)

Name of fellow:

Department:

Name of Supervisor:

Date:

BRIEF OVERVIEW OF PROGRESS, ACHIEVEMENT AND PERFORMANCE (HALF PAGE SHOULD BE SUFFICIENT):

1. Previous background and skills. Training needs

Transversal skills acquired:

Technical and specific skills acquired:

Summary of acquired aspects and brief description on the uniqueness of the professional profile of the DC:

2. Interdisciplinary level, possible penalties and project complexity. SWOT Analysis

- Strengths identified:
- Weaknesses identified:
- Opportunities identified:
- Threats identified (and, if possible, measures for mitigating them):

3. HYBRIDS network participation of the candidate

- HYBRIDS Network events, training courses, presentations, stays, etc. (those the DC plans to attend):

4. Research goals, intermediate milestones and evaluation criteria

Research goal	Milestone and final delivery date	Evaluation criteria

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Research result/contribution	Category	Contribution to DC project goals

6. Networking opportunities and communication and dissemination plan

- Synergies and Funding possibilities identified:
- Publications (incl. in press):
- Conference, workshop attendance, courses, and /or seminar presentations:
- Dissemination plan
 1. Research venues attended (conference, workshops, seminars attendance etc.)
 2. Dissemination activities carried out or in course for the general public:

7. Ethical, sustainable and organizational aspects of the research career

- Ethical issues found:
- Degree of accomplishment of ethical and sustainable principles (measures that ensure compliance with the ethical and green principles of the project):

Date & Signature of fellow:

Date & Signature of supervisor

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