



GUIDE FOR APPLICANTS

version 1.0 – December 9, 2019

This guide is aims to provide practical information to potential applicants on how to apply, together with a description of the assessment procedure. For further and up-to-date information, please visit the website <https://etnmanic.eu>



This project has received funding from the EU's Horizon 2020 programme under the Marie Skłodowska-Curie grant agreement No 861153.

CONTENT

- 1. ABOUT ITN MANIC 3**
 - 1.1 ABOUT THE RESEARCH PROGRAMME.....3
 - 1.2 PARTICIPATING HOST ORGANIZATIONS.....3

- 2. CALL FOR APPLICANTS..... 4**
 - 2.1 WHY APPLY FOR A POSITION IN THE MANIC EUROPEAN TRAINING NETWORK?4
 - 2.2 AVAILABLE POSITIONS.....4
 - 2.3 WHO CAN APPLY (ELIGIBILITY CRITERIA)?5
 - 2.4 WORKING CONDITIONS AND SALARY.....6
 - 2.5 TIMELINE.....7
 - 2.6 CONTENT AND SUBMISSION OF YOUR APPLICATION.....7

- 3. SELECTION & EVALUATION PROCEDURE 9**
 - 3.1 ELIGIBILITY CHECK.....9
 - 3.2 EVALUATION OF APPLICATIONS.....9
 - 3.3 LONGLISTING..... 10
 - 3.4 INTERVIEWS..... 10
 - 3.5 SHORTLISTING..... 10
 - 3.6 CONTRACTING 11

1. ABOUT ITN MANIC

Funded by the European Commission through the Horizon 2020 Marie Skłodowska-Curie ITN Programme, the MANIC network offers **15 high level fellowships for joint research on new materials for cognitive applications**. The most talented and motivated students will be selected for advanced multidisciplinary research training, preferably starting **July 2020**.

1.1 About the research programme

The scientific aim of MANIC is to **synthesize materials that can function as networks of neurons and synapses by integrating conductivity, plasticity and self-organization**. Successes in deep learning show that the paradigm of neuromorphic computing is very attractive. However, current technology is based on the Turing/von Neumann architecture, requiring extensive communication and an excessive amount of energy for computing. The human brain performs pattern recognition tasks with a fraction of the power needed by supercomputers for similar tasks. **In this multidisciplinary project, new (memristic) materials and architectures for neuromorphic computing will be investigated in order to develop materials that can learn.**

1.2 Participating host organizations

Selected researchers will enroll in one of the 15 positions offered by the 12 host organizations participating in the MANIC network.

1. **University of Groningen** (Groningen, The Netherlands)
2. **IBM Research GmbH** (Rueschlikon, Switzerland)
3. **École Polytechnique Fédérale de Lausanne** (Lausanne, Switzerland)
4. **University of Picardie Jules Verne** (Amiens, France)
5. **Consejo Superior de Investigaciones Científicas** (Zaragoza, Spain)
6. **Forschungszentrum Jülich GmbH** (Jülich, Germany)
7. **Bielefeld University** (Bielefeld, Germany)
8. **The Chancellor Masters & Scholars of the University Of Cambridge** (Cambridge, UK)
9. **The Queen's University of Belfast** (Belfast, UK)
10. **University College London** (London, UK)
11. **University of Twente** (Enschede, The Netherlands)
12. **University of Zurich** (Zurich, Switzerland)

2. CALL FOR APPLICANTS

2.1 Why apply for a position in the MANIC European Training Network?

ITNs are financially supported by the European Commission because they provide excellent research, training and career aspects. The benefits of being a PhD student in an ITN network:

- You will get the chance to participate in **specially developed lectures and courses** (e.g. on specific techniques, academic soft skills, etc.);
- You can already at an early stage in your career start **building your personal professional network** due to the embedding of our PhD projects in a high profile consortium with renown universities and innovative companies (such as IBM Research Zürich);
- You will be **exposed to research in a non-academic environment**. You will spend at least one month in the non-academic sector. This will enhance your capacity to understand the strategies, requirements and skills for doing research in a business environment. You may even opt to do your full PhD with IBM Research Zurich;
- You will get the opportunity to **spend some time in the labs of other partners in the consortium** (thereby you will get familiar with other disciplines, techniques, cultures etc.);
- You will be advised by **excellent group leaders** who are **outstanding in their research and** experienced in doctorate **training**.

2.2 Available positions

1. [Ferroelastic domain walls as memristors and their network behaviour](#)
University of Groningen (NL)
2. [Adaptive random non-linear mappings for neural computing in ferroelastic films](#)
University of Groningen (NL)
3. [Morphological Image Analysis of Conduction Maps](#)
University of Groningen (NL)
4. [Thermal Analysis of Devices for Neuromorphic Computing](#)
IBM Research GmbH (CH)
5. [Synaptic element for neuromorphic computation exploiting ferroelectric domain walls](#)
IBM Research GmbH (CH)

6. [Domain-wall-based conductive channels and interfaces for reconfigurable circuits](#)
École Polytechnique Fédérale de Lausanne (CH)
7. [Topological excitations for emergent computing devices](#)
University of Picardie Jules Verne (FR)
8. [Atomic Structure of Conductive Domain Walls of Oxide Thin Films](#)
Consejo Superior de Investigaciones Científicas (ES)
9. [Metaplasticity of redox-based memristive thin film devices](#)
Forschungszentrum Jülich GmbH (DE)
10. [Neuromorphic Circuits for Novel Devices](#)
Bielefeld University (DE)
11. [Domain wall dynamics and neuron-like 'crackling noise'](#)
The Chancellor Masters & Scholars of the University Of Cambridge (UK)
12. [Moveable Domain Wall Electronics in Single Crystal Ferroelectric Sheets](#)
The Queen's University of Belfast (UK)
13. [Memristors based on oxides with metal-insulator transitions](#)
University College London (UK)
14. [Integration of memristive materials on Si](#)
University of Twente (NL)
15. [Device modeling and circuit simulation](#)
University of Zurich (CH)

2.3 Who can apply (eligibility criteria)?

To comply with the funding rules of the Horizon 2020 Marie Skłodowska-Curie programme:

- You qualify as an **Early Stage Researcher**, meaning that - on the starting date of your employment with the host institute – **you are in the first four years of your research career and have not (yet) been awarded a doctoral degree.**
- You **have not resided and/or have had your main activity** (study, work, etc.) **in the country of the host institute for more than 12 months during the 3 years prior to the starting date of your employment** with the respective host institute.

The Call is open to any nationality, but please be informed that the European Commission's Research Executive Agency is entitled to request clarification for MSC

researchers who are nationals of [countries subjected to EU sanctions](#) and doing research in particular fields (scientific) or raising specific ethics issues(dualuse/misuse).

In addition:

- You have research experience in one or multiple fields relevant to the MANIC project, such as physics, materials science, chemistry, computer science, mathematics, artificial intelligence and/or electrical engineering, or a combination thereof.
- You are proficient in English language (academic level).
- **Important! Additional requirements may apply, depending on your choice of host institute.** We strongly recommend to check the information per position on our website as well the local requirements of the respective graduate school.

Please also note that, while specific expertise can be a plus, methods can always be learned.

2.4 Working conditions and salary

Marie Skłodowska Curie (MSC) projects offer highly competitive and attractive salary and working conditions.

- Selected candidates will have a **fulltime employment contract for the duration of 36 months**. Selected candidates will have an initial appointment of 12 months that will be extended by 24 months if they perform satisfactorily. Host institutes of which the standard PhD trajectory is more than 36 months may decide to offer an employment contract for a longer period.
- Selected candidates will receive a salary in accordance with the MSCA regulations for early stage researchers. The basic gross salary (living allowance) is **€ 3.270,- euro per month**. Please note that a correction factor will be applied per country; therefore, the exact gross salary will be confirmed upon appointment. Please also consider that the net salary may be 20-30% lower due to taxes, social benefit premiums *etc.* due to national legislation.
- In addition to the living allowance, selected candidates will benefit from a **mobility allowance of gross € 600,- per month**.
- Selected candidates who have a family at the time of recruitment qualify for an additional **family allowance of gross € 500,- per month**. 'Family' means persons linked to the candidate by marriage (or a relationship with equivalent status to a marriage recognised by the legislation of the country where this relationship was formalised) or dependent children who are actually being maintained by the candidate.
- Selected candidates will enjoy at least the same standards and working conditions as those applicable to local researchers at the host institution holding a similar position.

2.5 Timeline

Opening of the call	: December, 2019
Deadline for applications	: January 26, 2020 – 23.59 CET
Decision on eligibility	: before February 8, 2020
Invitation to interview (or rejection)	: before March 1, 2020
Interviews	: March 2020
Notification on evaluation outcome	: Early April 2020
Validation by Scientific Board	: before May 1, 2020
Acceptance by host institution	: dependent on host organization*
Starting date	: July 1, 2020**

* Please note that for some host institutes, an additional (local) application and acceptance procedure may apply.

**Precise date of enrollment depends on the position you apply for and on the contracting procedure of the host organization.

2.6 Content and submission of your application

Your application consists of two parts:

1. An online application form
2. One PDF file containing all your application files

2.6.1 Online application form

To submit your application, please fill in the requested data in the online application form, upload your application file and submit your application. **The online application form will be available from 8 January 2020, 17:00 (CET) until 26 January 2020, 23:59 (CET)** on the website <https://etnmanic.eu>.

In the online form, you are requested to fill in different types of information. This information is aimed to facilitate the eligibility check of your application. Please consider the following:

- You may **apply for a maximum of 5 positions** in the MANIC network. *While all Recruitment Committees will have access to your application, only the Recruitment Committee of your first preference will initially evaluate your application. Therefore, please carefully select your preference(s).*
- To **indicate your (expected) whereabouts**, please list the start/end dates, country and description of your main activity in the required section.
 - Please list your (expected) whereabouts in chronological order, starting from 1 April 2017 and ending with 1 September 2020.
 - Should you have resided in more than one country within the requested period, please use the “add another whereabouts” button to list multiple whereabouts.

- The form allows for a maximum listing of 10 whereabouts. In case you have more (expected) whereabouts, please list these in your CV.
- If you have not graduated yet, please indicate the expected date of your degree being awarded.
- Please **list the names and contact details of two referees**¹. The Recruitment Committee(s) may contact them for references. Please inform your referees upfront on the possibility of them being contacted by a representative of the MANIC network regarding your application. The referees are most likely to be contacted between February and June 2020.
- If you have had a **career breaks and/or diversified career path** (i.e. worked outside of academia for a while) – then please add a short description in the relevant section of the form. *Please note that you still need to meet the qualification criteria, regardless of having had a career break and/or diversified career path.*

2.6.2 Your application file

Your application should consist of **one PDF file** containing the following documents, in the following order:

- a. a motivation letter,
- b. a Curriculum Vitae,
- c. a copy of your Bachelor or Master certificate or equivalent (depending on the requirement of the host institution(s) you are applying to)
- d. an abstract of the thesis of your highest obtained degree (max. 500 words).
- e. proof of sufficiency in English (if this is required by the host institution(s) you are applying to)

Failure to submit any of the required documents will automatically result in a rejection of your application on formal grounds.

¹ Any permanent staff of the scientific institution that knows you well.

3. SELECTION & EVALUATION PROCEDURE

3.1 Eligibility check

All applications will be checked according to the following Eligibility Criteria (EC):

Table 1 - Eligibility criteria for MANIC applicants

EC1	The applicant fulfils the educational qualification requirements of the host institute(s) applied to, in a discipline relevant for MANIC (e.g. chemistry, materials science, physics, computer science, mathematics and/or engineering, or a combination thereof).
EC2	The applicant is an Early Stage Researcher .
EC3	The applicant complies with the mobility rule for the project(s) they have applied for.
EC4	The application is complete, in English and submitted through the online form before the deadline.

Only eligible applications will be processed to the next phase. Ineligible applicants will receive a rejection notification stating the reason(s) for their ineligibility and the possibility for redress within 2 weeks after submission of their application.

3.2 Evaluation of applications

- a) Per position, a Recruitment Committee consisting of three members (of which one non-academic) will evaluate all applications in which that positions was listed by the applicant *as first preference*.
- b) The Recruitment Committee will evaluate the applications based on the evaluation criteria depicted in table 2.
- c) Scores will range from 0 (insufficient) to 5 (outstanding).
- d) An overall threshold of 3.5 will be applied.
- e) Each Recruitment Committee will have access to all applicant data and application files, in order for them to also identify promising applicants who have listed the respective host institute as second to fifth preference.
- f) In case an applicant has indicated a career break or unconventional career path, the Recruitment Committee will take this into special consideration during the evaluation.

Table 2 – Overview of evaluation criteria used for MANIC applications

Evaluation Criteria	Threshold	Weight
Applicant's academic qualifications and experience	3.5	30
Motivation, eagerness and career ambitions	3.5	20
Achieved results, incl. publications, patents, invited talks, awards, grants and prizes	3.5	20
Complementary skills: creativity, independence, leadership, communication, English proficiency	3.5	20
Extra: previous mobility, teaching or non-academic experience	N/A	10

3.3 Longlisting

- a) Each Recruitment Committee will prepare a **longlist**. This list may also include candidates who have listed the respective host institute as second to fifth preference.
- b) All longlists will be compared to identify any overlap of interest in the same applicant.

3.4 Interviews

- a) From the highest ranking candidates, at least 3 candidates per position² will be invited for an interview (in person or web-based) with the Recruitment Committee.
- b) In case of multiple Recruitment Committees showing an interest in the *same* candidate:
 - a. The respective candidate may have *one interview* by members of different Recruitment Committees (maximum 5 members), or,
 - b. The respective candidate may have *multiple interviews* with different Recruitment Committees.
- c) Interviewed candidates will be evaluated by the evaluation criteria as described in table 3.
- d) Scores will range from 0 (insufficient) to 5 (outstanding).
- e) An overall threshold of 3.5 will be applied.

Table 3 – Overview of evaluation criteria used for MANIC interviews

Evaluation Criteria	Threshold	Weight
Applicant's academic qualifications and experience	3.5	30
Motivation, eagerness and career ambitions	3.5	20
Achieved results, incl. publications, patents, invited talks, awards, grants and prizes	3.5	20
Complementary skills: creativity, independence, leadership, communication, English proficiency	3.5	10
Reference letters/information	N/A	10
Extra: previous mobility, teaching or non-academic experience	N/A	10

3.5 Shortlisting

- a) After completion of the interview round, each Recruitment Committee will draft a shortlist.
- b) The position will be offered to the highest ranking candidate per host institute.
- c) In case multiple host institutes have shortlisted the same candidate, the candidate will be free to decide which offer they will accept.
- d) In case the highest ranking candidate declines the offer, the position will be offered to the next highest ranking candidate.
- e) After acceptance of the offer, Recruitment Committees are free to cross-reference any high ranking reserve-listed candidates to other Recruitment Committees.
- f) Once a suitable candidate has been found, the MANIC Supervisory Board will be asked to validate the entitlement to a position in the MANIC PhD programme.

² Only if enough high quality candidates remain.

3.6 Contracting

- a) Selected candidates are offered a full, fixed-term employment position according to the Marie Skłodowska Curie and national employment regulations.
- b) In addition, all short-listed - but non-recruited - candidates will be informed (by email) about the strengths and weaknesses of their applications to help them reinforce their profiles for future job applications.